

**5.1.1: Number of students benefited by Scholarships and Freeships provided by the institution, Government & Non – Government bodies, industries, individuals philanthropists during the academic year**

**2018-2019**

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7	Merit scholarship students list with amount	18	72,000	89 -90
<b>TOTAL STUDENTS COUNT :</b>		<b>117</b>	<b>5,00,000</b>	



**PRINCIPAL**  
AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist., Telangana.

**Committed to Excellence in Technical Education**



## POLICY DOCUMENT

### AVANTHI FREESHIP AND MERIT SCHOLARSHIP POLICY

**OBJECTIVE:** The objective of the scheme is to provide financial assistance to the scheduled students studying at Avanthi Institute of Pharmaceutical Sciences to enable to complete their education.

The management of Avanthi Institute of Pharmaceutical Sciences is committed to promote and support higher education opportunities for students from diverse backgrounds.

In recognition of the importance of financial aid in facilitating access to quality education, the institution has established a policy framework for the fair and transparent distribution of non-government scholarships and free ships.

The institution has taken several initiations to motivate students to perform well in their academics, sports and extra-curricular activities,

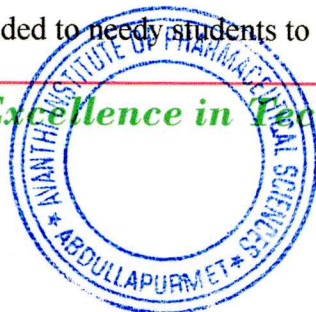
The student's eligibility for award, medals and other financial assistance is based on their academic performance, financial background and other needs.

This policy document outlines the guidelines, procedures and criteria for the awarding of merit scholarships and free-ships.

**The financial assistance to the students will be provided based on the following criteria:**

- 1) To encourage and reward academic excellence, recognizing outstanding achievements by students at Avanthi Institute of Pharmaceutical Sciences.
- 2) To provide financial assistance to students from poor background, enabling them pursue higher education.
- 3) To promote a diverse and inclusive student community by supporting students with exceptional talents in sports, cultural activities or other areas of achievement.
- 4) To ensure transparency, fairness and accountability in the process of Scholarships and free-ships.
- 5) Financial support shall be provided to needy students to take-up quality projects

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- 6) Admission through free ship will be offered on a first- come, first- served basis financial status of applicant.
- 7) The students who are eligible can apply for AVANTHI FREESHIP AND MERIT SCHOLARSHIP (INTERNAL POLICY) and must attend the counseling for as per the schedule.
- 8) The Freeships offered through Avanthi Freeship Test, is applicable for the first year students at the time of admission. The same freeship will be continued in subsequent years of study based on the student performance
- 9) After first year and for the consequent years, the students must attain the attendance percentage  $\geq 80$  and should not have more than two backlogs in the previous academic year.
- 10) The list of short listed students who obtain merit marks in Avanthi Freeship Test are forwarded by the Principal to the Governing Body for approval Freeships are implemented after the approval in Governing body council.
- 11) Concession / Freeships can also be given to other senior students based on the annual income of the parents and also on the socio – economic condition of the students, the decision will be purely based on the institution

## STUDENT MERIT SCHOLARSHIP FRAME WORK

The merit scholarship will be provided for all First and Second TOPPERS of the students year wise and programwise.

1.For 1<sup>ST</sup> TOPPER awarded ..... Rs 5000 /-

2.For 2<sup>nd</sup> TOPPER awarded ..... Rs 3000 /-

The Avanthi Freeships and Merit Scholarships Policy is adapted on this day Dec 4<sup>th</sup> 2017 at Avanthi Institute of Pharmaceutical Sciences, Hyderabad. According to the Merit scholarship Policy, those who are academic toppers will be awarded on Anniversary Day of the institution



  
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Gunthapally(V), Abdullapurmet(M),

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## MODEL FREESHIP QUESTION PAPER

FREESHIP EXAMINATION TEST

2018 - 19

Date:

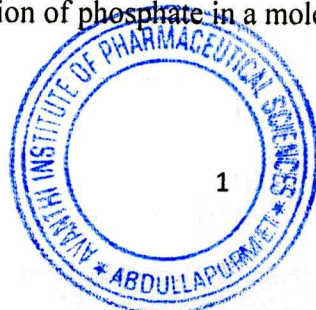
Total Marks: 100

Duration: 180min

Name of the student :

Avanthi Freeship No:

- 1. True statement regarding active site is ( )**
- 1) Active sites are surface areas on enzymes      2) Active sites are large areas on the enzymes  
3) These are grooves & pockets in the enzymes      4) Many active sites are present on the enzymes
- 2. Enzymes that use ATP for their activity is ( )**
- 1) Kinases      2) Synthetases  
3) Transferases      4) Hydrolases
- 3. Enzyme required in the reaction  $\text{NO}_3 \text{-----} \rightarrow \text{NO}_2$  ( )**
- 1) Dehydrogenase      2) Reductase      3) Oxidases      4) Deoxygenases
- 4. An enzymatic reaction proceeded forward and reached equilibrium status. Substances that can be seen at this stage is/are ( )**
- 1) Only product      2) Product and enzyme.  
3) Product, Enzyme and substrate      4) Only enzyme.
- 5. Third number in the enzyme nomenclature indicates ( )**
- 1) Sub-Subclass      2) SubClasses      3) Major Classes      4) Serial number
- 6. Phosphatase enzymes are ( )**
- 1) Addition of phosphate by transfer  
2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$   
3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$   
4) Changing the position of phosphate in a molecule.



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7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \leftrightarrow \text{H}_2\text{CO}_3$  requires ( )  
1) No enzyme 2) An enzyme  
3) Very high temperatures 4) Very low temperatures
8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures ( )  
Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures  
1) Both A and R are correct and R is the correct explanation of A.  
2) Both A and R are correct but R is not the correct explanation of A.  
3) A is true, R is false  
4) A is false, R is true.
9. True statement regarding enzyme ( )  
I: All proteins are enzymes  
II: Only some enzymes are proteins  
III: Enzymes are active only in their tertiary structure  
IV: Enzymes are organic catalysts  
1) I, II 2) II, III 3) Only III 4) III, IV
10. Metallic co-factor in carboxy peptidase is ( )  
1) Fe 2) Mn 3) Zn 4) Mg
11. Isocitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is ( )  
1) 2 2) 3 3) 4 4) 1
12. Rate of the enzymatic reaction is ( )  
1) Difference between initial velocity and final velocity  
2) Amount of product formed per unit time  
3) Amount of product formed at any time  
4) The ratio between substrate and product at any time
13. Protein part in a holo enzyme is ( )  
1) Apoenzyme 2) Simple enzyme  
3) Conjugated enzyme 4) Inducible enzyme

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. ( ) Reason R: Ma  
 1) Both A and R are correct and R is the correct explanation of A.  
 2) Both A and R are correct but R is not the correct explanation of A.  
 3) A is true, R is false  
 4) A is false, R is true.
15. Co-enzymes nature is ( )  
 1) Organic                      2) Inorganic                      3) Proteins                      4) Organic or Inorganic
16. True statement regarding enzymes ( )  
 I: They are thermostable.  
 II: Enzymes can start the reaction.  
 III: Enzymes can be inhibited.  
 IV: Hydrogen-Ion concentration controls enzymatic activity.  
 1) I&II                      2) II, III&IV                      3) III&IV                      4) Only III
17. A multistep chemical reaction, each step catalyzed by an enzyme, is referred as ( )  
 1) Serial catalysis                      2) Multi step catalysis  
 3) Feed back inhibition                      4) Metabolic pathway
18. Haem moiety of peroxidase can be regarded as ( )  
 1) Prosthetic group                      2) Co-enzyme                      3) Metallic cofactor                      4) Simple enzyme
19. Assertion (A): Enzymes are highly specific in reaction. ( )  
 Reason (R): Active sites are specific for a substrate.  
 1 Both A and R are correct and R is the correct explanation of A.  
 2. Both A and R are correct but R is not the correct explanation of A.  
 3 A is true, R is false  
 4. A is false, R is true
20. An enzyme with IUB number EC4.1.2.1 belongs to ( )  
 1) Hydrolases                      2) Isomerases                      3) Lyases                      4) Oxido reductases
21. Enzymes which breaks bonds with addition of water ( )  
 1) Kinases                      2) Synthetases                      3) Transferases.                      4) Hydrolases
22.  $X+Y+ATP \leftrightarrow X-Y+ADP+P_i$ . This reaction is catalyzed by enzymes that belong to ( )  
 1. Kinases                      2. Hydrolases                      3. Ligases                      4. Isomerases

23. False statement regarding enzymatic reaction ( )

- 1 In all enzymatic reactions an intermediate 'ES' complex is formed
- 2 Substrate is bound to the enzyme active site before forming in to product
- 3 Product can be unstable after formation
- 4 Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as ( )

1. Activation energy of an enzyme
2. Rate of the enzymatic reaction
3. Michaelis-Menton constant
4. Feed back inhibition

25.  $K_m$  value is a measure of ( )

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be:

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is:

- e. ELISA-Test    b. ESR – Test    c. PCR – Test    d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.

- i. Cancer    ii. Influenza    iii. Allergy    iv. Small pox

- (a) i and ii    (b) ii and iii    (c) iii and iv    (d) ii and iv

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia?

- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High fever, weakness, stomach pain, loss of appetite and constipation

**30. when an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:**

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

**31. The substance produced by a cell in viral infection that can protect other cells from further infection is:**

- a. Serotonin
- b. Colostrums
- c. Interferon
- d. Histamine

**32. Antibodies present in colostrum which protect the new born from certain diseases is of**

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

**33. Which of the following is not a lymphoid tissue?**

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

**34. Identify the third line of defense from the following**

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

**35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called**

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

**36. Immunity that protects against intracellular bacteria, virus & cancer cells is**

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

**37. Which of the following cells release inflammatory mediators such as histamine and bradykinin**

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Acidophils and Neutrophils



**38. Match the following**

List – I List – II

- A. Anti tetanus serum 1. Cell mediated immunity  
B. Vaccination 2. Humoral immunity  
C. Graft rejection 3. Artificially acquired active immunity  
D. Protects against extra cellular bacteria 4. Naturally acquired active immunity
5. Artificially acquired passive immunity
- a) A – 3; B – 5; C – 1; D – 2    b) A – 5; B – 3; C – 1; D – 2  
c) A – 5; B – 3; C – 2; D – 1    d) A – 5; B – 4; C – 1; D – 2

**39. Consider the following statements about immunological disorders**

- 1) Deficiency in the immune response is called immunodeficiency
  - 2) Inappropriate immune response against self antigens is called autoimmunity
  - 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
  - 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.
- Which of the above are true?
- a) Only 1, 2 & 3    b) Only 2, 3 & 4    c) Only 1, 2 & 4    d) All are true

**40. Match the following**

List – I

List – II

- A. Malaise 1. General feeling of discomfort  
B. Cirrhosis 2. Loss of appetite  
C. Hepatitis 3. Fibrosis of liver  
D. Anorexia 4. Fibrosis of lungs  
5. Inflammation of liver
- a) A – 1; B – 3; C – 2; D – 5    b) A – 2; B – 3; C – 5; D – 1  
c) A – 4; B – 5; C – 3; D – 2    d) A – 1; B – 3; C – 5; D – 2

**41. Gamma interferons are produced by**

- a) B lymphocytes    b) Macrophages    c) T lymphocytes    d) Dendritic cells

**42. An example for the less organised secondary lymphoid tissue**

- a) Thymus    b) Spleen    c) Lymph nodes    d) Mucosal - associated lymphoid tissue

**43. Antibodies are produced by**

- a) B-lymphocytes only    b) Plasma cells only  
c) B-lymphocytes and T-lymphocytes    d) B-lymphocytes and plasma cells

**44. Antigen presenting cells are**

- a) Dendritic cells    b) Activated macrophages  
c) B-Cells    d) Dendritic cells, activated macrophages and B-Cells

**45. Find the wrong statement among the following**

- a) Malignant tumors exhibit metastasis  
b) Benign tumors are with a fibrous outer capsule  
c) Sarcomas are the malignant tumors of secondary lymphoid organs  
d) Carcinomas are malignant tumors of the epithelial cells

**46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection?**

Disease	Causative organisms	Mode of infection
1) Elephantiasis	Wuchereria bancrofti	With infected water and food
2) Malaria	Plasmodium vivax	Bite of male anopheles mosquito
3) Typhoid	Salmonella typhi	With inspired air
4) Pneumonia	Strepto coccus pneumonia	Droplet infection

- a) Option – 1    b) Option – 2    c) Option – 3    d) Option – 4

**47. Where will you look for the sporozoites of the malarial parasite?**

- a) RBCs of Humans suffering from malaria  
b) Saliva of infected female anopheles mosquito  
c) Saliva of Infected female culex mosquito  
d) Spleen of infected humans.

48. In which one of the following options the two examples are correctly matched with their particular type of immunity

Example	Type of immunity
1) Saliva in mouth and tears in eyes	Physical barriers
2) Mucous coating of epithelium lining the urinogenital and the HCL in the stomach	Physiological barriers tract
3) Polymorphonuclear leucocytes and monocytes	Cellular barriers
4) Anti – tetanus and anti snake bite injections	Active immunity

a) Example – 1 b) Example – 2 c) Example – 3 4) Example - 4

49. A certain patient is suspected to be suffering from Acquired immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?

- a) Ultra sound b) Widal c) Elisa d) MRI

50. Which of the following is a pair of viral diseases?

- a) Typhoid and tuberculosis b) Ring worm and AIDS  
c) Common cold and AIDS d) Dysentery and common cold

51. When no external force is acting on a system of particles, the centre of mass of the system

- 1) Remains at rest only 2) Moves with constant velocity only  
3) Moves with constant velocity or will be at rest 4) Moves with variable velocity

52. Centre of mass of a body

- 1) Always lies inside the body 2) Always lies outside the body  
3) Always lies on the surface of the body 4) May lie inside or outside the body

53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move

- 1) Vertically down wards 2) Vertically upwards  
3) Horizontally 4) In the same parabolic path

**54. A bomb at rest explodes. The centre of mass of the system**

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

**55. When an external force is applied at the centre of mass of a system of particles, then it undergoes**

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

**56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to**

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

**57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves**

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

**58. Choose the correct statement.**

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

**59. Choose the wrong statement.**

- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
- 2) Motion of centre of mass depends upon the external force.
- 3) The location of centre of mass depends on the reference frame used locate it.
- 4) The position of centre of mass depends upon the shape of body & distribution of mass.

**60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will**

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

61. a) Algebraic sum of moments of masses about centre of mass is zero

b) For small bodies centre of mass coincides with centre of gravity

c) Position of centre of mass depends on co-ordinate system

d) Position of centre of mass is independent of mass distribution

1) a and b are correct

2) b and c are correct

3) a, b and c are correct

4) a, b, c and d are correct

62. Match the following.

List - I

a Position of centre of mass

b. The algebraic sum of moments of all the field

c. Centre of mass and centre of gravity coincide reference

d. Centre of mass and centre of gravity field do not coincide

List - II

e. Is zero

f. In non uniform gravitational masses about centre of mass

g. Is independent of frame of

h. In uniform gravitational

1. a → e; b → g; c → f; d → h

2. a → g; b → e; c → f; d → h

3. a → g; b → e; c → h; d → f

4. a → h; b → e; c → f; d → g

63. A wooden sphere and a copper sphere of same radius are kept in contact with each other. Their centre of mass will be

(1) At their point of contact (2) Outside the spheres

(3) With in copper sphere (4) Outside the spheres

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.

(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

**65(A): Standing of the passengers in upper part of a double decker bus is not permitted.**

**(R): Standing of passengers will raise the centre of gravity of system, leading to instability.**

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4)(A) is false but (R) is true.

**66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is  $1.13 \times 10^{-10}$  m. The distance of centre of mass of the molecule relative to carbon atom is**

1)  $0.48 \times 10^{-10}$  m    2)  $0.64 \times 10^{-10}$  m    3)  $0.56 \times 10^{-10}$  m    4)  $0.36 \times 10^{-10}$  m

**67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are,**

1)  $(3/2, 3/2, 3/2)$     2)  $(-3/2, -3/2, -3/2)$     3)  $(3/4, 3/4, 3/4)$     4)  $(-3/4, -3/4, -3/4)$

**68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is**

1)  $19/14$  m on the side of heavier rod    2)  $8/7$  m on the side of lighter rod

3) 2 m on the side of heavier rod    4) 2 m on the side of lighter rod

**69. Calculate the number of protons, neutrons and electrons respectively in  $^{14}\text{N}_7^{3+}$**

1) 7, 10, 7    2) 7, 7, 10    3) 10, 7, 7    4) 7, 7, 7

**70. The order of filling of electrons in orbital in Ti is**

1) 1s, 2s, 3s, 3p, 3d and 4s

2) 1s, 2s, 2p, 3s, 3p, 4s and 3d

3) 1s, 2s, 2p, 3s, 4s, 3p and 3d

4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

**71. The symbol of an element is Une. Its atomic number is**

1) 110

2) 109

3) 101

4) 108

72. Statement(a):  $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO} < \text{P}_4\text{O}_{16}$  – Acidic property

Statement (b):  $\text{F} > \text{Cl} > \text{Br}$  – electron gain enthalphy

Statement (c):  $\text{M}^{2-} > \text{M}^- > \text{M}^+ > \text{M}^{2+}$  ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

- 1) a-T, b-T, c-F, d-F    2) a-F, b-T, c-F, d-T    3) a-F, b-F, c-F, d-T    4) a-T, b-F, c-T, d-F

73. The symbol of an element is Une. Its atomic number is

- 1)110                      2)109                      3)101                      4)108

74. Match the bond order for the following molecules.

List-I	List-II
a) $\text{Li}_2$	i)3
b) $\text{N}_2$	ii)1.5
c) $\text{Be}_2$	iii)1.0
d) $\text{O}_2$	iv)0

The correct answer is

- 1) a-ii, b-iii, c-i, d-v    2) a-iii, b-i, c-iv, d-v    3) a-iv, b-i, c-v, d-iii    4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

- 1) Two times higher than a hydrogen molecule    2) Four times higher than a hydrogen molecule  
3) Same as that of a hydrogen molecule    4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $\text{N}_2$  at 400 K and CO at 800 K is (molar mass of  $\text{N}_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO =  $28 \text{ g mol}^{-1}$ )

- 1)0.75    2)0.25    3)0.707    4)1.414

77. Relative abundance (in percentage) of  $^{14}\text{C}$  isotope is

- 1) 1.1                      2)  $2 \times 10^{-10}$     3)  $2 \times 10^{-4}$     4)  $2 \times 10^{-5}$

78. Calculate the molality of 1 litre solution of 93%  $\text{H}_2\text{SO}_4$  by w/v. [ $d_{\text{H}_2\text{SO}_4} = 1.84 \text{ g/cc}$ ]

- 1) 3.71    2) 8.5    3) 12.4    4) 10.42

79. Amongst the chemical reactions given below, the reactions with increasing entropy are

a)  $\text{H}_2\text{O}(l) \rightleftharpoons \text{H}_2\text{O}(g)$     b)  $\text{C}(s) + \text{CO}_2(g) \rightleftharpoons 2\text{CO}(g)$     c)  $2\text{H}_2(g) + \text{O}_2(g) \rightleftharpoons 2\text{H}_2\text{O}(l)$     d)  $\text{N}_2(g) + \text{O}_2(g) \rightleftharpoons$  Mixture of  $\text{N}_2$  and  $\text{O}_2$

- 1) a, b, c, d    2) a, b, c    3) a, b, d    4) b, c, d

80. For the formation of  $\text{NH}_3$  from  $\text{N}_2$  and  $\text{H}_2$  at 500 K, the concentration of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  at equilibrium are  $1.5 \times 10^{-2} \text{ M}$ ,  $3.0 \times 10^{-2} \text{ M}$ ,  $1.2 \times 10^{-2} \text{ M}$  respectively. The equilibrium constant for the reverse reaction is

- 1)  $3.56 \times 10^2$                       2)  $2.81 \times 10^{-3}$     3)  $3.56 \times 10^{-2}$     4)  $2.81 \times 10^3$

81. Estimate the approximate  $\text{pK}_a$  of 0.5 M  $\text{CH}_3\text{COOH}$ . Degree of dissociation (ionization) is

0.15. ( $\log 1.32 = 0.12$ )

- 1) 2.0                      2) 1.5                      3) 1.88                      4) 0.15

82. The natural relative abundance of isotopes of hydrogen is

1)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$

2)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$ ;  $^3\text{T} = 10^{-16}\%$

3)  $^1\text{H} = 99.100\%$ ;  $^2\text{D} = 0.900\%$

4)  $^1\text{H} = 99.900\%$ ;  $^2\text{D} = 0.010\%$ ;  $^3\text{T} = 10^{-15}\%$

83. Calcium on heating in  $\text{N}_2$  yields an ionic compound A, which reacts with water to give  $\text{Ca}(\text{OH})_2$  and a gas B. Identify A and B

- 1)  $\text{CaN}_2, \text{NO}$     2)  $\text{Ca}_3\text{N}_2, \text{NH}_3$     3)  $\text{CaN}_2, \text{NH}_3$     4)  $\text{Ca}_3\text{N}_2, \text{NO}$

84. The formula of Borax is

- 1)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$     2)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$     3)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$     4)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$



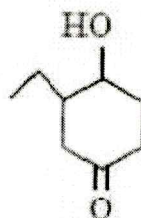
85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms?

- 1) Graphite 2) Graphite and  $C_{60}$  3)Diamond 4)Diamond and  $C_{60}$

86. Which of the following chemicals is NOT involved in photochemical smog formation

- 1) $SO_2$  2) $O_3$  3) $NO_2$  4) $NO$

87. The IUPA name of the following compound is



- 1) 2-Hydroxy -5-oxoethylcyclohexane 2)2-ethyl-4 oxocyclohexanol  
3) 3-Ethyl-4-hydroxycyclohexanone 4)5-Hydroxy-3-oxethylcyclohexane

88. Number of possible constitutional isomers of alkane with formula  $C_6H_{14}$  is

- 1)3 2)5 3)2 4)10

89. In the process of formation of nitronium ion, nitric acid acts as

- 1) a base 2)an acid 3) a catalyst 4)a solvent

90.  $NaCl$  is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

- 1) Frenkel defect 2) Schottky defect 3)F-centers 4)Impurity defects

91. Calculate the approximate  $\Delta T_b$  (in K) for 0.001 molal  $KCl$  solution if its van't Hoff factor is 1.98 [ $k_b$  of water is  $0.52 K kg mol^{-1}$ ]

- 1)1.03 2) $1.03 \times 10^{-3}$  3) $1.03 \times 10^{-5}$  4) $1.03 \times 10^{-1}$

92. Henry's law constant for  $CO_2$  in waters is 1.67 kbar at  $25^\circ C$ . The quantity of  $CO_2$  in 1000 mL of soda water when packed under 5 bar  $CO_2$  pressure at  $25^\circ C$  is

- 1) 0.084 mol 2) 0.167 mol 3) 0.252 mol 4) 0.336 mol

93. Which of the following correctly represents Nernst equations?

$$1) \Delta G = \Delta G^\circ + \frac{2.303 RT \log [P]}{[R]}$$

$$2) \Delta G = \Delta G^\circ - \frac{2.303 RT \log [P]}{[R]}$$

$$3) \Delta G^\circ = \Delta G + \frac{2.303 RT \log [R]}{[P]}$$

$$4) \Delta G^\circ = \Delta G - \frac{2.303 RT \log [R]}{[P]}$$

94. One end of a thin uniform rod of length L and mass M<sub>1</sub> is riveted to the centre of a uniform circular disc of radius 'r' and mass M<sub>2</sub> so that both are coplanar. The centre of mass of the combination from the centre of the disc is

(Assume that the point of attachment is at the origin)

$$1) \frac{L(M_1 + M_2)}{2M_1}$$

$$2) \frac{LM_1}{2(M_1 + M_2)}$$

$$3) \frac{2(M_1 + M_2)}{LM_1}$$

$$4) \frac{2LM_1}{(M_1 + M_2)}$$

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero.

b) x – coordinate of centre of mass of system of particles in a plane is represented by

$$x_{cm} = \frac{1}{M} \sum m_i x_i$$

c) x – coordinate of a rigid body of continuous mass distribution represented by

$$x_{cm} = \frac{1}{M} \int x \, dm$$

1) a and b are true

2) b and c are true

3) a and c are true

4) All a, b, c are true

96. Disc of radius 'r' is removed from the disc of radius 'R' then

- a) The minimum shift in centre of mass is zero
- b) The maximum shift in centre of mass cannot be greater than  $r^2 / (R+r)$
- c) Centre of mass must lie where mass exists
- d) The shift in centre of mass is  $r^2 / (R+r)$

- 1) Only a and b are correct
- 2) Only a and c are correct
- 3) Only a, b and d are correct
- 4) All are correct

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is

- a)  $R/\pi$
- b)  $2R/\pi$
- c)  $4R/3\pi$
- d)  $3R/4\pi$

98. Two bodies of masses  $m_1$  and  $m_2$  are at distances  $x_1$  and  $x_2$  from their centre of mass.

Then, the correct statement of the following is

- 1)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$
- 2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$
- 3)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$
- 4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$

99. The energy possessed by a body by virtue of its motion is

- a) Chemical Energy
- b) Kinetic Energy
- c) Potential Energy
- d) All

100. Distance travelled by a body is proportional to the square time . The body is moving with

- a) Uniform acceleration
- b) Velocity
- c) Variable acceleration
- d) All

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# Avanthi Institute of Pharmaceutical Sciences

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## MODEL FREESHIP QUESTION PAPER

### FREESHIP EXAMINATION TEST

Total Marks: 100

Duration: 180min

Date: 25/6/18

85  
-----  
100

Name of the student :

G.P. Praveen Kumar

Avanthi Freeship No:

AIPRS 2018005

1. True statement regarding active site is (2)
  - 1) Active sites are surface areas on enzymes
  - 2) Active sites are large areas on the enzymes
  - 3) These are grooves & pockets in the enzymes
  - 4) Many active sites are present on the enzymes
2. Enzymes that use ATP for their activity is (3)
  - 1) Kinases
  - 2) Synthetases
  - 3) Transferases
  - 4) Hydrolases
3. Enzyme required in the reaction  $\text{NO}_2 \rightarrow \text{NO}$  (2)
  - 1) Dehydrogenase
  - 2) Reductase
  - 3) Oxidases
  - 4) Deoxygenases
4. An enzymatic reaction proceeded forward and reached equilibrium status. Substances that can be seen at this stage is/are (3)
  - 1) Only product
  - 2) Product and enzyme.
  - 3) Product, Enzyme and substrate
  - 4) Only enzyme.
5. Third number in the enzyme nomenclature indicates (1)
  - 1) Sub-Subclass
  - 2) SubClasses
  - 3) Major Classes
  - 4) Serial number
6. Phosphatase enzymes are (3)
  - 1) Addition of phosphate by transfer
  - 2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$
  - 3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$
  - 4) Changing the position of phosphate in a molecule.
7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \leftrightarrow \text{H}_2\text{CO}_3$  requires (1)
  - 1) No enzyme
  - 2) An enzyme
  - 3) Very high temperatures
  - 4) Very low temperatures
8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures (2)
  - 1) Both A and R are correct and R is the correct explanation of A.
  - 2) Both A and R are correct but R is not the correct explanation of A.
  - 3) A is true, R is false
  - 4) A is false, R is true.
9. True statement regarding enzyme (4)
  - I: All proteins are enzymes
  - II: Only some enzymes are proteins
  - III: Enzymes are active only in their tertiary structure
  - IV: Enzymes are organic catalysis
10. Metallic co-factor in carboxy peptidase is (3)
  - 1) I, II
  - 2) II, III
  - 3) Only III
  - 4) III, IV
11. Isocitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is (4)
  - 1) 2
  - 2) 3
  - 3) 4
  - 4) 1
12. Rate of the enzymatic reaction is (2)
  - 1) Difference between initial velocity and final velocity
  - 2) Amount of product formed per unit time
  - 3) Amount of product formed at any time
  - 4) The ratio between subject and product at any time
13. Protein part in a holo enzyme is (1)
  - 1) Apoenzyme
  - 2) Simple enzyme
  - 3) Conjugated enzyme
  - 4) Inductive enzyme

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. Reason R: Many

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true.

15. Co-enzymes nature is (1)

- 1) Organic
- 2) Inorganic
- 3) Proteins
- 4) Organic or Inorganic

16. True statement regarding enzymes (3)

- I. They are thermostable.
- II. Enzymes can start the reaction.
- III. Enzymes can be inhibited.
- IV. Hydrogen-ion concentration controls enzymatic activity.

17. Amultistepchemical reaction, each step catalyzed by an enzyme is referred as (4)

- 1) I & II
- 2) II, III & IV
- 3) III & IV
- 4) Only III

18. Haemmoicy of peroxidase can be regarded as (1)

- 1) Prosthetic group
- 2) Co-enzyme
- 3) Metallic cofactor
- 4) Simple enzyme

19. Assertion (A): Enzymes are highly specific in reaction. Reason (R): Active sites are specific for a substrate.

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true

20. An enzyme with IUB number EC4.1.2.1 belongs to (3)

- 2) Hydrolases
- 3) Lyases
- 4) Oxido reductases

21. Enzymes which breaks bonds with addition of water (4)

- 3) Kinases
- 2) Synthetases
- 3) Transferases
- 4) Hydrolases

22. X+Y+ATP ↔ X-Y+ADP+P<sub>i</sub>. This reaction is catalyzed by enzymes that belong to (4)

- 1. Kinases
- 2. Hydrolases
- 3. Ligases
- 4. Isomerases

23. False statement regarding enzymatic reaction (3)

- 1. In all enzymatic reactions an intermediate 'ES' complex is formed
- 2. Substrate is bound to the enzyme active site before forming in to product
- 3. Product can be unstable after formation
- 4. Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as (3)

- 1. Activation energy of an enzyme
- 2. Rate of the enzymatic reaction
- 3. Michaelis-Menton constant
- 4. Feed back inhibition

25. K<sub>m</sub> value is a measure of (2)

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be: (3)

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is: (4)

- e. ELISA-Test
- b. ESR - Test
- c. PCR - Test
- d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases. (4)

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox
- (a) i and ii
- (b) ii and iii
- (c) iii and iv
- (d) ii and iv

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia? (1)

- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High fever, weakness, stomach pain, loss of appetite and constipation

30. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that: **(3)**

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

31. The substance produced by a cell in viral infection that can protect other cells from further infection is: **(4)**

- a. Serotonin
- b. Colostrum
- c. Interferon
- d. Histamine

32. Antibodies present in colostrum which protect the new born from certain diseases is of **(2)**

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

33. Which of the following is not a lymphoid tissue? **(3)**

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

34. Identify the third line of defense from the following **(3)**

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called **(2)**

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

36. Immunity that protects against intracellular bacteria, virus & cancer cells is **(4)**

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

37. Which of the following cells release inflammatory mediators such as histamine and bradykinin **(1)**

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Acidophils and Neutrophils

38. Match the following **(2)**

- List - I List - II
- A. Anti tetanus serum
  - B. Vaccination
  - C. Graft rejection
  - D. Protects against extra cellular bacteria
- 1. Cell mediated immunity
  - 2. Humoral immunity
  - 3. Artificially acquired active immunity
  - 4. Naturally acquired active immunity

5. Artificially acquired passive immunity

- a) A - 3; B - 5; C - 1; D - 2
- b) A - 5; B - 3; C - 1; D - 2
- c) A - 5; B - 3; C - 2; D - 1
- d) A - 5; B - 4; C - 1; D - 2

39. Consider the following statements about immunological disorders **(1)**

- 1) Deficiency in the immune response is called immunodeficiency
  - 2) Inappropriate immune response against self antigens is called autoimmunity
  - 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
  - 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.
- Which of the above are true?
- a) Only 1, 2 & 3b) Only 2, 3 & 4
  - c) Only 1, 2 & 4
  - d) All are true

40. Match the following **(4)**

- List - I List - II
- A. Malaise
  - B. Cirrhosis
  - C. Hepatitis
  - D. Anorexia
- 1. General feeling of discomfort
  - 2. Loss of appetite
  - 3. Fibrosis of liver
  - 4. Fibrosis of lungs
  - 5. Inflammation of liver

- a) A - 1; B - 3; C - 2; D - 5
- b) A - 2; B - 3; C - 5; D - 1
- c) A - 4; B - 5; C - 3; D - 2
- d) A - 1; B - 3; C - 5; D - 2

41. Gamma interferons are produced by

- a) B lymphocytes
- b) Macrophages
- c) T lymphocytes
- d) Dendritic cells

(3)

42. An example for the less organised secondary lymphoid tissue

- a) Thymus
- b) Spleen
- c) Lymph nodes
- d) Mucosal - associated lymphoid tissue

(4)

43. Antibodies are produced by

- a) B-lymphocytes only
- b) Plasma cells only

(4)

c) B-lymphocytes and T-lymphocytes

d) B-lymphocytes and plasma cells

(1)

44. Antigen presenting cells are

- a) Dendritic cells
- b) Activated macrophages

- c) B-Cells
- d) Dendritic cells, activated macrophages and B-Cells

(3)

45. Find the wrong statement among the following

a) Malignant tumors exhibit metastasis

b) Benign tumors are with a fibrous outer capsule

c) Sarcomas are the malignant tumors of secondary lymphoid organs

d) Carcinomas are malignant tumors of the epithelial cells

(4)

46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection?

Disease Causative organisms Mode of infection

1) Elephantiasis Wuchereria bancrofti With infected water and food

2) Malaria Plasmodium vivax Bite of male anopheles mosquito

3) Typhoid Salmonella typhi With inspired air

4) Pneumonia Strepto coccus pneumonia Droplet infection

a) Option - 1 b) Option - 2 c) Option - 3 d) Option - 4

47. Where will you look for the sporozoites of the malarial parasite?

a) RBCs of Humans suffering from malaria

b) Saliva of infected female anopheles mosquito

c) Saliva of infected female culex mosquito

d) Spleen of infected humans.

(2)

48. In which one of the following options the two examples are correctly matched with their particular type of immunity

Example

Type of immunity

1) Saliva in mouth and tears in eyes

Physical barriers

2) Mucous coating of epithelium lining the urogenital and the HCL in the stomach

Physiological barriers tract

3) Polymorphonuclear leucocytes and monocytes

Cellular barriers

4) Anti - tetanus and anti snake bite injections

Active immunity

a) Example - 1 b) Example - 2c) Example - 3 4) Example - 4

(3)

49. A certain patient is suspected to be suffering from Acquired Immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?

- a) Ultra sound
- b) Widal
- c) Elisa
- d) MRI

(2)

50. Which of the following is a pair of viral diseases?

a) Typhoid and tuberculosis

b) Ring worm and AIDS

c) Common cold and AIDS

d) Dysentery and common cold

(3)

51. When no external force is acting on a system of particles, the centre of mass of the system

1) Remains at rest only

2) Moves with constant velocity only

3) Moves with constant velocity or will be at rest

4) Moves with variable velocity

(4)

52. Centre of mass of a body

1) Always lies inside the body

2) Always lies outside the body

3) Always lies on the surface of the body

4) May lie inside or outside the body

(4)

53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move

1) Vertically down wards

2) Vertically upwards

3) Horizontally

4) In the same parabolic path

54. A bomb at rest explodes. The centre of mass of the system

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

(4) ✓

55. When an external force is applied at the centre of mass of a system of particles, then it undergoes

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

(1) ✓

56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

(3) ✓

57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

(3) ✓

58. Choose the correct statement.

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

(3) ✓

59. Choose the wrong statement.

- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
- 2) Motion of centre of mass depends upon the external force.
- 3) The location of centre of mass depends on the reference frame used locate it.
- 4) The position of centre of mass depends upon the shape of body & distribution of mass.

(4) ✓

60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

9

61. a) Algebraic sum of moments of masses about centre of mass is zero

- b) For small bodies centre of mass coincides with centre of gravity
- c) Position of centre of mass depends on co-ordinate system
- d) Position of centre of mass is independent of mass distribution

- 1) a and b are correct
- 2) b and c are correct
- 3) a, b and c are correct
- 4) a, b, c and d are correct

(1) ✓

62. Match the following.

List - I  
a. Position of centre of mass

b. The algebraic sum of moments of all the field

c. Centre of mass and centre of gravity coincide reference

d. Centre of mass and centre of gravity field do not coincide

List - II  
e. Is zero

f. In non uniform gravitational masses about centre of mass

g. Is independent of frame of

h. In uniform gravitational

- 1. a → e; b → g; c → f; d → h
- 2. a → g; b → e; c → f; d → h
- 3. a → g; b → e; c → h; d → f
- 4. a → h; b → e; c → f; d → g

(4) ✓

63. A wooden sphere and a copper sphere of same radius are kept in contact with each other. Their centre of mass will be

- (1) At their point of contact
- (2) Outside the spheres
- (3) Within copper sphere
- (4) Outside the spheres

(3) ✓

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.

(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).
- (2) Both (A) and (R) are true and (R) is not the correct explanation of (A).
- (3) (A) is true but (R) is false.
- (4) (A) is false but (R) is true.

(1) ✓

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65(A): Standing of the passengers in upper part of a double decker bus is not permitted.

(R): Standing of passengers will raise the centre of gravity of system, leading to instability.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false. (4) (A) is false but (R) is true.

66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is  $1.13 \times 10^{-10} \text{m}$ . The distance of centre of mass of the molecule relative to carbon atom is

- 1)  $0.48 \times 10^{-10} \text{m}$  2)  $0.64 \times 10^{-10} \text{m}$  3)  $0.56 \times 10^{-10} \text{m}$  4)  $0.36 \times 10^{-10} \text{m}$

67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are.

- 1) (3/2, 3/2, 3/2) 2) (-3/2, -3/2, -3/2) 3) (3/4, 3/4, 3/4) 4) (-3/4, -3/4, -3/4)

68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is

- 1) 19/14 m on the side of heavier rod 2) 8/7 m on the side of lighter rod 3) 2 m on the side of heavier rod 4) 2 m on the side of lighter rod

69. Calculate the number of protons, neutrons and electrons respectively in  $^{14} \text{N}_7^{3+}$

- 1) 7, 10, 7 2) 7, 7, 10 3) 10, 7, 7 4) 7, 7, 7

70. The order of filling of electrons in orbital in Ti is

- 1) 1s, 2s, 3s, 3p, 3d and 4s 2) 1s, 2s, 2p, 3s, 3p, 4s and 3d 3) 1s, 2s, 2p, 3s, 4s, 3p and 3d 4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

71. The symbol of an element is Ure. Its atomic number is

- 1) 110 2) 109 3) 101 4) 108

72. Statement(a):  $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO} < \text{P}_2\text{O}_5$  - Acidic property

Statement (b):  $\text{F} > \text{Cl} > \text{Br}$  - electron gain enthalphy

Statement (c):  $M^2 > M^+ > M^+$  ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

- 1) a-T, b-T, c-F, d-F 2) a-F, b-T, c-F, d-T 3) a-F, b-F, c-F, d-T 4) a-T, b-F, c-T, d-F

73. The symbol of an element is Ure. Its atomic number is

- 1) 110 2) 109 3) 101 4) 108

74. Match the bond order for the following molecules.

- List-I List-II a)  $\text{Li}_2$  i) 3 b)  $\text{N}_2$  ii) 1.5 c)  $\text{Be}_2$  iii) 1.0 d)  $\text{O}_2$  iv) 0

The correct answer is

- 1) a-ii, b-iii, c-i, d-v 2) a-iii, b-i, c-iv, d-v 3) a-iv, b-i, c-v, d-iii 4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

- 1) Two times higher than a hydrogen molecule 2) Four times higher than a hydrogen molecule 3) Same as that of a hydrogen molecule 4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $\text{N}_2$  at 400 K and CO at 800 K is (molar mass of  $\text{N}_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO = 28 g  $\text{mol}^{-1}$ )

- 1) 0.75 2) 0.25 3) 0.707 4) 1.414

77. Relative abundance (in percentage) of  $^{14}\text{C}$  isotope is

- 1) 1.1
- 2)  $2 \times 10^{-10}$
- 3)  $2 \times 10^{-4}$
- 4)  $2 \times 10^{-5}$

78. Calculate the molality of 1 litre solution of 93%  $\text{H}_2\text{SO}_4$  by w/v.  $d_{\text{H}_2\text{SO}_4} = 1.84 \text{ g/cc}$

- 1) 3.71
- 2) 8.5
- 3) 12.4
- 4) 10.42

79. Amongst the chemical reactions given below, the reactions with increasing entropy are

- a)  $\text{H}_2\text{O}(l) \rightleftharpoons \text{H}_2\text{O}(g)$
- b)  $\text{C}(s) + \text{CO}_2(g) \rightleftharpoons 2\text{CO}(g)$
- c)  $2\text{H}_2(g) + \text{O}_2(g) \rightleftharpoons 2\text{H}_2\text{O}(l)$
- d)  $\text{N}_2(g) + \text{O}_2(g) \rightleftharpoons \text{Mixture of N}_2 \text{ and O}_2$

- 1) a, b, c, d
- 2) a, b, c
- 3) a, b, d
- 4) b, c, d

80. For the formation of  $\text{NH}_3$  from  $\text{N}_2$  and  $\text{H}_2$  at 500 K, the concentration of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  at equilibrium are  $1.5 \times 10^{-2} \text{ M}$ ,  $3.0 \times 10^{-2} \text{ M}$ ,  $1.2 \times 10^{-2} \text{ M}$  respectively. The equilibrium constant for the reverse reaction is

- 1)  $3.56 \times 10^2$
- 2)  $2.81 \times 10^3$
- 3)  $3.56 \times 10^{-2}$
- 4)  $2.81 \times 10^3$

81. Estimate the approximate  $\text{pK}_a$  of 0.5  $\text{MCH}_3\text{COOH}$ . Degree of dissociation (ionization) is 0.15. ( $\log 1.32 = 0.12$ )

- 1) 2.0
- 2) 1.5
- 3) 1.88
- 4) 0.15

82. The natural relative abundance of isotopes of hydrogen is

- 1)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$
- 2)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.15\%$ ;  $^3\text{T} = 10^{-16}\%$
- 3)  $^1\text{H} = 99.100\%$ ;  $^2\text{D} = 0.900\%$
- 4)  $^1\text{H} = 99.900\%$ ;  $^2\text{D} = 0.010\%$ ;  $^3\text{T} = 10^{-15}\%$

83. Calcium on heating in  $\text{N}_2$  yields an ionic compound A, which reacts with water to give  $\text{Ca}(\text{OH})_2$  and a gas B. Identify A and B

- 1)  $\text{CaN}_2$ ,  $\text{NO}$
- 2)  $\text{Ca}_3\text{N}_2$ ,  $\text{NH}_3$
- 3)  $\text{CaN}_2$ ,  $\text{NH}_3$
- 4)  $\text{Ca}_3\text{N}_2$ ,  $\text{NO}$

84. The formula of Borax is

- 1)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$
- 2)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$
- 3)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- 4)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$

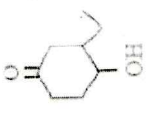
85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms?

- 1) Graphite
- 2) Graphite and  $\text{C}_{60}$
- 3) Diamond
- 4) Diamond and  $\text{C}_{60}$

86. Which of the following chemicals is NOT involved in photochemical smog formation

- 1)  $\text{SO}_2$
- 2)  $\text{O}_3$
- 3)  $\text{NO}_2$
- 4)  $\text{NO}$

87. The IUPAC name of the following compound is



- 1) 2-Hydroxy-5-oxocyclohexane
- 2) 2-ethyl-4-oxocyclohexanone
- 3) 3-Ethyl-4-hydroxycyclohexanone
- 4) 5-Hydroxy-3-oxethylcyclohexane

88. Number of possible constitutional isomers of alkane with formula  $\text{C}_6\text{H}_{14}$  is

- 1) 3
- 2) 5
- 3) 2
- 4) 10

89. In the process of formation of nitronium ion, nitric acid acts as

- 1) a base
- 2) an acid
- 3) a catalyst
- 4) a solvent

90.  $\text{NaCl}$  is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

- 1) Frenkel defect
- 2) Schottky defect
- 3) F-centers
- 4) Impurity defects

91. Calculate the approximate  $\text{pH}$  (in K) for 0.001 molal  $\text{KCl}$  solution if its van't Hoff factor is 1.98 [ $K_b$  of water is  $0.52 \text{ K kg mol}^{-1}$ ]

- 1) 1.03
- 2)  $1.03 \times 10^{-3}$
- 3)  $1.03 \times 10^{-5}$
- 4)  $1.03 \times 10^{-1}$

92. Henry's law constant for  $\text{CO}_2$  in water is 1.67 kbar at  $25^\circ\text{C}$ . The quantity of  $\text{CO}_2$  in 1000 ml of soda water when packed under 5 bar  $\text{CO}_2$  pressure at  $25^\circ\text{C}$  is

- 1) 0.084 mol
- 2) 0.167 mol
- 3) 0.252 mol
- 4) 0.336 mol

93. Which of the following correctly represents Nernst equations? (2)

- 1)  $\Delta G = \Delta G^\circ + 2.303 RT \log \frac{[P]}{[R]}$
- 2)  $\Delta G = \Delta G^\circ - 2.303 RT \log \frac{[P]}{[R]}$
- 3)  $\Delta G^\circ = \Delta G + 2.303 RT \log \frac{[R]}{[P]}$
- 4)  $\Delta G^\circ = \Delta G - 2.303 RT \log \frac{[R]}{[P]}$

94. One end of a thin uniform rod of length L and mass M1 is riveted to the centre of a uniform circular disc of radius 'r' and mass M2 so that both are coplanar. The centre of mass of the combination from the centre of the disc is (Assume that the point of attachment is at the origin) (3)

- 1)  $\frac{L(M_1 + M_2)}{2M_1}$
- 2)  $\frac{LM_1}{2(M_1 + M_2)}$
- 3)  $\frac{2(M_1 + M_2)}{LM_1}$
- 4)  $\frac{2LM_1}{(M_1 + M_2)}$

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero. (4)

- b)  $x$  - coordinate of centre of mass of system of particles in a plane is represented by 
$$x_{cm} = \frac{1}{M} \sum m_i x_i$$
- c)  $x$  - coordinate of a rigid body of continuous mass distribution represented by 
$$x_{cm} = \frac{1}{M} \int x dm$$
- 1) a and b are true    2) b and c are true    3) a and c are true    4) All a, b, c are true

96. Disc of radius 'r' is removed from the disc of radius 'R' then (1)

- a) The minimum shift in centre of mass is zero
- b) The maximum shift in centre of mass cannot be greater than  $r^2 / (R+r)$
- c) Centre of mass must lie where mass exists
- d) The shift in centre of mass is  $r^2 / (R+r)$

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is (3)

- 1) Only a and b are correct
- 2) Only a and c are correct
- 3) Only a, b and d are correct
- 4) All are correct

98. Two bodies of masses m1 and m2 are at distances x1 and x2 from their centre of mass. Then, the correct statement of the following is (2)

- 1)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$
- 2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$
- 3)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$
- 4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$

99. The energy possessed by a body by virtue of its motion is (3)

- a) Chemical Energy    b) Kinetic Energy    c) Potential Energy    d) All

100. Distance travelled by a body is proportional to the square time. The body is moving with (1)

- a) Uniform acceleration    b) Velocity    c) Variable acceleration    d) All

\*\*\*\*\*

16  
**PRINCIPAL INSTITUTE OF AVANTHI**  
**INSTITUTIONAL SCIENCES PHARMACEUTICAL SCIENCES**  
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MODEL FREESHIP QUESTION PAPER

FREESHIP EXAMINATION TEST

77/100

Date: 18/2/18

Total Marks: 100

Duration: 180min

Name of the student :

G. Saravane

Avanathi Freeship No:

AIPPS 2018026

1. True statement regarding active site is

1) Active sites are surface areas on enzymes

2) Active sites are large areas on the enzymes

(2)

3) These are grooves & pockets in the enzymes 4) Many active sites are present on the enzymes

2. Enzymes that use ATP for their activity is

1) Kinases

2) Synthetases

3) Transferases

4) Hydrolases

(2)

3. Enzyme required in the reaction  $\text{NO}_3^- \rightarrow \text{NO}_2^-$

1) Dehydrogenase

2) Reductase

3) Oxidases

4) Deoxygenases

(1)

4. An enzymatic reaction proceeded forward and reached equilibrium status.

Substances that can be seen at this stage is/are

1) Only product

2) Product and enzyme.

(3)

5. Third number in the enzyme nomenclature indicates

1) Sub-Subclass

2) SubClasses

3) Major Classes

4) Serial number

(1)

6. Phosphatase enzymes are

1) Addition of phosphate by transfer

2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$

3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$

4) Changing the position of phosphate in a molecule.

(4)

7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$  requires

1) No enzyme

2) An enzyme

3) Very high temperatures

4) Very low temperatures

(2)

8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures

(4)

1) Both A and R are correct and R is the correct explanation of A.

2) Both A and R are correct but R is not the correct explanation of A.

3) A is true, R is false

4) A is false, R is true.

9. True statement regarding enzyme

I: All proteins are enzymes

II: Only some enzymes are proteins

III: Enzymes are active only in their tertiary structure

IV: Enzymes are organic catalysts

1) I, II

2) II, III

3) Only III

4) III, IV

10. Metallic co-factor in carboxy peptidase is

1) Fe

2) Mn

3) Zn

4) Mg

(1)

11. Isocitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is

1) 2

2) 3

3) 4

4) 1

(1)

12. Rate of the enzymatic reaction is

1) Difference between initial velocity and final velocity

2) Amount of product formed per unit time

3) Amount of product formed at any time

4) The ratio between subject and product at any time

(4)

13. Protein part in a holo enzyme is

1) Apoenzyme

2) Simple enzyme

3) Conjugated enzyme

4) Inductive enzyme

(3)

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. ( ) Reason R: Many

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true.

15. Co-enzymes nature is (4)

- 1) Organic
- 2) Inorganic
- 3) Proteins
- 4) Organic or Inorganic

16. True statement regarding enzymes (2)

- I: They are thermostable.
- II: Enzymes can start the reaction.
- III: Enzymes can be inhibited.
- IV: Hydrogen-ion concentration controls enzymatic activity.

17. Amultistepchemicalreaction,eachstepcatalyzedbyanenzyme,isreferredas (4)

- 1) I&II
- 2) II,III&IV
- 3) III&IV
- 4) OnlyIII

18. Hemmolety of peroxidase can be regarded as (1)

- 1) Prosthetic group
- 2) Co-enzyme
- 3) Metallic cofactor
- 4) Simple enzyme

19. Assertion (A): Enzymes are highly specific in reaction. (1)

- Reason (R): Active sites are specific for a substrate.
- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true

20. An enzyme with IUB number EC4.1.2.1 belongs to (3)

- 1) Kinases
- 2) Hydrolases
- 3) Isomerases
- 4) Oxidoreductases

21. Enzymes which breaks bonds with addition of water (4)

- 1) Kinases
- 2) Synthetases
- 3) Transferases
- 4) Hydrolases

22.  $X+Y+ATP \leftrightarrow X-Y+ADP+P_i$ . This reaction is catalyzed by enzymes that belong to (3)

- 1) Kinases
- 2) Hydrolases
- 3) Ligases
- 4) Isomerases

23. False statement regarding enzymatic reaction (4)

- I In all enzymatic reactions an intermediate 'ES' complex is formed
- 2 Substrate is bound to the enzyme active site before forming in to product
- 3 Product can be unstable after formation
- 4 Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as (3)

- 1. Activation energy of an enzyme
- 2. Rate of the enzymatic reaction
- 3. Michaelis-Menton constant
- 4. Feed back inhibition

25.  $K_m$  value is a measure of (2)

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be: (3)

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is: (4)

- e. ELISA-Test
- b. ESR - Test
- c. PCR - Test
- d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases. (4)

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia? (4)

- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High Fever, weakness, stomach pain, loss of appetite and constipation

30. when an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

(3)

31. The substance produced by a cell in viral infection that can protect other cells from further infection is:

- a. Serotonin
- b. Colostrum
- c. Interferon
- d. Histamine

(3)

32. Antibodies present in colostrum which protect the new born from certain diseases is of

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

(2)

33. Which of the following is not a lymphoid tissue?

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

(3)

34. Identify the third line of defense from the following

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

(3)

35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

(2)

36. Immunity that protects against intracellular bacteria, virus & cancer cells is

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

(4)

37. Which of the following cells release inflammatory mediators such as histamine and bradykinin

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Adipophils and Neutrophils

(2)

38. Match the following

List - I List - II

- A. Anti tetanus serum
  - B. Vaccination
  - C. Graft rejection
  - D. Protects against extra cellular bacteria
- 1. Cell mediated immunity
  - 2. Humoral immunity
  - 3. Artificially acquired active immunity
  - 4. Naturally acquired active immunity

(3)

5. Artificially acquired passive immunity

- a) A - 3; B - 5; C - 1; D - 2
- b) A - 5; B - 3; C - 1; D - 2
- c) A - 5; B - 3; C - 2; D - 1
- d) A - 5; B - 4; C - 1; D - 2

39. Consider the following statements about immunological disorders

- 1) Deficiency in the immune response is called immunodeficiency
- 2) Inappropriate immune response against self antigens is called autoimmunity
- 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
- 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.

Which of the above are true?

- a) Only 1, 2 & 3 b) Only 2, 3 & 4
- c) Only 1, 2 & 4
- d) All are true

40. Match the following

List - I

List - II

- A. Malaise
  - B. Cirrhosis
  - C. Hepatitis
  - D. Anorexia
- 1. General feeling of discomfort
  - 2. Loss of appetite
  - 3. Fibrosis of liver
  - 4. Fibrosis of lungs
  - 5. Inflammation of liver

- a) A - 1; B - 3; C - 2; D - 5
- b) A - 2; B - 3; C - 5; D - 1
- c) A - 4; B - 5; C - 3; D - 2
- d) A - 1; B - 3; C - 5; D - 2

(4)

41. Gamma interferons are produced by

- a) B-lymphocytes
- b) Macrophages
- c) T-lymphocytes
- d) Dendritic cells

(3)

42. An example for the less organised secondary lymphoid tissue

- a) Thymus
- b) Spleen
- c) Lymph nodes
- d) Mucosal-associated lymphoid tissue

(4)

43. Antibodies are produced by

- a) B-lymphocytes only
- b) Plasma cells only

(4)

c) B-lymphocytes and T-lymphocytes

d) B-lymphocytes and plasma cells

44. Antigen presenting cells are

- a) Dendritic cells
- b) Activated macrophages

(4)

c) B-Cells

d) Dendritic cells, activated macrophages and B-Cells

45. Find the wrong statement among the following

- a) Malignant tumors exhibit metastasis
- b) Benign tumors are with a fibrous outer capsule

(3)

c) Sarcomas are the malignant tumors of secondary lymphoid organs

d) Carcinomas are malignant tumors of the epithelial cells

46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection?

(4)

Disease

Causative organisms

Mode of infection

1) Elephantiasis	Wuchereria bancrofti	With infected water and food
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2) Malaria	Plasmodium vivax	Bite of male anopheles mosquito
------------	------------------	---------------------------------

3) Typhoid	Salmonella typhi	With inspired air
------------	------------------	-------------------

4) Pneumonia	Streptococcus pneumoniae	Droplet infection
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a) Option - 1 b) Option - 2 c) Option - 3 d) Option - 4

47. Where will you look for the sporozoites of the malarial parasite?

(3)

a) RBCs of Humans suffering from malaria

b) Saliva of infected female anopheles mosquito

c) Saliva of infected female culex mosquito

d) Spleen of infected humans.

48. In which one of the following options the two examples are correctly matched with their particular type of immunity

Example

Type of immunity

(3)

1) Saliva in mouth and tears in eyes

Physical barriers

2) Mucous coating of epithelium lining the urinogenital and the HCL in the stomach

Physiological barriers tract

3) Polymorphonuclear leucocytes and monocytes

Cellular barriers

4) Anti - tetanus and anti snake bite injections

Active immunity

a) Example - 1 b) Example - 2 c) Example - 3 d) Example - 4

49. A certain patient is suspected to be suffering from Acquired Immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?

- a) Ultra sound
- b) Widal
- c) Elisa
- d) MRI

(4)

50. Which of the following is a pair of viral diseases?

- a) Typhoid and tuberculosis
- b) Ring worm and AIDS

(3)

c) Common cold and AIDS

d) Dysentery and common cold

51. When no external force is acting on a system of particles, the centre of mass of the system

- 1) Remains at rest only

2) Moves with constant velocity only

3) Moves with constant velocity or will be at rest

4) Moves with variable velocity

52. Centre of mass of a body

1) Always lies inside the body

2) Always lies outside the body

3) Always lies on the surface of the body

4) May lie inside or outside the body

(4)

53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move

- 1) Vertically down wards
- 3) Horizontally

2) Vertically upwards

4) In the same parabolic path

(4)

54. A bomb at rest explodes. The centre of mass of the system

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

(4)

55. When an external force is applied at the centre of mass of a system of particles, then it undergoes

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

(1)

56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

(3)

57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

(2)

58. Choose the correct statement.

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

(3)

59. Choose the wrong statement.

- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
- 2) Motion of centre of mass depends upon the external force.
- 3) The location of centre of mass depends on the reference frame used locate it.
- 4) The position of centre of mass depends upon the shape of body & distribution of mass.

(2)

60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

(4)

61. a) Algebraic sum of moments of masses about centre of mass is zero

- b) For small bodies centre of mass coincides with centre of gravity
- c) Position of centre of mass depends on co-ordinate system
- d) Position of centre of mass is independent of mass distribution

- 1) a and b are correct
- 2) b and c are correct
- 3) a, b and c are correct
- 4) a, b, c and d are correct

(2)

62. Match the following.

List - I

a Position of centre of mass

b. The algebraic sum of moments of all the field

c. Centre of mass and centre of gravity coincide reference

d. Centre of mass and centre of gravity field do not coincide

List - II

f. In non uniform gravitational masses about centre of mass

g. Is independent of frame of

h. In uniform gravitational

1. a → e; b → g; c → f; d → h

2. a → g; b → e; c → f; d → h

3. a → g; b → e; c → h; d → f

4. a → h; b → e; c → f; d → g

(4)

63. A wooden sphere and a copper sphere of same radius are kept in contact with each other. Their centre of mass will be

- (1) At their point of contact
- (2) Outside the spheres
- (3) With in copper sphere
- (4) Outside the spheres

(3)

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.

(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A)

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

(1)



65(A): Standing of the passengers in upper part of a double decker bus is not permitted.

(R) : Standing of passengers will raise the centre of gravity of system, leading to instability.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A)

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A)

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is  $1.13 \times 10^{-10} \text{m}$ . The distance of centre of mass of the molecule relative to carbon atom is

1)  $0.48 \times 10^{-10} \text{m}$     2)  $0.64 \times 10^{-10} \text{m}$     3)  $0.56 \times 10^{-10} \text{m}$     4)  $0.36 \times 10^{-10} \text{m}$

67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are,

1) (3/2, 3/2, 3/2)    2) (-3/2, -3/2, -3/2)    3) (3/4, 3/4, 3/4)    4) (-3/4, -3/4, -3/4)

68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is

1) 19/14 m on the side of heavier rod    2) 8/7 m on the side of lighter rod  
3) 2 m on the side of heavier rod    4) 2 m on the side of lighter rod

69. Calculate the number of protons, neutrons and electrons respectively in  $^{14} \text{N}_3^{3+}$

1) 7, 10, 7    2) 7, 7, 10    3) 10, 7, 7    4) 7, 7, 7

70. The order of filling of electrons in orbital in Ti is

1) 1s, 2s, 3s, 3p, 3d and 4s

2) 1s, 2s, 2p, 3s, 3p, 4s and 3d

3) 1s, 2s, 2p, 3s, 4s, 3p and 3d

4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

71. The symbol of an element is Uue. Its atomic number is

1) 110    2) 109    3) 101    4) 108

72. Statement(a):  $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO} < \text{P}_2\text{O}_5$  - Acidic property

Statement (b):  $\text{F} > \text{Cl} > \text{Br}$  - electron gain enthalphy

Statement (c):  $M^2 > M^+ > M^0 > M^{2-}$  ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

1) a-T, b-T, c-F, d-F    2) a-F, b-T, c-F, d-T    3) a-F, b-F, c-F, d-T    4) a-T, b-F, c-T, d-F

73. The symbol of an element is Uue. Its atomic number is

1) 110    2) 109    3) 101    4) 108

74. Match the bond order for the following molecules.

List-I	List-II
a) $\text{U}_2$	i) 3
b) $\text{N}_2$	ii) 1.5
c) $\text{Be}_2$	iii) 1.0
d) $\text{O}_2$	iv) 0

The correct answer is

1) a-ii, b-iii, c-i, d-v    2) a-iii, b-i, c-iv, d-v    3) a-iv, b-i, c-v, d-iii    4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

1) Two times higher than a hydrogen molecule    2) Four times higher than a hydrogen molecule

3) Same as that of a hydrogen molecule    4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $\text{N}_2$  at 400 K and CO at 800 K is (molar mass of  $\text{N}_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO =  $28 \text{ g mol}^{-1}$ )

1) 0.75    2) 0.25    3) 0.707    4) 1.414

77. Relative abundance (in percentage) of  $^{14}\text{C}$  isotope is

- 1) 1.1      2)  $2 \times 10^{-10}$       3)  $2 \times 10^{-4}$       4)  $2 \times 10^{-5}$

(2)

78. Calculate the molality of 1 litre solution of 93%  $\text{H}_2\text{SO}_4$  by w/v. [ $d_{\text{H}_2\text{SO}_4} = 1.84 \text{ g/cc}$ ]

- 1) 3.71      2) 8.5      3) 12.4      4) 10.42

(4)

79. Amongst the chemical reactions given below, the reactions with increasing entropy are

- a)  $\text{H}_2\text{O}(l) \rightleftharpoons \text{H}_2\text{O}(g)$     b)  $\text{C}(s) + \text{CO}_2(g) \rightleftharpoons 2\text{CO}(g)$     c)  $2\text{H}_2(g) + \text{O}_2(g) \rightleftharpoons 2\text{H}_2\text{O}(l)$     d)  $\text{N}_2(g) + \text{O}_2(g) \rightleftharpoons \text{Mixture of N}_2 \text{ and O}_2$

- 1) a, b, c, d      2) a, b, c      3) a, b, d      4) b, c, d

(2)

80. For the formation of  $\text{NH}_3$  from  $\text{N}_2$  and  $\text{H}_2$  at 500 K, the concentration of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  at equilibrium are  $1.5 \times 10^{-2} \text{ M}$ ,  $3.0 \times 10^{-2} \text{ M}$ ,  $1.2 \times 10^{-2} \text{ M}$  respectively. The equilibrium constant for the reverse reaction is

- 1)  $3.56 \times 10^2$       2)  $2.81 \times 10^3$       3)  $3.56 \times 10^{-2}$       4)  $2.81 \times 10^3$

(2)

81. Estimate the approximate  $pK_a$  of 0.5  $\text{MCH}_3\text{COOH}$ . Degree of dissociation (ionization) is 0.15. ( $\log 1.32 = 0.12$ )

- 1) 2.0      2) 1.5      3) 1.88      4) 0.15

(3)

82. The natural relative abundance of isotopes of hydrogen is

- 1)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$   
 2)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.15\%$ ;  $^3\text{T} = 10^{-16}\%$   
 3)  $^1\text{H} = 99.100\%$ ;  $^2\text{D} = 0.900\%$   
 4)  $^1\text{H} = 99.900\%$ ;  $^2\text{D} = 0.010\%$ ;  $^3\text{T} = 10^{-15}\%$

(2)

83. Calcium on heating in  $\text{N}_2$  yields an ionic compound A, which reacts with water to give  $\text{Ca}(\text{OH})_2$  and a gas B. Identify A and B

- 1)  $\text{CaN}_2$ , NO      2)  $\text{Ca}_3\text{N}_2$ ,  $\text{NH}_3$       3)  $\text{CaN}_2$ ,  $\text{NH}_3$       4)  $\text{Ca}_3\text{N}_2$ , NO

(2)

84. The formula of Borax is

- 1)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$       2)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$       3)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$       4)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$

(3)

85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms?

- 1) Graphite    2) Graphite and  $\text{C}_{60}$     3) Diamond    4) Diamond and  $\text{C}_{60}$

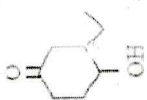
(3)

86. Which of the following chemicals is NOT involved in photochemical smog formation

- 1)  $\text{SO}_2$     2)  $\text{O}_3$     3)  $\text{NO}_2$     4) NO

(1)

87. The IUPAC name of the following compound is



(3)

- 1) 2-Hydroxy-5-oxocyclohexane      2) 2-ethyl-4-oxocyclohexanol

- 3) 3-Ethyl-4-hydroxycyclohexanone      4) 5-Hydroxy-3-oxocyclohexane

88. Number of possible constitutional isomers of alkane with formula  $\text{C}_6\text{H}_{14}$  is

- 1) 3      2) 5      3) 2      4) 10

(2)

89. In the process of formation of nitronium ion, nitric acid acts as

- 1) a base    2) an acid    3) a catalyst    4) a solvent

(1)

90. NaCl is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

- 1) Frenkel defect    2) Schottky defect    3) F-centers    4) Impurity defects

(3)

91. Calculate the approximate  $\text{p}K_a$  (in K) for 0.001 molal KCl solution if its van't Hoff factor is 1.98 [ $K_a$  of water is  $0.52 \text{ K kg mol}^{-1}$ ]

- 1) 1.03      2)  $1.03 \times 10^3$       3)  $1.03 \times 10^5$       4)  $1.03 \times 10^1$

(2)

92. Henry's law constant for  $\text{CO}_2$  in waters is 1.67 kbar at  $25^\circ\text{C}$ . The quantity of  $\text{CO}_2$  in 1000 ml of soda water when packed under 5 bar  $\text{CO}_2$  pressure at  $25^\circ\text{C}$  is

- 1) 0.084 mol    2) 0.167 mol    3) 0.252 mol    4) 0.336 mol

(2)

93. Which of the following correctly represents Nernst equations?

- 1)  $\Delta G = \Delta G^\circ + 2.303 RT \log \frac{[P]}{[R]}$
- 2)  $\Delta G = \Delta G^\circ - 2.303 RT \log \frac{[P]}{[R]}$
- 3)  $\Delta G^\circ = \Delta G + 2.303 RT \log \frac{[P]}{[R]}$
- 4)  $\Delta G^\circ = \Delta G - 2.303 RT \log \frac{[R]}{[P]}$

(2)

94. One end of a thin uniform rod of length L and mass M1 is riveted to the centre of a uniform circular disc of radius 'r' and mass M2 so that both are coplanar. The centre of mass of the combination from the centre of the disc is (Assume that the point of attachment is at the origin)

- 1)  $\frac{L(M_1 + M_2)}{2M_1}$
- 2)  $\frac{LM_1}{2(M_1 + M_2)}$
- 3)  $\frac{2(M_1 + M_2)}{LM_1}$
- 4)  $\frac{2LM_1}{(M_1 + M_2)}$

(3)

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero.

- b)  $x$  - coordinate of centre of mass of system of particles in a plane is represented by  $x_{cm} = \frac{1}{M} \sum m_i x_i$
- c)  $x$  - coordinate of a rigid body of continuous mass distribution represented by  $x_{cm} = \frac{1}{M} \int x dm$
- 1) a and b are true    2) b and c are true    3) a and c are true    4) All a, b, c are true

(4)

96. Disc of radius 'r' is removed from the disc of radius 'R' then

- a) The minimum shift in centre of mass is zero
- b) The maximum shift in centre of mass cannot be greater than  $\frac{r^2}{R+r}$
- c) Centre of mass must lie where mass exists
- d) The shift in centre of mass is  $r^2 / (R+r)$

(1)

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is

- 1) Only a and b are correct
- 2) Only a and c are correct
- 3) Only a, b and d are correct
- 4) All are correct

(2)

98. Two bodies of masses m1 and m2 are at distances x1 and x2 from their centre of mass. Then, the correct statement of the following is

- 1)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$
- 2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$
- 3)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$
- 4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$

(4)

99. The energy possessed by a body by virtue of its motion is

- a) Chemical Energy    b) Kinetic Energy    c) Potential Energy    d) All

(4)

100. Distance travelled by a body is proportional to the square time. The body is moving with

- a) Uniform acceleration    b) Velocity    c) Variable acceleration    d) All

(1)

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**MODEL FREESHIP QUESTION PAPER**

## FREESHIP EXAMINATION TEST

Date: 25/6/18

Total Marks: 100

Duration: 180min

Name of the student :

P. Sai Krishna

Avanathi Freeship No:

AIPS 2018046

1. True statement regarding active site is (25)
- 1) Active sites are surface areas on enzymes 2) Active sites are large areas on the enzymes
- 3) These are grooves & pockets in the enzymes 4) Many active sites are present on the enzymes
2. Enzymes that use ATP for their activity is (25)
- 1) Kinases 2) Synthetases
- 3) Transferases 4) Hydrolases
3. Enzyme required in the reaction  $\text{NO}_3 \rightarrow \text{NO}_2$  (22)
- 1) Dehydrogenase 2) Reductase 3) Oxidases 4) Deoxygenases
4. An enzymatic reaction proceeded forward and reached equilibrium status. (1)
- Substances that can be seen at this stage is/are
- 1) Only product 2) Product and enzyme.
- 3) Product, Enzyme and substrate 4) Only enzyme.
5. Third number in the enzyme nomenclature indicates (3)
- 1) Sub-Subclass 2) SubClasses 3) Major Classes 4) Serial number
6. Phosphatase enzymes are (3)
- 1) Addition of phosphate by transfer
- 2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$
- 3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$
- 4) Changing the position of phosphate in a molecule.
7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \leftrightarrow \text{H}_2\text{CO}_3$  requires (1)
- 1) No enzyme 2) An enzyme
- 3) Very high temperatures 4) Very low temperatures
8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures (1)
- Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures
9. True statement regarding enzyme (4)
- I: All proteins are enzymes
- II: Only some enzymes are proteins
- III: Enzymes are active only in their tertiary structure
- IV: Enzymes are organic catalysis
- 1) I, II 2) II, III 3) Only III 4) III, IV
10. Metallic co-factor in carboxy peptidase is (3)
- 1) Fe 2) Mn 3) Zn 4) Mg
11. Isonitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is (4)
- 1) 2 2) 3 3) 4 4) 1
12. Rate of the enzymatic reaction is (2)
- 1) Difference between initial velocity and final velocity
- 2) Amount of product formed per unit time
- 3) Amount of product formed at any time
- 4) The ratio between subject and product at any time
13. Protein part in a holo enzyme is (1)
- 1) Apoenzyme 2) Simple enzyme
- 3) Conjugated enzyme 4) Inductive enzyme

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- 1) Apoenzyme
- 2) Simple enzyme
- 3) Conjugated enzyme
- 4) Inductive enzyme

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. (2)

Reason R: Many proteins are structural proteins.

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true.

15. Co-enzymes nature is (1)

- 1) Organic
- 2) Inorganic
- 3) Proteins
- 4) Organic or Inorganic

16. True statement regarding enzymes (3)

- I: They are thermostable.
- II: Enzymes can start the reaction.
- III: Enzymes can be inhibited.
- IV: Hydrogen-ion concentration controls enzymatic activity.

17. Amultistepchemicalreaction,eachstepcatalyzedbyanenzyme,isreferredas (4)

- 1) Serial catalysis
- 2) Multi step catalysis
- 3) Feed back inhibition
- 4) Metabolic pathway

18. Haemioleity of peroxidase can be regarded as (1)

- 1) Prosthetic group
- 2) Co-enzyme
- 3) Metallic cofactor
- 4) Simple enzyme

19. Assertion (A): Enzymes are highly specific in reaction. (4)

Reason (R): Active sites are specific for a substrate.

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true

20. An enzyme with IUB number EC4.1.2.1 belongs to (3)

- 1) Hydrolases
- 2) Isomerases
- 3) Lyases
- 4) Oxido reductases

21. Enzymes which breaks bonds with addition of water (4)

22.  $X+Y+ATP \leftrightarrow X-Y+ADP+P_i$ . This reaction is catalyzed by enzymes that belong to (3)

- 1. Kinases
- 2. Hydrolases
- 3. Ligases
- 4. Isomerases

23. False statement regarding enzymatic reaction (3)

- 1 In all enzymatic reactions an intermediate 'ES' complex is formed
- 2 Substrate is bound to the enzyme active site before forming in to product
- 3 Product can be unstable after formation
- 4 Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as (3)

- 1. Activation energy of an enzyme
- 2. Rate of the enzymatic reaction
- 3. Michaelis-Menton constant
- 4. Feed back inhibition

25.  $K_m$  value is a measure of (2)

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be: (3)

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is: (4)

- a. ELISA-Test
- b. ESR - Test
- c. PCR - Test
- d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases. (2)

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox
- (a) i and ii
- (b) ii and iii
- (c) iii and iv
- (d) ii and iv

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia? (1)

4  
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- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High fever, weakness, stomach pain, loss of appetite and constipation

30. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that: (3)

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

31. The substance produced by a cell in viral infection that can protect other cells from further infection is: (3)

- a. Serotonin
- b. Colostrum
- c. Interferon
- d. Histamine

32. Antibodies present in colostrum which protect the new born from certain diseases is of (2)

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

33. Which of the following is not a lymphoid tissue? (3)

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

34. Identify the third line of defense from the following (3)

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called (2)

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

36. Immunity that protects against intracellular bacteria, virus & cancer cells is (1)

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

37. Which of the following cells release inflammatory mediators such as histamine and bradykinin (1)

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Acidophils and Neutrophils

38. Match the following (2)

List - I List - II

- A. Anti tetanus serum
- B. Vaccination

- 1. Cell mediated immunity
- 2. Humoral immunity
- 3. Artificially acquired active immunity
- 4. Naturally acquired active immunity

39. Consider the following statements about immunological disorders

- 1) Deficiency in the immune response is called immunodeficiency
- 2) Inappropriate immune response against self antigens is called autoimmunity
- 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
- 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.

40. Match the following (2)

List - I

- A. Malaise
- B. Cirrhosis
- 1. General feeling of discomfort
- 2. Loss of appetite

C. Hepatitis 3. Fibrosis of liver

D. Anorexia 4. Fibrosis of lungs

5. Inflammation of liver

a) A-1; B-3; C-2; D-5 b) A-2; B-3; C-5; D-1

c) A-4; B-5; C-3; D-2 d) A-1; B-3; C-5; D-2

41. Gamma interferons are produced by

a) B-lymphocytes b) Macrophages c) T-lymphocytes d) Dendritic cells

42. An example for the less organised secondary lymphoid tissue

a) Thymus b) Spleen c) Lymph nodes d) Mucosal - associated lymphoid tissue

43. Antibodies are produced by

a) B-lymphocytes only b) Plasma cells only

c) B-lymphocytes and T-lymphocytes d) B-lymphocytes and plasma cells

44. Antigen presenting cells are

a) Dendritic cells b) Activated macrophages

c) B-Cells d) Dendritic cells, activated macrophages and B-Cells

45. Find the wrong statement among the following

a) Malignant tumors exhibit metastasis

b) Benign tumors are with a fibrous outer capsule

c) Sarcomas are the malignant tumors of secondary lymphoid organs

d) Carcinomas are malignant tumors of the epithelial cells

46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection?

Disease	Causative organisms	Mode of infection
1) Elephantiasis	Wuchereria bancrofti	With infected water and food
2) Malaria	Plasmodium vivax	Bite of male anophelies mosquito
3) Typhoid	Salmonella typhi	With inspired air
4) Pneumonia	Strepto coccus pneumonia	Droplet infection

a) Option - 1 b) Option - 2 c) Option - 3 d) Option - 4

47. Where will you look for the sporozoites of the malarial parasite?

a) RBCs of Humans suffering from malaria

b) Saliva of infected female anophelies mosquito

c) Saliva of infected female culex mosquito

d) Spleen of infected humans.

48. In which one of the following options the two examples are correctly matched with their particular type of immunity

Example

Type of immunity

1) Saliva in mouth and tears in eyes

Physical barriers

2) Mucous coating of epithelium lining the urinogenital and the HCL in the stomach

Physiological barriers tract

3) Polymorphonuclear leucocytes and monocytes

Cellular barriers

4) Anti - tetanus and anti snake bite injections

Active immunity

a) Example - 1 b) Example - 2 c) Example - 3 d) Example - 4

49. A certain patient is suspected to be suffering from Acquired immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?

a) Ultra sound b) Widal c) Elisa d) MRI

50. Which of the following is a pair of viral diseases?

a) Typhoid and tuberculosis b) Ring worm and AIDS

c) Common cold and AIDS d) Dysentery and common cold

51. When no external force is acting on a system of particles, the centre of mass of the system

1) Remains at rest only

2) Moves with constant velocity only

3) Moves with constant velocity or will be at rest

4) Moves with variable velocity

52. Centre of mass of a body

1) Always lies inside the body

2) Always lies outside the body

3) Always lies on the surface of the body

4) May lie inside or outside the body

53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move

- 1) Vertically down wards
- 2) Vertically upwards
- 3) Horizontally
- 4) In the same parabolic path

(3)

54. A bomb at rest explodes. The centre of mass of the system

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

(4)

55. When an external force is applied at the centre of mass of a system of particles, then it undergoes

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

(4)

56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

(3)

57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

(2)

58. Choose the correct statement.

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

(3)

59. Choose the wrong statement.
- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
  - 2) Motion of centre of mass depends upon the external force.
  - 3) The location of centre of mass depends on the reference frame used locate it.
  - 4) The position of centre of mass depends upon the shape of body & distribution of mass.

60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

(4)

61. a) Algebraic sum of moments of masses about centre of mass is zero

- b) For small bodies centre of mass coincides with centre of gravity
- c) Position of centre of mass depends on co-ordinate system
- d) Position of centre of mass is independent of mass distribution

- 1) a and b are correct
- 2) b and c are correct
- 3) a, b and c are correct
- 4) a, b, c and d are correct

(4)

62. Match the following.

List - I  
a. Position of centre of mass

b. The algebraic sum of moments of all the field

c. Centre of mass and centre of gravity coincide reference

d. Centre of mass and centre of gravity field do not coincide

List - II  
e. Is zero

f. In non uniform gravitational masses about centre of mass

g. Is independent of frame of

h. In uniform gravitational

- 1. a → e; b → g; c → f; d → h
- 2. a → g; b → e; c → f; d → h
- 3. a → g; b → e; c → h; d → f
- 4. a → h; b → e; c → f; d → g

(4)

63. A wooden sphere and a cooper sphere of same radius are kept in contact with each other. Their centre of mass will be

- (1) At their point of contact
- (2) Outside the spheres
- (3) With in copper sphere
- (4) Outside the spheres

(3)

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.

(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.

(1)



- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).  
 (2) Both (A) and (R) are true and (R) is not the correct explanation of (A).  
 (3) (A) is true but (R) is false. (4) (A) is false but (R) is true.

65(A): Standing of the passengers in upper part of a double decker bus is not permitted.

(R) : Standing of passengers will raise the centre of gravity of system, leading to instability.

- (1) Both (A) and (R) are true and (R) is the correct explanation of (A).  
 (2) Both (A) and (R) are true and (R) is not the correct explanation of (A).  
 (3) (A) is true but (R) is false. (4) (A) is false but (R) is true.

66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is 1.13 x 10<sup>-10</sup>m. The distance of centre of mass of the molecule relative to carbon atom is

- 1) 0.48 x 10<sup>-10</sup>m 2) 0.64 x 10<sup>-10</sup>m 3) 0.56 x 10<sup>-10</sup>m 4) 0.36 x 10<sup>-10</sup>m

67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are,

- 1) (3/2, 3/2, 3/2) 2) (-3/2, -3/2, -3/2) 3) (3/4, 3/4, 3/4) 4) (-3/4, -3/4, -3/4)

68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is

- 1) 19/14 m on the side of heavier rod 2) 8/7 m on the side of lighter rod  
 3) 2 m on the side of heavier rod 4) 2 m on the side of lighter rod

69. Calculate the number of protons, neutrons and electrons respectively in <sup>238</sup>U.

- 1) 7, 10, 7 2) 7, 7, 10 3) 10, 7, 7 4) 7, 7, 7

70. The order of filling of electrons in orbital in Ti is

- 1) 1s, 2s, 3s, 3p, 3d and 4s 2) 1s, 2s, 2p, 3s, 3p, 4s and 3d  
 3) 1s, 2s, 2p, 3s, 4s, 3p and 3d 4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

71. The symbol of an element is Uue. Its atomic number is

11

- 1)110 2)109 3)101 4)108

72. Statement(a): Na<sub>2</sub>O < MgO < ZnO < P<sub>2</sub>O<sub>5</sub> – Acidic property

Statement (b): F > Cl > Br – electron gain enthalphy

Statement (c): M<sup>+</sup> > M<sup>2+</sup> > M<sup>3+</sup> – ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

- 1) a-T, b-T, c-F, d-F 2) a-F, b-T, c-F, d-T 3) a-F, b-F, c-F, d-T 4) a-T, b-F, c-T, d-F

73. The symbol of an element is Uue. Its atomic number is

- 1)110 2)109 3)101 4)108

74. Match the bond order for the following molecules.

- |                    |          |
|--------------------|----------|
| List-I             | List-II  |
| a) Li <sub>2</sub> | i) 3     |
| b) N <sub>2</sub>  | ii) 1.5  |
| c) Be <sub>2</sub> | iii) 1.0 |
| d) O <sub>2</sub>  | iv) 0    |

The correct answer is

- 1) a-ii, b-iii, c-i, d-v 2) a-iii, b-i, c-iv, d-v 3) a-iv, b-i, c-v, d-iii 4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

- 1) Two times higher than a hydrogen molecule 2) Four times higher than a hydrogen molecule

12

- 3) Same as that of a hydrogen molecule 4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $N_2$  at 400 K and CO at 800 K is (molar mass of  $N_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO =  $28 \text{ g mol}^{-1}$ ) (3)

- 1) 1.75 2) 0.25 3) 0.707 4) 1.414  
1) 1.1 2)  $2 \times 10^{10}$  3)  $2 \times 10^4$  4)  $2 \times 10^5$

77. Relative abundance (in percentage) of  $^{14}\text{C}$  isotope is (2)

- 1) 3.71 2) 8.5 3) 12.4 4) 10.42

78. Calculate the molality of 1 litre solution of 93%  $\text{H}_2\text{SO}_4$  by w/v. [ $d_{\text{mix}} = 1.84 \text{ g/cc}$ ] (4)

- 1) a, b, c, d 2) a, b, c 3) a, b, d 4) b, c, d

79. Amongst the chemical reactions given below, the reactions with increasing entropy are (2)

- a)  $\text{H}_2\text{O}(l) \rightarrow \text{H}_2\text{O}(g)$  b)  $\text{C}(s) + \text{CO}_2(g) \rightarrow 2\text{CO}(g)$  c)  $2\text{H}_2(g) + \text{O}_2(g) \rightarrow 2\text{H}_2\text{O}(l)$  d)  $\text{N}_2(g) + \text{O}_2(g) \rightarrow \text{Mixture of } \text{N}_2 \text{ and } \text{O}_2$

80. For the formation of  $\text{NH}_3$  from  $\text{N}_2$  and  $\text{H}_2$  at 500 K, the concentration of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  at equilibrium are  $1.5 \times 10^{-2} \text{ M}$ ,  $3.0 \times 10^{-2} \text{ M}$ ,  $1.2 \times 10^{-2} \text{ M}$  respectively. The equilibrium constant for the reverse reaction is (3)

- 1)  $3.56 \times 10^2$  2)  $2.81 \times 10^3$  3)  $3.56 \times 10^{-2}$  4)  $2.81 \times 10^{-3}$

81. Estimate the approximate  $\text{p}K_a$  of 0.5 M  $\text{CH}_3\text{COOH}$ . Degree of dissociation (ionization) is 0.15. ( $\log 1.32 = 0.12$ ) (3)

- 1) 2.0 2) 1.5 3) 1.88 4) 0.15

82. The natural relative abundance of isotopes of hydrogen is (2)

- 1)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$   
2)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.15\%$ ;  $^3\text{T} = 10^{-16}\%$   
3)  $^1\text{H} = 99.100\%$ ;  $^2\text{D} = 0.900\%$   
4)  $^1\text{H} = 99.990\%$ ;  $^2\text{D} = 0.010\%$ ;  $^3\text{T} = 10^{-15}\%$

83. Calcium on heating in  $\text{N}_2$  yields an ionic compound A, which reacts with water to give  $\text{Ca}(\text{OH})_2$  and a gas B. Identify A and B (2)

- 1)  $\text{CaN}_2$ , NO 2)  $\text{Ca}_3\text{N}_2$ ,  $\text{NH}_3$  3)  $\text{CaN}_2$ ,  $\text{NH}_3$  4)  $\text{Ca}_3\text{N}_2$ , NO

84. The formula of Borax is (3)

- 1)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$  2)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$  3)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$  4)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$

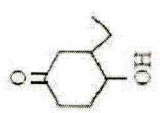
85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms? (2)

- 1) Graphite 2) Graphite and  $\text{C}_{60}$  3) Diamond 4) Diamond and  $\text{C}_{60}$

86. Which of the following chemicals is NOT involved in photochemical smog formation? (1)

- 1)  $\text{SO}_2$  2)  $\text{O}_3$  3)  $\text{NO}_2$  4) NO

87. The IUPAC name of the following compound is (2)



- 1) 2-Hydroxy-5-oxocyclohexane 2) 2-ethyl-4-oxocyclohexanol  
3) 3-Ethyl-4-hydroxycyclohexanone 4) 5-Hydroxy-3-oxocyclohexane

88. Number of possible constitutional isomers of alkane with formula  $\text{C}_6\text{H}_{14}$  is (2)

- 1) 3 2) 5 3) 2 4) 10

89. In the process of formation of nitronium ion, nitric acid acts as (1)

- 1) a base 2) an acid 3) a catalyst 4) a solvent

90.  $\text{NaCl}$  is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of (3)

- 1) Frenkel defect 2) Schottky defect 3) F-centers 4) Impurity defects

91. Calculate the approximate  $T_b$  (in K) for 0.001 molal KCl solution if its van't Hoff factor is 1.98 [ $K_b$  of water is  $0.52 \text{ K kg mol}^{-1}$ ] (2)

- 1) 1.03 2)  $1.03 \times 10^3$  3)  $1.03 \times 10^5$  4)  $1.03 \times 10^7$

92. Henry's law constant for  $\text{CO}_2$  in waters is 1.67 kbar at 25 °C. The quantity of  $\text{CO}_2$  in 1000 ml of soda water when packed under 5 bar  $\text{CO}_2$  pressure at 25°C is (2)

- 1) 0.084 mol 2) 0.167 mol 3) 0.252 mol 4) 0.336 mol

93. Which of the following correctly represents Nernst equations?

- 1)  $\Delta G = \Delta G^\circ + 2.303 \frac{RT}{n} \log \frac{[P]}{[R]}$
- 2)  $\Delta G = \Delta G^\circ - 2.303 \frac{RT}{n} \log \frac{[P]}{[R]}$
- 3)  $\Delta G^\circ = \Delta G + 2.303 \frac{RT}{n} \log \frac{[R]}{[P]}$
- 4)  $\Delta G^\circ = \Delta G - 2.303 \frac{RT}{n} \log \frac{[R]}{[P]}$

(3)

- 1) a and b are true
- 2) b and c are true
- 3) a and c are true
- 4) All a, b, c are true

96. Disc of radius 'r' is removed from the disc of radius 'R' then

- a) The minimum shift in centre of mass is zero
- b) The maximum shift in centre of mass cannot be greater than  $r / (R+r)$
- c) Centre of mass must lie where mass exists
- d) The shift in centre of mass is  $r^2 / (R+r)$

(1)

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is

- 1) Only a and b are correct
- 2) Only a and c are correct
- 3) Only a, b and d are correct
- 4) All are correct

(3)

98. Two bodies of masses m1 and m2 are at distances x1 and x2 from their centre of mass. Then, the correct statement of the following is

- 1)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$
- 2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$
- 3)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$
- 4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$

(2)

94. One end of a thin uniform rod of length L and mass M1 is riveted to the centre of a uniform circular disc of radius 'r' and mass M2 so that both are coplanar. The centre of mass of the combination from the centre of the disc is (Assume that the point of attachment is at the origin)

- 1)  $\frac{L(M_1 + M_2)}{2M_1}$
- 2)  $\frac{LM_1}{2(M_1 + M_2)}$
- 3)  $\frac{2(M_1 + M_2)}{LM_1}$
- 4)  $\frac{2LM_1}{(M_1 + M_2)}$

(4)

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero.

b) x - coordinate of centre of mass of system of particles in a plane is represented by

$$\bar{x}_{com} = \frac{1}{M} \sum m_i x_i$$

c) x - coordinate of a rigid body of continuous mass distribution represented by

$$\bar{x}_{com} = \frac{1}{M} \int x \, dm$$

(2)

99. The energy possessed by a body by virtue of its motion is

- a) Chemical Energy
- b) Kinetic Energy
- c) Potential Energy
- d) All

(2)

100. Distance travelled by a body is proportional to the square time. The body is moving with

- a) Uniform acceleration
- b) Velocity
- c) Variable acceleration
- d) All

\*\*\*\*\*

(1)

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**MODEL FRESHSHIP QUESTION PAPER**

**FRESHSHIP EXAMINATION TEST**

Date: 18/9/18

Total Marks: 100

Duration: 180min

Name of the student : *B. Pavankumar*

Avanathi Freshship No: *APS2018083*

*69*  
*100*

1. True statement regarding active site is (2)
  - 1) Active sites are surface areas on enzymes
  - 2) Active sites are large areas on the enzymes
  - 3) These are grooves & pockets in the enzymes
  - 4) Many active sites are present on the enzymes
2. Enzymes that use ATP for their activity is (2)
  - 1) Kinases
  - 2) Synthetases
  - 3) Transferases
  - 4) Hydrolases
3. Enzyme required in the reaction  $\text{NO}_3 \rightarrow \text{NO}_2$  (3)
  - 1) Dehydrogenase
  - 2) Reductase
  - 3) Oxidases
  - 4) Deoxygenases
4. An enzymatic reaction proceeded forward and reached equilibrium status. Substances that can be seen at this stage is/are (3)
  - 1) Only product
  - 2) Product and enzyme.
  - 3) Product, Enzyme and substrate
  - 4) Only enzyme.
5. Third number in the enzyme nomenclature indicates (1)
  - 1) Sub-Class
  - 2) SubClasses
  - 3) Major Classes
  - 4) Serial number
6. Phosphatase enzymes are (3)
  - 1) Addition of phosphate by transfer
  - 2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$
  - 3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$
  - 4) Changing the position of phosphate in a molecule.
7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$  requires (1)
  - 1) No enzyme
  - 2) An enzyme
  - 3) Very high temperatures
  - 4) Very low temperatures
8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures (1)
  - 1) Both A and R are correct and R is the correct explanation of A.
  - 2) Both A and R are correct but R is not the correct explanation of A.
  - 3) A is true, R is false
  - 4) A is false, R is true.
9. True statement regarding enzyme (4)
  - I: All proteins are enzymes
  - II: Only some enzymes are proteins
  - III: Enzymes are active only in their tertiary structure
  - IV: Enzymes are organic catalysts
10. Metallic co-factor in carboxy peptidase is (3)
  - 1) I, II
  - 2) II, III
  - 3) Only III
  - 4) III, IV
11. Isocitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is (2)
  - 1) 2
  - 2) 3
  - 3) 4
  - 4) 1
12. Rate of the enzymatic reaction is (2)
  - 1) Difference between initial velocity and final velocity
  - 2) Amount of product formed per unit time
  - 3) Amount of product formed at any time
  - 4) The ratio between subject and product at any time
13. Protein part in a holo enzyme is (1)
  - 1) Apoenzyme
  - 2) Simple enzyme
  - 3) Conjugated enzyme
  - 4) Inductive enzyme

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. Reason R: Many proteins are not enzymes. (1) Reason R: Many proteins are not enzymes. (1)

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true.

15. Co-enzymes nature is

- 1) Organic
- 2) Inorganic
- 3) Proteins
- 4) Organic or Inorganic

16. True statement regarding enzymes

- I: They are thermostable.
- II: Enzymes can start the reaction.
- III: Enzymes can be inhibited.
- IV: Hydrogen-ion concentration controls enzymatic activity.

- 1) I & II
- 2) II, III & IV
- 3) III & IV
- 4) Only III

17. Amultistep chemical reaction, each step catalyzed by an enzyme, is referred as

- 1) Serial catalysis
- 2) Multi step catalysis
- 3) Feed back inhibition
- 4) Metabolic pathway

18. Haemmoivety of peroxidase can be regarded as

- 1) Prosthetic group
- 2) Co-enzyme
- 3) Metallic cofactor
- 4) Simple enzyme

19. Assertion (A): Enzymes are highly specific in reaction.

Reason (R): Active sites are specific for a substrate.

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true

20. An enzyme with IUB number EC4.1.2.1 belongs to

- 1) Kinases
- 2) Hydrolases
- 3) Lyases
- 4) Oxido reductases

21. Enzymes which breaks bonds with addition of water

- 1) Kinases
- 2) Synthetases
- 3) Transfases.
- 4) Hydrolases

22.  $X+Y+ATP \rightarrow X+Y+ADP+P_i$ . This reaction is catalyzed by enzymes that belong to ( )

- 1. Kinases
- 2. Hydrolases
- 3. Ligases
- 4. Isomerases

23. False statement regarding enzymatic reaction

- 1 In all enzymatic reactions an intermediate 'ES' complex is formed
- 2 Substrate is bound to the enzyme active site before forming in to product
- 3 Product can be unstable after formation
- 4 Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as ( )

- 1. Activation energy of an enzyme
- 2. Rate of the enzymatic reaction
- 3. Michaelis-Menton constant
- 4. Feed back inhibition

25.  $K_m$  value is a measure of

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be:

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is:

- a. ELISA-Test
- b. ESR - Test
- c. PCR - Test
- d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases. (3)

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox
- (a) i and ii
- (b) ii and iii
- (c) iii and iv
- (d) ii and iv

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia? (1)

- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High fever, weakness, stomach pain, loss of appetite and constipation

30. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

(3)

31. The substance produced by a cell in viral infection that can protect other cells from further infection is:

- a. Serotonin
- b. Colostrum
- c. Interferon
- d. Histamine

(2)

32. Antibodies present in colostrum which protect the new born from certain diseases is of

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

(2)

33. Which of the following is not a lymphoid tissue?

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

(3)

34. Identify the third line of defense from the following

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

(3)

35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

(2)

36. Immunity that protects against intracellular bacteria, virus & cancer cells is

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

(4)

37. Which of the following cells release inflammatory mediators such as histamine and bradykinin

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Acidophils and Neutrophils

(2)

38. Match the following

List - I List - II

- A. Anti tetanus serum
- B. Vaccination
- C. Graft rejection
- D. Protects against extra cellular bacteria

- 1. Cell mediated immunity
- 2. Humoral immunity
- 3. Artificially acquired active immunity
- 4. Naturally acquired active immunity

(2)

39. Consider the following statements about immunological disorders

- 1) Deficiency in the immune response is called immunodeficiency
- 2) Inappropriate immune response against self antigens is called autoimmunity
- 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
- 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.

Which of the above are true?

List - I

List - II

- A. Malaise
- B. Cirrhosis
- C. Hepatitis
- D. Anorexia

- 1. General feeling of discomfort
- 2. Loss of appetite
- 3. Fibrosis of liver
- 4. Fibrosis of lungs
- 5. Inflammation of liver

Only 1, 2 & 3b) Only 2, 3 & 4

c) Only 1, 2 & 4

d) All are true

40. Match the following

(3)

41. Gamma interferons are produced by  
 a) B lymphocytes    b) Macrophages    c) T lymphocytes    d) Dendritic cells
42. An example for the less organised secondary lymphoid tissue  
 a) Thymus    b) Spleen    c) Lymph nodes    d) Mucosal-associated lymphoid tissue
43. Antibodies are produced by  
 a) B-lymphocytes only    b) Plasma cells only  
 c) B-lymphocytes and T-lymphocytes    d) B-lymphocytes and plasma cells
44. Antigen presenting cells are  
 a) Dendritic cells    b) Activated macrophages  
 c) B-Cells    d) Dendritic cells, activated macrophages and B-Cells
45. Find the wrong statement among the following  
 a) Malignant tumors exhibit metastasis  
 b) Benign tumors are with a fibrous outer capsule  
 c) Sarcomas are the malignant tumors of secondary lymphoid organs  
 d) Carcinomas are malignant tumors of the epithelial cells
46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection?
- | Disease          | Causative organisms     | Mode of infection               |
|------------------|-------------------------|---------------------------------|
| 1) Elephantiasis | Wuchereria bancrofti    | With infected water and food    |
| 2) Malaria       | Plasmodium vivax        | Bite of male anopheles mosquito |
| 3) Typhoid       | Salmonella typhi        | With inspired air               |
| 4) Pneumonia     | Streptococcus pneumonia | Droplet infection               |
- a) Option - 1    b) Option - 2    c) Option - 3    d) Option - 4
47. Where will you look for the sporozoites of the malarial parasite?  
 a) RBCs of Humans suffering from malaria  
 b) Saliva of infected female anopheles mosquito  
 c) Saliva of infected female culex mosquito  
 d) Spleen of infected humans.

(2) ✓  
 (3) ✓  
 (4) ✓  
 (4) ✓  
 (3) ✓  
 (2) ✓  
 (3) ✓  
 (2) ✓

48. In which one of the following options the two examples are correctly matched with their particular type of immunity
- | Example  | Type of immunity             |
|--|------------------------------|
| 1) Saliva in mouth and tears in eyes   | Physical barriers            |
| 2) Mucous coating of epithelium lining the urogenital and the HCL in the stomach | Physiological barriers tract |
| 3) Polymorphonuclear leucocytes and monocytes                                    | Cellular barriers            |
| 4) Anti - tetanus and anti snake bite injections                                 | Active immunity              |
- a) Example - 1    b) Example - 2c) Example - 3 4) Example - 4
49. A certain patient is suspected to be suffering from Acquired Immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?  
 a) Ultra sound    b) Widal    c) Elisa    d) MRI
50. Which of the following is a pair of viral diseases?  
 a) Typhoid and tuberculosis    b) Ring worm and AIDS  
 c) Common cold and AIDS    d) Dysentery and common cold
51. When no external force is acting on a system of particles, the centre of mass of the system  
 1) Remains at rest only    2) Moves with constant velocity only  
 3) Moves with constant velocity or will be at rest    4) Moves with variable velocity
52. Centre of mass of a body  
 1) Always lies inside the body    2) Always lies outside the body  
 3) Always lies on the surface of the body    4) May lie inside or outside the body
53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move  
 1) Vertically down wards    2) Vertically upwards  
 3) Horizontally    4) In the same parabolic path

(3) ✓  
 (2) ✓  
 (3) ✓  
 (3) ✓  
 (4) ✓  
 (3) ✓  
 (3) ✓  
 (3) ✓

54. A bomb at rest explodes. The centre of mass of the system

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

(4)

55. When an external force is applied at the centre of mass of a system of particles, then it undergoes

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

(1)

56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

(4)

57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

(3)

58. Choose the correct statement.

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

(2)

59. Choose the wrong statement.

- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
- 2) Motion of centre of mass depends upon the external force.
- 3) The location of centre of mass depends on the reference frame used locate it.
- 4) The position of centre of mass depends upon the shape of body & distribution of mass.

(3)

60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

(4)

61. a) Algebraic sum of moments of masses about centre of mass is zero

b) For small bodies centre of mass coincides with centre of gravity

c) Position of centre of mass depends on co-ordinate system

d) Position of centre of mass is independent of mass distribution

1) a and b are correct

2) b and c are correct

3) a, b and c are correct

4) a, b, c and d are correct

(1)

62. Match the following.

List - I  
a. Position of centre of mass

b. The algebraic sum of moments of all the field

c. Centre of mass and centre of gravity coincide reference

d. Centre of mass and centre of gravity field do not coincide

List - II  
e. Is zero

f. In non uniform gravitational masses about centre of mass

g. Is independent of frame of

h. In uniform gravitational

1. a → e; b → g; c → f; d → h

2. a → g; b → e; c → f; d → h

3. a → g; b → e; c → h; d → f

4. a → h; b → e; c → f; d → g

(4)

63. A wooden sphere and a copper sphere of same radius are kept in contact with each other. Their centre of mass will be

(1) At their point of contact

(2) Outside the spheres

(3) Within in copper sphere

(4) Outside the spheres

(2)

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.  
(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.  
(1) Both (A) and (R) are true and (R) is the correct explanation of (A).  
(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).  
(3) (A) is true but (R) is false.  
(4) (A) is false but (R) is true.

(1)



65(A): Standing of the passengers in upper part of a double decker bus is not permitted.

(R) : Standing of passengers will raise the centre of gravity of system, leading to instability.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is  $1.13 \times 10^{-10} \text{m}$ . The distance of centre of mass of the molecule relative to carbon atom is

- 1)  $0.48 \times 10^{-10} \text{m}$
- 2)  $0.64 \times 10^{-10} \text{m}$
- 3)  $0.56 \times 10^{-10} \text{m}$
- 4)  $0.36 \times 10^{-10} \text{m}$

67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are.

- 1) (3/2, 3/2, 3/2)
- 2) (-3/2, -3/2, -3/2)
- 3) (3/4, 3/4, 3/4)
- 4) (-3/4, -3/4, -3/4)

68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is

- 1) 19/14 m on the side of heavier rod
- 2) 8/7 m on the side of lighter rod
- 3) 2 m on the side of heavier rod
- 4) 2 m on the side of lighter rod

69. Calculate the number of protons, neutrons and electrons respectively in  $^{14}_7\text{N}^{3+}$

- 1) 7, 10, 7
- 2) 7, 7, 10
- 3) 10, 7, 7
- 4) 7, 7, 7

70. The order of filling of electrons in orbital in Ti is

- 1) 1s, 2s, 3s, 3p, 3d and 4s
- 2) 1s, 2s, 2p, 3s, 3p, 4s and 3d
- 3) 1s, 2s, 2p, 3s, 4s, 3p and 3d
- 4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

71. The symbol of an element is Uue. Its atomic number is

- 1) 110
- 2) 109
- 3) 101
- 4) 108

(3)

(2)

(1)

(2)

(2)

(2)

(1)

72. Statement(a):  $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO} < \text{P}_2\text{O}_5$  – Acidic property

Statement (b):  $\text{F} > \text{Cl} > \text{Br}$  – electron gain enthalphy

Statement (c):  $\text{M}^{2+} > \text{M}^+ > \text{M}^{3+}$  ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

- 1) a-T, b-T, c-F, d-F
- 2) a-F, b-T, c-F, d-T
- 3) a-F, b-F, c-F, d-T
- 4) a-T, b-F, c-T, d-F

73. The symbol of an element is Uue. Its atomic number is

- 1) 110
- 2) 109
- 3) 101
- 4) 108

74. Match the bond order for the following molecules.

List-I

List-II

a)  $\text{Li}_2$

i) 3

b)  $\text{N}_2$

ii) 1.5

c)  $\text{Be}_2$

iii) 1.0

d)  $\text{O}_2$

iv) 0

The correct answer is

- 1) a-ii, b-iii, c-i, d-v
- 2) a-iii, b-i, c-iv, d-v
- 3) a-iv, b-i, c-v, d-iii
- 4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

- 1) Two times higher than a hydrogen molecule
- 2) Four times higher than a hydrogen molecule
- 3) Same as that of a hydrogen molecule
- 4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $\text{N}_2$  at 400 K and CO at 800 K is (molar mass of  $\text{N}_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO =  $28 \text{ g mol}^{-1}$ )

- 1) 0.75
- 2) 0.25
- 3) 0.707
- 4) 1.414

(4)

(3)

(3)

(3)

(3)

77. Relative abundance (in percentage) of  $^{14}\text{C}$  isotope is

- 1) 1.1
- 2)  $2 \times 10^{-10}$
- 3)  $2 \times 10^{-4}$
- 4)  $2 \times 10^{-5}$

(2)

78. Calculate the molality of 1 litre solution of 93%  $\text{H}_2\text{SO}_4$  by w/v. ( $d_{\text{H}_2\text{SO}_4} = 1.84 \text{ g/cc}$ )

- 1) 3.71
- 2) 8.5
- 3) 12.4
- 4) 10.42

(4)

79. Amongst the chemical reactions given below, the reactions with increasing entropy are

- a)  $\text{H}_2\text{O(l)} \rightleftharpoons \text{H}_2\text{O(g)}$
- b)  $\text{C(s)} + \text{CO}_2\text{(g)} \rightleftharpoons 2\text{CO(g)}$
- c)  $2\text{H}_2\text{(g)} + \text{O}_2\text{(g)} \rightleftharpoons 2\text{H}_2\text{O(l)}$
- d)  $\text{N}_2\text{(g)} + \text{O}_2\text{(g)} \rightleftharpoons \text{Mixture of N}_2 \text{ and O}_2$

- 1) a, b, c, d
- 2) a, b, c
- 3) a, b, d
- 4) b, c, d

(3)

80. For the formation of  $\text{NH}_3$  from  $\text{N}_2$  and  $\text{H}_2$  at 500 K, the concentration of  $\text{N}_2$ ,  $\text{H}_2$  and  $\text{NH}_3$  at equilibrium are  $1.5 \times 10^{-2} \text{ M}$ ,  $3.0 \times 10^{-2} \text{ M}$ ,  $1.2 \times 10^{-2} \text{ M}$  respectively. The equilibrium constant for the reverse reaction is

- 1)  $3.56 \times 10^2$
- 2)  $2.81 \times 10^{-3}$
- 3)  $3.56 \times 10^{-2}$
- 4)  $2.81 \times 10^3$

(2)

81. Estimate the approximate  $\text{pK}_a$  of 0.5 M  $\text{CH}_3\text{COOH}$ . Degree of dissociation (ionization) is 0.15. ( $\log 1.32 = 0.12$ )

- 1) 2.0
- 2) 1.5
- 3) 1.88
- 4) 0.15

(2)

82. The natural relative abundance of isotopes of hydrogen is

- 1)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.015\%$
- 2)  $^1\text{H} = 99.985\%$ ;  $^2\text{D} = 0.15\%$ ;  $^3\text{T} = 10^{-16}\%$
- 3)  $^1\text{H} = 99.100\%$ ;  $^2\text{D} = 0.900\%$
- 4)  $^1\text{H} = 99.990\%$ ;  $^2\text{D} = 0.010\%$ ;  $^3\text{T} = 10^{-15}\%$

(3)

83. Calcium on heating in  $\text{N}_2$  yields an ionic compound A, which reacts with water to give  $\text{Ca(OH)}_2$  and a gas B. Identify A and B

- 1)  $\text{CaN}_2$ , NO
- 2)  $\text{Ca}_3\text{N}_2$ ,  $\text{NH}_3$
- 3)  $\text{CaN}_2$ ,  $\text{NH}_3$
- 4)  $\text{Ca}_3\text{N}_2$ , NO

(2)

84. The formula of Borax is

- 1)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$
- 2)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 7\text{H}_2\text{O}$
- 3)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$
- 4)  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 2\text{H}_2\text{O}$

(3)

85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms?

- 1) Graphite
- 2) Graphite and  $\text{C}_{60}$
- 3) Diamond
- 4) Diamond and  $\text{C}_{60}$

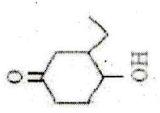
(2)

86. Which of the following chemicals is NOT involved in photochemical smog formation

- 1)  $\text{SO}_2$
- 2)  $\text{O}_3$
- 3)  $\text{NO}_2$
- 4) NO

(1)

87. The IUPA name of the following compound is



(2)

- 1) 2-Hydroxy-5-oxocyclohexane
- 2) 2-ethyl-4-oxocyclohexanol
- 3) 3-Ethyl-4-hydroxycyclohexanone
- 4) 5-Hydroxy-3-oxethylcyclohexane

88. Number of possible constitutional isomers of alkane with formula  $\text{C}_6\text{H}_{14}$  is

- 1) 3
- 2) 5
- 3) 2
- 4) 10

(1)

89. In the process of formation of nitronium ion, nitric acid acts as

- 1) a base
- 2) an acid
- 3) a catalyst
- 4) a solvent

(2)

90. NaCl is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

- 1) Frenkel defect
- 2) Schottky defect
- 3) F-centers
- 4) Impurity defects

(3)

91. Calculate the approximate  $\text{pK}_b$  (in K) for 0.001 molal KCl solution if its van't Hoff factor is 1.98 [ $K_b$  of water is  $0.52 \text{ K kg mol}^{-1}$ ]

- 1) 1.03
- 2)  $1.03 \times 10^{-3}$
- 3)  $1.03 \times 10^{-5}$
- 4)  $1.03 \times 10^{-1}$

(2)

92. Henry's law constant for  $\text{CO}_2$  in waters is 1.67 kbar at  $25^\circ\text{C}$ . The quantity of  $\text{CO}_2$  in 1000 ml of soda water when packed under 5 bar  $\text{CO}_2$  pressure at  $25^\circ\text{C}$  is

- 1) 0.084 mol
- 2) 0.167 mol
- 3) 0.252 mol
- 4) 0.336 mol

(2)

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93. Which of the following correctly represents Nernst equations?

(2)

1)  $\Delta G = \Delta G^\circ + 2.303 \frac{RT}{[R]} \log \frac{[P]}{[R]}$

2)  $\Delta G = \Delta G^\circ - 2.303 \frac{RT}{[R]} \log \frac{[P]}{[R]}$

3)  $\Delta G^\circ = \Delta G + 2.303 \frac{RT}{[P]} \log \frac{[R]}{[P]}$

4)  $\Delta G^\circ = \Delta G - 2.303 \frac{RT}{[P]} \log \frac{[R]}{[P]}$

94. One end of a thin uniform rod of length L and mass M1 is riveted to the centre of a uniform circular disc of radius 'r' and mass M2 so that both are coplanar. The centre of mass of the combination from the centre of the disc is (Assume that the point of attachment is at the origin)

(3)

1)  $\frac{L(M_1 + M_2)}{2M_1}$

2)  $\frac{LM_1}{2(M_1 + M_2)}$

3)  $\frac{2(M_1 + M_2)}{LM_1}$

4)  $\frac{2LM_1}{(M_1 + M_2)}$

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero.

b) x - coordinate of centre of mass of system of particles in a plane is represented by  $\bar{x}_{com} = \frac{1}{M} \sum m_i x_i$

(4)

c) x - coordinate of a rigid body of continuous mass distribution represented by

$\bar{x}_{com} = \frac{1}{M} \int x dm$

1) a and b are true 2) b and c are true 3) a and c are true 4) All a, b, c are true

96. Disc of radius 'r' is removed from the disc of radius 'R' then a) The minimum shift in centre of mass is zero

(1)

b) The maximum shift in centre of mass cannot be greater than  $r^2 / (R+r)$

c) Centre of mass must lie where mass exists

d) The shift in centre of mass is  $r^2 / (R+r)$

1) Only a and b are correct

2) Only a and c are correct

3) Only a, b and d are correct

4) All are correct

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is

a) R/π b) 2R/π c) 4R/3π d) 3R/4π

(2)

98. Two bodies of masses m1 and m2 are at distances x1 and x2 from their centre of mass. Then, the correct statement of the following is

(3)

1)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$

2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$

3)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$

4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$

99. The energy possessed by a body by virtue of its motion is

a) Chemical Energy b) Kinetic Energy c) Potential Energy d) All

(2)

100. Distance travelled by a body is proportional to the square time. The body is moving with

a) Uniform acceleration b) Velocity c) Variable acceleration d) All

\*\*\*\*\*

(2)

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MODEL FREEESHIP QUESTION PAPER

FREEESHIP EXAMINATION TEST

$\frac{71}{100}$

Total Marks: 100

Duration: 180min

Date: 30/6/2018

Name of the student: Laggam Bhavitha

Avanathi FreeShip No: AIPS 2018085

- 1) True statement regarding active site is (2)  
 1) Active sites are surface areas on enzymes 2) Active sites are large areas on the enzymes
- 3) These are grooves & pockets in the enzymes (2)  
 4) Many active sites are present on the enzymes
2. Enzymes that use ATP for their activity is (2)  
 1) Kinases 2) Synthetases  
 3) Transferases 4) Hydrolases
3. Enzyme required in the reaction  $\text{NO}_2 \rightarrow \text{NO}$  (1)  
 1) Dehydrogenase 2) Reductase 3) Oxidases 4) Deoxygenases
4. An enzymatic reaction proceeded forward and reached equilibrium status. (3)  
 Substances that can be seen at this stage is/are  
 1) Only product 2) Product and enzyme.  
 3) Product, Enzyme and substrate 4) Only enzyme.
5. Third number in the enzyme nomenclature indicates (1)  
 1) Sub-Subclass 2) SubClasses 3) Major Classes 4) Serial number
6. Phosphatase enzymes are (3)  
 1) Addition of phosphate by transfer  
 2) Removal of phosphate in the absence of  $\text{H}_2\text{O}$   
 3) Removal of phosphate in the presence of  $\text{H}_2\text{O}$   
 4) Changing the position of phosphate in a molecule.
7. The reaction  $\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CO}_3$  requires (1)  
 1) No enzyme 2) An enzyme  
 3) Very high temperatures 4) Very low temperatures
8. Assertion (A): In thermophilic organisms metabolic activities take place even at  $80^\circ\text{C} - 90^\circ\text{C}$  of temperatures (2)  
 Reason (R): Enzymes in thermophilic are stable and retain their catalytic power at these temperatures
9. True statement regarding enzyme (4)  
 I: All proteins are enzymes  
 II: Only some enzymes are proteins  
 III: Enzymes are active only in their tertiary structure  
 IV: Enzymes are organic catalysis  
 1) I, II 2) II, III 3) Only III 4) III, IV
10. Metallic co-factor in carboxy peptidase is (3)  
 1) Fe 2) Mn 3) Zn 4) Mg
11. Isonitrate +  $\text{NAD}^+ \leftrightarrow \alpha$  ketoglutaric acid +  $\text{NADH} + \text{H}^+ + \text{CO}_2$ . The main class number of enzyme that catalyzes this reaction is (3)  
 1)2 2)3 3)4 4)1
12. Rate of the enzymatic reaction is (2)  
 1) Difference between initial velocity and final velocity  
 2) Amount of product formed per unit time  
 3) Amount of product formed at any time  
 4) The ratio between subject and product at any time
13. Protein part in a holo enzyme is (1)  
 1) Apoenzyme 2) Simple enzyme  
 3) Conjugated enzyme 4) Inductive enzyme

14. Assertion A: All enzymes are proteins and all proteins are not enzymes. ( ) Reason R: Many proteins are not enzymes.

- 1) Both A and R are correct and R is the correct explanation of A.
- 2) Both A and R are correct but R is not the correct explanation of A.
- 3) A is true, R is false
- 4) A is false, R is true.

15. Co-enzymes nature is

- 1) Organic
- 2) Inorganic
- 3) Proteins
- 4) Organic or Inorganic

16. True statement regarding enzymes

- I: They are thermostable.
- II: Enzymes can start the reaction.
- III: Enzymes can be inhibited.
- IV: Hydrogen-ion concentration controls enzymatic activity.

17. Amultistepchemicalreaction, eachstepcatalyzedbyanenzyme, is referred as

- 1) Serial catalysis
- 2) Multi step catalysis
- 3) Feed back inhibition
- 4) Metabolic pathway

18. Haemmoiety of peroxidase can be regarded as

- 1) Prosthetic group
- 2) Co-enzyme
- 3) Metallic cofactor
- 4) Simple enzyme

19. Assertion (A): Enzymes are highly specific in reaction.

Reason (R): Active sites are specific for a substrate.

- 1 Both A and R are correct and R is the correct explanation of A.
- 2 Both A and R are correct but R is not the correct explanation of A.
- 3 A is true, R is false
- 4 A is false, R is true

20. An enzyme with IUB number EC4.1.2.1 belongs to

- 1) Kinases
- 2) Hydrolases
- 3) Lyases
- 4) Oxido reductases

21. Enzymes which breaks bonds with addition of water

- 1) Kinases
- 2) Synthetases
- 3) Transferases
- 4) Hydrolases

22.  $X+Y+ATP \leftrightarrow X-Y+ADP+P_i$ . This reaction is catalyzed by enzymes that belong to ( )

- 1. Kinases
- 2. Hydrolases
- 3. Ligases
- 4. Isomerases

23. False statement regarding enzymatic reaction

- 1 In all enzymatic reactions an intermediate 'ES' complex is formed
- 2 Substrate is bound to the enzyme active site before forming in to product
- 3 Product can be unstable after formation
- 4 Chemical bonds may form or break down in the substrate during 'ES' complex.

24. The approximate inverse measures of the affinity of the enzyme for a given substrate is called as ( )

- 1. Activation energy of an enzyme
- 2. Rate of the enzymatic reaction
- 3. Michaelis-Menton constant
- 4. Feed back inhibition

25.  $K_m$  value is a measure of

- 1) Rate of the reaction
- 2) Substrate concentration
- 3) [ES] complex formation
- 4) Decrease in enzyme activity

26. The term 'Health' is defined in many ways. The most accurate definition of the health would be:

- a. Health is the state of body and mind in a balanced condition
- b. Health is the reflection of a smiling face
- c. Health is a state of complete physical, mental and social well-being
- d. Health is the symbol of economic prosperity.

27. The chemical test that is used for diagnosis of typhoid is:

- e. ELISA-Test
- b. ESR - Test
- c. PCR - Test
- d. Widal-Test

28. Diseases are broadly grouped into infectious and non-infectious diseases. In the list given below, identify the infectious diseases.

- i. Cancer
- ii. Influenza
- iii. Allergy
- iv. Small pox
- (a) i and ii
- (b) ii and iii
- (c) iii and iv
- (d) ii and iv

29. Many diseases can be diagnosed by observing the symptoms in the patient. Which groups of symptoms are indicative of pneumonia?

- a. Difficulty in respiration, fever, chills, cough, headache
- b. Constipation, abdominal pain, cramps, blood clots
- c. Nasal congestion and discharge, cough, sore throat, headache
- d. High fever, weakness, stomach pain, loss of appetite and constipation

30. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:

- a. The patient was not efficient at his work
- b. The patient was not economically prosperous
- c. The patient shows behavioral and social maladjustment
- d. He does not take interest in sports

(2)

31. The substance produced by a cell in viral infection that can protect other cells from further infection is:

- a. Serotonin
- b. Colostrum
- c. Interferon
- d. Histamine

(3)

32. Antibodies present in colostrum which protect the newborn from certain diseases is of:

- a. Ig G type
- b. Ig A type
- c. Ig D type
- d. Ig E type

(2)

33. Which of the following is not a lymphoid tissue?

- a. Spleen
- b. Tonsils
- c. Appendix
- d. Thymus

(2)

34. Identify the third line of defense from the following

- a) NK cells
- b) Tears
- c) T cells
- d) Phagocytes

(3)

35. Two T cell subpopulations can be distinguished by the type of the membrane glycoprotein molecules called

- a) Opsonization
- b) CD markers
- c) MHC molecules
- d) BCR

(2)

36. Immunity that protects against intracellular bacteria, virus & cancer cells is

- a) Innate immunity
- b) Humoral immunity
- c) Non-specific immunity
- d) Cell mediated immunity

(4)

37. Which of the following cells release inflammatory mediators such as histamine and bradykinin

- a) Basophils
- b) Eosinophils
- c) Neutrophils
- d) Acidophils and Neutrophils

(1)

38. Match the following

List - I List - II

- A. Anti tetanus serum
  - B. Vaccination
  - C. Graft rejection
  - D. Protects against extra cellular bacteria
- 1. Cell mediated immunity
  - 2. Humoral immunity
  - 3. Artificially acquired active immunity
  - 4. Naturally acquired active immunity

(2)

39. Consider the following statements about immunological disorders

- a) A-3; B-5; C-1; D-2
- b) A-5; B-3; C-1; D-2
- c) A-5; B-3; C-2; D-1
- d) A-5; B-4; C-1; D-2

40. Match the following

- 1) Deficiency in the immune response is called immunodeficiency
  - 2) Inappropriate immune response against self antigens is called autoimmunity
  - 3) Immunodeficiency resulting from a genetic or developmental defect is called primary immunodeficiency.
  - 4) Severe combined immunodeficiency (SCID) is due to secondary immunodeficiency.
- Which of the above are true?
- a) Only 1, 2 & 3b) Only 2, 3 & 4
  - c) Only 1, 2 & 4
  - d) All are true

List - I

List - II

- A. Malaise
  - B. Cirrhosis
  - C. Hepatitis
  - D. Anorexia
- 1. General feeling of discomfort
  - 2. Loss of appetite
  - 3. Fibrosis of liver
  - 4. Fibrosis of lungs
  - 5. Inflammation of liver

- a) A-1; B-3; C-2; D-5
- b) A-2; B-3; C-5; D-1
- c) A-4; B-5; C-3; D-2
- d) A-1; B-3; C-5; D-2

(5)

41. Gamma interferons are produced by  
 a) B lymphocytes    b) Macrophages    c) T lymphocytes    d) Dendritic cells **(3)**
42. An example for the less organised secondary lymphoid tissue  
 a) Thymus    b) Spleen    c) Lymph nodes    d) Mucosal-associated lymphoid tissue **(4)**
43. Antibodies are produced by  
 a) B-lymphocytes only    b) Plasma cells only    c) B-lymphocytes and T-lymphocytes    d) B-lymphocytes and plasma cells **(2)**
44. Antigen presenting cells are  
 a) Dendritic cells    b) Activated macrophages    c) B-Cells    d) Dendritic cells, activated macrophages and B-Cells **(4)**
45. Find the wrong statement among the following **(3)**  
 a) Malignant tumors exhibit metastasis  
 b) Benign tumors are with a fibrous outer capsule  
 c) Sarcomas are the malignant tumors of secondary lymphoid organs  
 d) Carcinomas are malignant tumors of the epithelial cells
46. Which of the following options gives the correct matching of a disease with its causative organism and mode of infection? **(3)**
- | Disease          | Causative organisms      | Mode of infection               |
|------------------|--------------------------|---------------------------------|
| 1) Elephantiasis | Wuchereria bancrofti     | With infected water and food    |
| 2) Malaria       | Plasmodium vivax         | Bite of male anopheles mosquito |
| 3) Typhoid       | Salmonella typhi         | With inspired air               |
| 4) Pneumonia     | Strepto coccus pneumonia | Droplet infection               |
47. Where will you look for the sporozoites of the malarial parasite? **(2)**  
 a) RBCs of Humans suffering from malaria  
 b) Saliva of infected female anopheles mosquito  
 c) Saliva of infected female culicx mosquito  
 d) Spleen of infected humans.

7

48. In which one of the following options the two examples are correctly matched with their particular type of immunity **(3)**
- | Example  | Type of immunity             |
|--|------------------------------|
| 1) Saliva in mouth and tears in eyes   | Physical barriers            |
| 2) Mucous coating of epithelium lining the urogenital and the HCL in the stomach | Physiological barriers tract |
| 3) Polymorphonuclear leucocytes and monocytes                                    | Cellular barriers            |
| 4) Anti - tetanus and anti snake bite injections                                 | Active immunity              |
49. A certain patient is suspected to be suffering from Acquired Immune deficiency syndrome. Which diagnostic technique will you recommend for its detection? **(3)**  
 a) Ultra sound    b) Widal    c) Elisa    d) MRI
50. Which of the following is a pair of viral diseases? **(2)**  
 a) Typhoid and tuberculosis    b) Ring worm and AIDS  
 c) Common cold and AIDS    d) Dysentery and common cold
51. When no external force is acting on a system of particles, the centre of mass of the system **(3)**
- |  |                                      |
|--|--------------------------------------|
| 1) Remains at rest only                            | 2) Moves with constant velocity only |
| 3) Moves with constant velocity or will be at rest | 4) Moves with variable velocity      |
52. Centre of mass of a body **(2)**  
 1) Always lies inside the body    2) Always lies outside the body  
 3) Always lies on the surface of the body    4) May lie inside or outside the body
53. A shell moving in a parabolic path explodes. The centre of mass of the fragments move **(2)**  
 1) Vertically down wards    2) Vertically upwards  
 3) Horizontally    4) In the same parabolic path

8

54. A bomb at rest explodes. The centre of mass of the system

- 1) Describes a parabola
- 2) Vertically upwards
- 3) Horizontally
- 4) Is at rest

(3)

55. When an external force is applied at the centre of mass of a system of particles, then it undergoes

- 1) Only translatory motion
- 2) Only rotatory motion
- 3) Both translatory and rotatory motion
- 4) An oscillatory motion

(1)

56. A bomb moving in a parabolic path explodes into two fragments of equal masses. The acceleration of the centre of mass of the fragments when both are in air is equal to

- 1)  $g/2$
- 2)  $2g$
- 3)  $g$
- 4) Zero

(3)

57. A uniform meter stick is placed vertically on a horizontal frictionless surface and released. As the stick is in motion, the centre of mass moves

- 1) Vertically up
- 2) Vertically down
- 3) In a parabolic path
- 4) Horizontally

(2)

58. Choose the correct statement.

- 1) Centre of mass of two particles will be nearer to lighter particle.
- 2) Centre of mass of the rigid body depends on reference frame used.
- 3) Centre of mass of the system of particles depends on the masses of the particles.
- 4) Centre mass must lie within the body.

(3)

59. Choose the wrong statement.

- 1) In the process of explosion some changes may occur in momentum of individual fragments due to internal forces but the motion of the centre of mass is unaltered.
- 2) Motion of centre of mass depends upon the external force.
- 3) The location of centre of mass depends on the reference frame used locate it.
- 4) The position of centre of mass depends upon the shape of body & distribution of mass.

(2)

60. A bomb travelling in a parabolic path under the effect of gravity explodes in mid air. The centre of mass of fragments will

- 1) Move vertically upwards and then vertically downwards
- 2) Move vertically upwards
- 3) Move in an irregular path
- 4) Move in the parabolic path the unexploded bomb would have travelled.

61. a) Algebraic sum of moments of masses about centre of mass is zero

b) For small bodies centre of mass coincides with centre of gravity

c) Position of centre of mass depends on co-ordinate system

d) Position of centre of mass is independent of mass distribution

- 1) a and b are correct
- 2) b and c are correct
- 3) a, b and c are correct
- 4) a, b, c and d are correct

(1)

62. Match the following.

List - I  
a. Position of centre of mass

List - II  
c. Is zero

b. The algebraic sum of moments of all the field

f. In non uniform gravitational masses about centre of mass

c. Centre of mass and centre of gravity coincide reference

g. Is independent of frame of

d. Centre of mass and centre of gravity field do not coincide

h. In uniform gravitational

1. a → e; b → g; c → f; d → h

2. a → g; b → c; c → f; d → h

3. a → g; b → e; c → h; d → f

4. a → h; b → e; c → f; d → g

63. A wooden sphere and a cooper sphere of same radius are kept in contact with each other. Their centre of mass will be

- (1) At their point of contact
- (2) Outside the spheres
- (3) With in copper sphere
- (4) Outside the spheres

(3)

64(A): A shell moving in a parabolic path explodes in mid air. The centre of mass of the fragments will follow the same parabolic path.

(R): Explosion is due to internal forces, which cannot alter the state of motion of a body.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

(3)



65(A) : Standing of the passengers in upper part of a double decker bus is not permitted. (3)

(R) : Standing of passengers will raise the centre of gravity of system, leading to instability.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true and (R) is not the correct explanation of (A).

(3) (A) is true but (R) is false. (4)(A) is false but (R) is true.

66. The distance between the centres of carbon and oxygen atoms in the carbon monoxide gas molecule is  $1.13 \times 10^{-10} \text{m}$ . The distance of centre of mass of the molecule relative to carbon atom is

1)  $0.48 \times 10^{-10} \text{m}$  2)  $0.64 \times 10^{-10} \text{m}$  3)  $0.56 \times 10^{-10} \text{m}$  4)  $0.36 \times 10^{-10} \text{m}$

67. The co-ordinates of centre of mass of particles of mass 10, 20 and 30 gm are (1, 1, 1) cm. The position co-ordinates of mass 40 gm which when added to the system, the position of combined centre of mass be at (0, 0, 0) are,

1) (3/2, 3/2, 3/2) 2) (-3/2, -3/2, -3/2) 3) (3/4, 3/4, 3/4) 4) (-3/4, -3/4, -3/4)

68. Two uniform rods A and B of lengths 5 m and 3 m are placed end to end. If their linear densities are 3 kg/m and 2 kg/m, the position of their centre of mass from their interface is

1) 19/14 m on the side of heavier rod 2) 8/7 m on the side of lighter rod  
3) 2 m on the side of heavier rod 4) 2 m on the side of lighter rod

69. Calculate the number of protons, neutrons and electrons respectively in  $^{14}_7\text{N}_2^{38}$

1) 7, 10, 7 2) 7, 7, 10 3) 10, 7, 7 4) 7, 7, 7

70. The order of filling of electrons in orbital in Ti is

1) 1s, 2s, 3s, 3p, 3d and 4s 2) 1s, 2s, 2p, 3s, 3p, 4s and 3d

3) 1s, 2s, 2p, 3s, 4s, 3p and 3d 4) 1s, 2s, 2p, 3s, 3d, 3p and 4s

71. The symbol of an element is Ure. Its atomic number is

1) 110 2) 109 3) 101 4) 108

72. Statement(a):  $\text{Na}_2\text{O} < \text{MgO} < \text{ZnO} < \text{P}_2\text{O}_5$  - Acidic property

Statement (b):  $F > \text{Cl} > \text{Br}$  - electron gain enthalphy

Statement (c):  $M^2 > M^+ > M^0 > M^{2+}$  ionic size

Statement(d): The second ionization enthalpy of Cu is more than second ionization enthalpy of K.

Which of the following is the correct representation of True (T)/ False (F) for the given statements?

1) a-T, b-T, c-F, d-F 2) a-F, b-T, c-F, d-T 3) a-F, b-F, c-F, d-T 4) a-T, b-F, c-T, d-F

73. The symbol of an element is Ure. Its atomic number is

1) 110 2) 109 3) 101 4) 108

74. Match the bond order for the following molecules.

List-I List-II

a)  $\text{Li}_2$  i) 3

b)  $\text{N}_2$  ii) 1.5

c)  $\text{Be}_2$  iii) 1.0

d)  $\text{O}_2$  iv) 0

The correct answer is

1) a-ii, b-iii, c-i, d-v 2) a-iii, b-i, c-iv, d-v 3) a-iv, b-i, c-v, d-iii 4) a-iii, b-ii, c-v, d-i

75. Helium molecule is two times heavier than hydrogen molecule at 298 K. According to kinetic theory, the average kinetic energy of helium at 298 K is

1) Two times higher than a hydrogen molecule 2) Four times higher than a hydrogen molecule

3) Same as that of a hydrogen molecule 4) Half of a hydrogen molecule

76. The ratio between the most probable speed of  $\text{N}_2$  at 400 K and CO at 800 K is (molar mass of  $\text{N}_2 = 28 \text{ g mol}^{-1}$ , molar mass of CO =  $28 \text{ g mol}^{-1}$ )

1) 0.75 2) 0.25 3) 0.707 4) 1.414

77. Relative abundance (in percentage) of <sup>14</sup>C isotope is

- 1) 1.1
- 2) 2 × 10<sup>-10</sup>
- 3) 2 × 10<sup>-4</sup>
- 4) 2 × 10<sup>-5</sup>

(2)

78. Calculate the molarity of 1 litre solution of 93% H<sub>2</sub>SO<sub>4</sub> by w/v. [d<sub>42500</sub> = 1.84 g/cc]

- 1) 3.71
- 2) 8.5
- 3) 12.4
- 4) 10.42

(4)

79. Amongst the chemical reactions given below, the reactions with increasing entropy are  
a) H<sub>2</sub>O(l) → H<sub>2</sub>O(g) b) C(s) + CO<sub>2</sub>(g) → 2CO(g) c) 2H<sub>2</sub>(g) + O<sub>2</sub>(g) → 2H<sub>2</sub>O(l) d) N<sub>2</sub>(g) + O<sub>2</sub>(g) → Mixture of N<sub>2</sub> and O<sub>2</sub>

- 1) a, b, c, d
- 2) a, b, c
- 3) a, b, d
- 4) b, c, d

(3)

80. For the formation of NH<sub>3</sub> from N<sub>2</sub> and H<sub>2</sub> at 500 K, the concentration of N<sub>2</sub>, H<sub>2</sub> and NH<sub>3</sub> at equilibrium are 1.5 × 10<sup>-2</sup> M, 3.0 × 10<sup>-2</sup> M, 1.2 × 10<sup>-2</sup> M respectively. The equilibrium constant for the reverse reaction is

- 1) 3.56 × 10<sup>2</sup>
- 2) 2.81 × 10<sup>-3</sup>
- 3) 3.56 × 10<sup>-2</sup>
- 4) 2.81 × 10<sup>3</sup>

(2)

81. Estimate the approximate pK<sub>a</sub> of 0.5 MCH<sub>3</sub>COOH. Degree of dissociation (ionization) is

- 0.15. (log 1.32 = 0.12)
- 1) 2.0
- 2) 1.5
- 3) 1.88
- 4) 0.15

(4)

82. The natural relative abundance of isotopes of hydrogen is

- 1) <sup>1</sup>H = 99.985%, <sup>2</sup>D = 0.015%
- 2) <sup>1</sup>H = 99.985%, <sup>2</sup>D = 0.15%, <sup>3</sup>T = 10<sup>-16</sup>%
- 3) <sup>1</sup>H = 99.100%, <sup>2</sup>D = 0.900%

(1)

4) <sup>1</sup>H = 99.900%, <sup>2</sup>D = 0.010%, <sup>3</sup>T = 10<sup>-18</sup>%

83. Calcium on heating in N<sub>2</sub> yields an ionic compound A, which reacts with water to give Ca(OH)<sub>2</sub> and a gas B. Identify A and B

- 1) CaN<sub>2</sub>, NO
- 2) Ca<sub>3</sub>N<sub>2</sub>, NH<sub>3</sub>
- 3) CaN<sub>2</sub>, NH<sub>3</sub>
- 4) Ca<sub>3</sub>N<sub>2</sub>, NO

(2)

84. The formula of Borax is

- 1) Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> · 5H<sub>2</sub>O
- 2) Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> · 7H<sub>2</sub>O
- 3) Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> · 10H<sub>2</sub>O
- 4) Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> · 2H<sub>2</sub>O

(3)

85. In which allotrope of carbon does each carbon atom form four bonds with other carbon atoms?

- 1) Graphite
- 2) Graphite and C<sub>60</sub>
- 3) Diamond
- 4) Diamond and C<sub>60</sub>

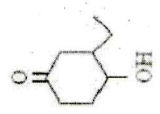
(2)

86. Which of the following chemicals is NOT involved in photochemical smog formation

- 1) SO<sub>2</sub>
- 2) O<sub>3</sub>
- 3) NO<sub>2</sub>
- 4) NO

(1)

87. The IUPA name of the following compound is



(3)

- 1) 2-Hydroxy -5-oxethylcyclohexane
- 2) 2-ethyl-4-oxocyclohexanol

- 3) 3-Ethyl-4-hydroxycyclohexanone
- 4) 5-Hydroxy-3-oxethylcyclohexane

88. Number of possible constitutional isomers of alkane with formula C<sub>6</sub>H<sub>14</sub> is

- 1) 3
- 2) 5
- 3) 2
- 4) 10

(1)

89. In the process of formation of nitronium ion, nitric acid acts as

- 1) a base
- 2) Jan acid
- 3) a catalyst
- 4) a solvent

(1)

90. NaCl is heated in an atmosphere of sodium vapour. The resultant yellow colour is due to the formation of

- 1) Frenkel defect
- 2) Schottky defect
- 3) F-centers
- 4) Impurity defects

(3)

91. Calculate the approximate E<sub>T</sub> (in K) for 0.001 molal KCl solution if its van't Hoff factor is 1.98 [k<sub>f</sub> of water is 0.52 K kg mol<sup>-1</sup>]

- 1) 1.03
- 2) 1.03 × 10<sup>3</sup>
- 3) 1.03 × 10<sup>5</sup>
- 4) 1.03 × 10<sup>1</sup>

(2)

92. Henry's law constant for CO<sub>2</sub> in waters is 1.67 kbar at 25°C. The quantity of CO<sub>2</sub> in 1000 ml of soda water when packed under 5 bar CO<sub>2</sub> pressure at 25°C is

- 1) 0.084 mol
- 2) 0.167 mol
- 3) 0.252 mol
- 4) 0.336 mol

(2)

93. Which of the following correctly represents Nernst equations?

(2) ✓

- 1)  $\Delta G = \Delta G^\circ + 2.303 \frac{RT}{[R]} \log \frac{[P]}{[R]}$
- 2)  $\Delta G = \Delta G^\circ - 2.303 \frac{RT}{[R]} \log \frac{[P]}{[R]}$
- 3)  $\Delta G^\circ = \Delta G + 2.303 \frac{RT}{[P]} \log \frac{[R]}{[P]}$
- 4)  $\Delta G^\circ = \Delta G - 2.303 \frac{RT}{[P]} \log \frac{[R]}{[P]}$

94. One end of a thin uniform rod of length L and mass M1 is riveted to the centre of a uniform circular disc of radius 'r' and mass M2 so that both are coplanar. The centre of mass of the combination from the centre of the disc is (Assume that the point of attachment is at the origin)

(2) ✓

- 1)  $\frac{L(M_1 + M_2)}{2M_1}$
- 2)  $\frac{LM_1}{2(M_1 + M_2)}$
- 3)  $\frac{2(M_1 + M_2)}{LM_1}$
- 4)  $\frac{2LM_1}{(M_1 + M_2)}$

95. a) Algebraic sum of moments of mass about centre of mass is equal to zero.

(4) ✓

- b)  $x$  - coordinate of centre of mass of system of particles in a plane is represented by  $x_{cm} = \frac{1}{M} \sum m_i x_i$
- c)  $x$  - coordinate of a rigid body of continuous mass distribution represented by  $x_{cm} = \frac{1}{M} \int x dm$
- 1) a and b are true    2) b and c are true    3) a and c are true    4) All a, b, c are true

96. Disc of radius 'r' is removed from the disc of radius 'R' then

(1) ✓

- a) The minimum shift in centre of mass is zero
- b) The maximum shift in centre of mass cannot be greater than  $r^2 / (R+r)$
- c) Centre of mass must lie where mass exists
- d) The shift in centre of mass is  $r^2 / (R+r)$

- 1) Only a and b are correct    2) Only a and c are correct
- 3) Only a, b and d are correct    4) All are correct

97. Distance of centre of mass of a thin uniform semi circular disc of radius R from its centre is

(2) ✓

- a)  $R/\pi$     b)  $2R/\pi$     c)  $4R/3\pi$     d)  $3R/4\pi$

98. Two bodies of masses m1 and m2 are at distances x1 and x2 from their centre of mass. Then, the correct statement of the following is

(2) ✓

- 1)  $\frac{m_1}{m_2} = \frac{x_1}{x_2}$     2)  $\frac{m_1}{m_2} = \sqrt{\frac{x_1}{x_2}}$     3)  $\frac{m_1}{m_2} = \frac{x_2}{x_1}$     4)  $\frac{m_1}{m_2} = \sqrt{\frac{x_2}{x_1}}$

99. The energy possessed by a body by virtue of its motion is

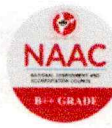
(3) ✓

- a) Chemical Energy    b) Kinetic Energy    c) Potential Energy    d) All

100. Distance travelled by a body is proportional to the square time. The body is moving with

(1) ✓

- a) Uniform acceleration    b) Velocity    c) Variable acceleration    d) All



## AVANTHI FREESHIP STUDENTS

### ACADEMIC YEAR

**2018 - 2019**

The following is the list of students 44 are selected from Avanthi Freeship Policy test conducted on 30-06-2018, 18-07-2018 and 25-06-2018. Based on the merit of the test results, the fee concessions is given to the below students.

### Freeship Test Marks

S.No	Freeship No	Name of the student	Marks
1	AIPS 2018002	DODDE ANUSHA	86
2	AIPS 2018005	G PRAVEEN KUMAR YADAV	85
3	AIPS 2018007	MD ABDUL NAFEY	70
4	AIPS 2018009	MEKALA SAMHITHA	83
5	AIPS 2018010	PODILI VAISHNAVI	82
6	AIPS 2018012	JAWAHAR CHOWDARI SUSHMA SWARAJ	81
7	AIPS 2018014	KASARAMONI SWETHA	80
8	AIPS 2018016	JANNU UMESH KUMAR	79
9	AIPS 2018018	JUMALA YOGITHA	69
10	AIPS 2018020	VANKESWARAM SAI PRASANNA	84
11	AIPS 2018021	ALLUGUBELLY PAVITHRA	76
12	AIPS 2018024	ARJAN CHAKRABORTHY	78
13	AIPS 2018026	GORUGANTHAM SRAVANI	77
14	AIPS 2018028	GUNDA MANOJ KUMAR	76
15	AIPS 2018030	KALYAN SATISH	73
16	AIPS 2018032	KATARIYA RAHUL JAIN	75
17	AIPS 2018035	MANNE SHALEM RAJ	74
18	AIPS 2018038	MATAM SANGAMESHWAR	76
19	AIPS 2018040	MEDISETTY VENKATA SURYA TEJA	73
20	AIPS 2018042	MOHAMMED NASRATH	75

*Committed to Excellence in Technical Education*



PRINCIPAL  
AVANTHI INSTITUTE OF  
PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana.



# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



21	AIPS 2018044	NAKARKANTI KAVYA	76
22	AIPS 2018046	PALLEBOINA SAI KRISHNA	75
23	AIPS 2018048	PANDRE AAKASH	73
24	AIPS 2018050	PATEL VENKATESH	69
25	AIPS 2018052	PRACHI SINGH	73
26	AIPS 2018054	R SAI KIRAN GOUD	73
27	AIPS 2018056	RADHA	71
28	AIPS 2018058	SAMPANGI MOUNIKA	73
29	AIPS 2018057	SAYED ASHRAF	72
30	AIPS 2018059	THAPA DHEERAJ	69
31	AIPS 2018061	GUNTI PRASHANTH	71
32	AIPS 2018063	PUJARI SHILPA	69
33	AIPS 2018065	G. ARAVIND	71
34	AIPS 2018067	A. MANASA	69
35	AIPS 2018069	G. SRAVANI	75
36	AIPS 2018071	T. DEEPSHIKA	71
37	AIPS 2018073	MOHD WADOOD UDDIN	69
38	AIPS 2018075	ZUBERIYA ANJUM	71
39	AIPS 2018077	ADE VANI	69
40	AIPS 2018079	G.PADMAVATHI	71
41	AIPS 2018081	SRILEKHA	68
42	AIPS 2018083	BATTU PAVANKUMAR	69
43	AIPS 2018085	LAGGAM BAVITHA	71
44	AIPS 2018087	SHARATABASSUM	69



  
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AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M)  
R.R. Dist. Telangana.



## APPLICATION TO AVAIL FREESHIP/CONCESSION

2018-2019

1. Name of the Student: G. Praveen Kumar Yadav
2. Registered no: 18GNLT0006
3. Branch: pharm 'D' Sys
4. Father name: G. parvathalu
5. Mother Name: G. parvathamma
6. Father Occupation: farmer
7. Mother Occupation: House wife
8. Parent Income: 69,000
9. Residential Address: Bomman pally, Achampet, Nagarkurnool.
10. Community & Caste: BC
11. Eamcet Rank: 10277
12. Convenor / Management: Convenor
13. Previous Education details: 10<sup>th</sup>, Inter
  - a. School Studied: Oxford model high school
  - b. S.S.C Grade / Percentage: 7.8
  - c. Intermediate Studied : Narayana Jr. college
  - d. Intermediate Percentage : 90%

Date: 05/09/2018

G. Praveen Kumar  
Signature



[Signature]  
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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana.



## APPLICATION TO AVAIL FREESHIP/CONCESSION

2018-2019

1. Name of the Student: GORUGANTHAM, SRAVANTI
2. Registered no: 18GNIR0050
3. Branch: B. Pharmacy I<sup>st</sup> year
4. Father name: Mr. Sunil Kumar
5. Mother Name: G. Madhavi
6. Father Occupation: Job
7. Mother Occupation: Nil
8. Parent Income: 1,00,000/-
9. Residential Address: H No' 5-1-27/3 saheb Nagar, Vanasthalipuram
10. Community & Caste: BC
11. Eamcet Rank: 21024
12. Convenor / Management: Management
13. Previous Education details: X<sup>th</sup> & Inter
  - a. School Studied: Sree chaitanya
  - b. S.S.C Grade / Percentage: A<sup>+</sup> 8.2
  - c. Intermediate Studied : Narayana Junior college
  - d. Intermediate Percentage : 94%

Date: 02/07/2018

  
Signature



  
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R.R. Dist. Telangana.



## APPLICATION TO AVAIL FREESHIP/CONCESSION

2018-2019

1. Name of the Student: ..... PALLEBOINA SAI KRISHNA
2. Registered no: ..... 186111R0059
3. Branch: ..... B.pharm Tex
4. Father name: ..... P. NANA RASU
5. Mother Name: ..... P. PADMAVATHI
6. Father Occupation: ..... Farmer
7. Mother Occupation: ..... ~~Nil~~
8. Parent Income: ..... 80,000
9. Residential Address: ..... H.No: 3-74, Suryapeth, Kodala
10. Community & Caste: ..... B.C
11. Eamcet Rank: ..... /
12. Convenor / Management: ..... management
13. Previous Education details: ..... 10<sup>th</sup> & Inter
  - a. School Studied: ..... Sri chaitanya High school
  - b. S.S.C Grade / Percentage: ..... 8.2
  - c. Intermediate Studied : ..... Narayana Jr. college
  - d. Intermediate Percentage : ..... 81.83

Date: 20/08/2018

  
Signature



  
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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist., Hyderabad.





## APPLICATION TO AVAIL FREESHIP/CONCESSION

2018-2019

1. Name of the Student: ..... LAGGAM BHAVITHA .....
2. Registered no: ..... 18GM1R0080 .....
3. Branch: ..... B. Pharmacy 1<sup>st</sup> Year .....
4. Father name: ..... Damodhar .....
5. Mother Name: ..... SUVARNA .....
6. Father Occupation: ..... Farmer .....
7. Mother Occupation: ..... Nil .....
8. Parent Income: ..... 1,00,000/- .....
9. Residential Address: ..... 1-60, Kunchally, Komarambeam .....
10. Community & Caste: ..... ST .....
11. Eamcet Rank: ..... 35000/- .....
12. Convenor / Management: ..... Management .....
13. Previous Education details: ..... 12<sup>th</sup> & Inter .....
- a. School Studied: ..... Mary Mata high school, .....
- b. S.S.C Grade / Percentage: ..... 7.0 .....
- c. Intermediate Studied : ..... Narayana junior college .....
- d. Intermediate Percentage : ..... 86% .....

Date:

16/9/18

Signature  
Bhavitha



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R.R. Dist., Telangana.



## APPLICATION TO AVAIL FREESHIP/CONCESSION

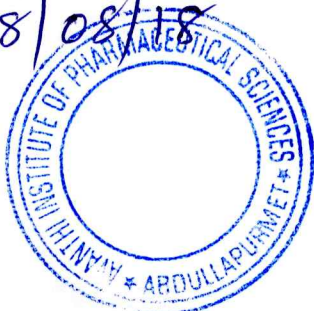
2018-2019

1. Name of the Student: BATTU. PAVAN KUMAR
2. Registered no: 18GN1R0079
3. Branch: B. Pharmacy 1st Year
4. Father name: Narsing Rao
5. Mother Name: Lalitha
6. Father Occupation: Farmer
7. Mother Occupation: - Nil -
8. Parent Income: 75000/-
9. Residential Address: 16-11-16/M/2/1, Muskuram bagh, Hyd
10. Community & Caste: SC
11. Eamcet Rank: -
12. Convenor / Management: Management
13. Previous Education details: Xth & Inter
  - a. School Studied: Bashyam high school
  - b. S.S.C Grade / Percentage: 8.0
  - c. Intermediate Studied : Sree chaitanya junior college
  - d. Intermediate Percentage : 70%

Date:

08/08/18

Pavan Kumar  
Signature



[Signature]  
PRINCIPAL  
AVANTHI INSTITUTE OF  
PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R. R. Dist. - Rangana.



## AVANTHI FREESHIP STUDENTS

### ACADEMIC YEAR

**2018-2019**

The following is the list of students 44 are selected from Avanthi Freeshippolicy test. Based on the merit of the results the fee concession is given to the below students.

S.No	Course	Name of the student	Hall Ticket No	Amount
1	Pharm.D I yr	DODDE ANUSHA	18GN1T0005	15000
2	Pharm.D I yr	G PRAVEEN KUMAR YADAV	18GN1T0006	12000
3	Pharm.D I yr	MD ABDUL NAFEY	18GN1T0013	2500
4	Pharm.D I yr	MEKALA SAMHITHA	18GN1T0014	10000
5	Pharm.D I yr	PODILI VAISHNAVI	18GN1T0015	9500
6	Pharm.D I yr	JAWAHAR CHOWDARI SUSHMA SWARAJ	18GN1T0018	9000
7	Pharm.D I yr	KASARAMONI SWETHA	18GN1T0019	8500
8	Pharm.D I yr	JANNU UMESH KUMAR	18GN1T0020	8000
9	Pharm.D I yr	JUMALA YOGITHA	18GN1T0023	2000
10	Pharm.D I yr	VANKESWARAM SAI PRASANNA	18GN1T0025	10500
11	B.Pharm.I yr	ALLUGUBELLY PAVITHRA	18GN1R0048	6000
12	B.Pharm.I yr	ARJAN CHAKRABORTHY	18GN1R0049	7000
13	B.Pharm.I yr	GORUGANTHAM SRAVANI	18GN1R0050	6500
14	B.Pharm.I yr	GUNDA MANOJ KUMAR	18GN1R0051	6000
15	B.Pharm.I yr	KALYAN SATISH	18GN1R0052	4000
16	B.Pharm.I yr	KATARIYA RAHUL JAIN	18GN1R0053	5000
17	B.Pharm.I yr	MANNE SHALEM RAI	18GN1R0054	4500

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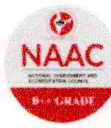
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R.R. Dist. Telangana.



# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



18	B.Pharm.I yr	MATAM SANGAMESHWAR	18GN1R0055	6000
19	B.Pharm.I yr	MEDISETTY VENKATA SURYA TEJA	18GN1R0056	4000
20	B.Pharm.I yr	MOHAMMED NASRATH	18GN1R0057	5000
21	B.Pharm.I yr	NAKARKANTI KAVYA	18GN1R0058	6000
22	B.Pharm.I yr	PALLEBOINA SAI KRISHNA	18GN1R0059	5000
23	B.Pharm.I yr	PANDRE AAKASH	18GN1R0060	4000
24	B.Pharm.I yr	PATEL VENKATESH	18GN1R0061	2000
25	B.Pharm.I yr	PRACHI SINGH	18GN1R0062	4000
26	B.Pharm.I yr	R SAI KIRAN GOUD	18GN1R0063	4000
27	B.Pharm.I yr	RADHA	18GN1R0064	3000
28	B.Pharm.I yr	SAMPANGI MOUNIKA	18GN1R0065	4000
29	B.Pharm.I yr	SAYED ASHRAF	18GN1R0066	3500
30	B.Pharm.I yr	THAPA DHEERAJ	18GN1R0067	2000
31	B.Pharm.I yr	GUNTI PRASHANTH	18GN1R0068	3000
32	B.Pharm.I yr	PUJARI SHILPA	18GN1R0069	2000
33	B.Pharm.I yr	G. ARAVIND	18GN1R0070	3000
34	B.Pharm.I yr	A. MANASA	18GN1R0071	2000
35	B.Pharm.I yr	G. SRAVANI	18GN1R0072	5000
36	B.Pharm.I yr	T. DEEPSHIKA	18GN1R0073	3000
37	B.Pharm.I yr	MOHD WADOOD UDDIN	18GN1R0074	2000
38	B.Pharm.I yr	ZUBERIYA ANJUM	18GN1R0075	3000
39	B.Pharm.I yr	ADE VANI	18GN1R0076	2000
40	B.Pharm.I yr	G.PADMAVATHI	18GN1R0077	3000
41	B.Pharm.I yr	SRILEKHA	18GN1R0078	1500
42	B.Pharm.I yr	BATTU PAVANKUMAR	18GN1R0079	2000

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# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



43	B.Pharm.I yr	LAGGAM BAVITHA	18GN1R0080	3000
44	B.Pharm.I yr	SHARATABASSUM	18GN1R0081	2000

Total students: **44**

Total Amount: Rs **2,15,000**



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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana.



Gunthapally,  
Date:30/08/18

From

The Principal,  
Avanthi Institute of Pharmaceutical Sciences,  
Gunthapally.

To

Chairperson  
Governing Body (GB),  
Avanthi Institute of Pharmaceutical Sciences,  
Gunthapally.

Dear Sir/Madam,

**Sub:** Request to sanction of Freeship Amount.

**Reference:** 1. Avanthi Freeship & Merit Scholarship Policy.

This is to inform you that Avanthi Institute of Pharmaceutical Sciences conducted an exam "Avanthi Freeship Policy Test" on 30-06-2018, 18-07-2018 and 25-06-2018 to the students, who are willing to join in Avanthi Institute of Pharmaceutical Sciences in first year B.Pharm and Pharm.D program for the academic year 2018-2019. Based on their performance in the test, they were awarded marks and eligibility for Freeships in accordance with rules and regulations of Freeship internal policy. I enclose the list of 44 students, who are qualified in the test for your reference. In this regard, I request you to please forward this students list to the Governing Body for sanctioning the Freeship amount for further proceedings.

The details are also enclosed for your consideration

Thanking you sir

Yours faithfully,



  
PRINCIPAL  
AVANTHI INSTITUTE OF  
PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist.



## Sanction Letter

With reference to the application received, you have been sanctioned the below concession / free ship.

Name ... G. P. Sareen Kumar S/o / D/o G. Parvathalu .....

Branch Pharm D ..... Roll number 18GN170006 ..... Concession / free ship

in tuition fee / Hospital fee / Transportation fee / JNTU fee / amount in Rs . 12,000 .....

Director



  
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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana.

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## Sanction Letter

With reference to the application received, you have been sanctioned the below concession / free ship.

Name ..... Gi. Saravani ..... S/o / D/o ..... Gi. Sunil Kumar .....

Branch ... B. Pharmacy ... Roll number... 18GIN1R0050 ... Concession / free ship

in  tuition fee / Hospital fee / Transportation fee / JNTU fee / amount in Rs . . . 6,500 .....

Director



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## Sanction Letter

With reference to the application received, you have been sanctioned the below concession / free ship.

Name P. Sai Krishna S/o / D/o P. Nagaraju

Branch B. pharm Roll number 18GINIR0059 Concession / free ship

in tuition fee / Hospital fee / Transportation fee / JNTU fee / amount in Rs. 5,000

  
Director



  
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PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist., Telangana

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## Sanction Letter

With reference to the application received, you have been sanctioned the below concession / free ship.

Name ..... L. Bhavitha ..... S/o / D/o ..... L. Damodar .....

Branch ... B. pharmacy ... Roll number... 18GIN1R0080 ... Concession / free ship

in tuition fee / Hospital fee / Transportation fee / JNTU fee / amount in Rs . 3,000 .....

Director



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PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana.

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## Sanction Letter

With reference to the application received, you have been sanctioned the below concession / free ship.

Name ..... B. paron Kumar ✓ S/o / D/o ..... B. Narsing Rao .....

Branch ... B. pharmacy Roll number. 18GINIR0079 ... Concession / free ship

in tuition fee / Hospital fee / Transportation fee / JNTU fee / amount in Rs . 2000 ✓ .....

Director



  
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# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



Our institution committed to provide freeships to poor and economically backward students. It is applicable to the students who do not have parents or either father or mother has lost their lives they could avail the opportunity. We also offer freeships whose parental annual income less than one lakh. We ensure that this financial support will help the students to reach their goals. Here we are providing the list of students to whom we have provided freeship from college along with their requested letters.

S.No	Course	Name of the student	Hall Ticket No	Amount
1	Pharm.D II YR	KALYANKAR NANDINI	17GN1T0020	6500
2	Pharm.D II YR	SIRAVENI ANUSHA	17GN1T0029	3000
3	Pharm.D III YR	DOMMATI SHASHIDHAR	16GN1T0004	6000
4	B.PharmII YR	CH HEPSIBA RANI	17GN1R0011	3000
5	B.PharmII YR	PANJALA RAGHAVENDRA GOUD	17GN1R0036	6500
6	B.PharmII YR	GOWROJU ROOPA DEVI	17GN1R0052	3000
7	B.PharmII YR	BEGARI KEERTHANA	17GN1R0054	1000
8	B.PharmII YR	GOUNDLA VAISHNAVI	17GN1R0055	2000
9	B.PharmII YR	RAMATI JASHWANTH	17GN1R0056	3000
10	B.PharmII YR	BANDARI SANDEEP	17GN1R0060	6000
11	B.PharmII YR	BEESA SUNIL	17GN1R0061	4000
12	B.PharmII YR	BYNABOINA NAGENDRA BABU	17GN1R0063	4000
13	B.PharmII YR	GAYAKWAD NACHIKETH	17GN1R0065	2000
14	B.PharmII YR	J MANISHA	17GN1R0067	2000
15	B.PharmII YR	KHAWAJA KHUSRO ALI KHAWAJA MAZHAR ALI	17GN1R0068	4000
16	B.PharmII YR	MARLA SHIREESHA	17GN1R0072	5000
17	B.PharmII YR	MARLA VINAY REDDY	17GN1R0073	1000
18	B.PharmII YR	MOHAMMED ABDUL RAFE AHMED	17GN1R0075	4000

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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana. 76



# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



19	B.PharmII YR	PIPPALLA SHRUTHI	17GN1R0079	3000
20	B.PharmII YR	PRETOM CHAKRABORTHY	17GN1R0080	2000
21	B.PharmII YR	RACHAKONDA AKSHARA	17GN1R0081	4000
22	B.PharmII YR	SIRROR THUKARAM	17GN1R0085	5000
23	B.PharmII YR	SURAJ RAJ	17GN1R0086	6000
24	B.PharmIII YR	YELLA RISHIKESH DEVIDAS	16GN1R0036	2000
25	B.PharmIII YR	BHEEMISHETTI KALYANI	16GN1R0037	6000
26	B.PharmIII YR	GUNDAGANI SRAVANI	16GN1R0040	5000
27	B.PharmIII YR	MEKARTHI PRAGATHI	16GN1R0041	3000
28	B.PharmIII YR	MEKALA SANGAMITHRA	16GN1R0042	3000
29	B.PharmIII YR	MADDELA SRIKANTH	16GN1R0043	4000
30	B.PharmIII YR	NALMELWAR AMANI ASHOK	16GN1R0044	6000
31	B.PharmIII YR	PALLEMONI GOWTHAMI	16GN1R0045	3500
32	B.PharmIII YR	P THARUN	16GN1R0046	4000
33	B.PharmIII YR	RUPA THARUN KUMAR	16GN1R0047	3500
34	B.PharmIII YR	SUDAGANI CHANDANA	16GN1R0048	5300
35	B.PharmIII YR	S MANEESH	16GN1R0049	5500
36	B.PharmIII YR	THORANALA YASHWANTH REDDY	16GN1R0051	3000
37	B.Pharm IV YR	DIVYA SRI VEDANTAM	15GN1R0019	4500
38	B.Pharm IV YR	SHALIMALA MURALI JANA PRIYA RAJU	15GN1R0056	3000
39	B.Pharm IV YR	A SOWMYA SREE	15GN1R0066	3200
40	B.Pharm IV YR	CH NIKHIL	15GN1R0067	2500
41	B.Pharm IV YR	D SUMANJALI	15GN1R0068	3000
42	B.Pharm IV YR	G SATYAVATHI	15GN1R0069	4000
43	B.Pharm IV YR	J CHUNKI	15GN1R0070	2000

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# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



44	B.Pharm IV YR	T RACHANA SINGH	15GN1R0072	1000
45	B.Pharm IV YR	K KIRANMAI	15GN1R0073	3000
46	B.Pharm IV YR	RANGAMPALLI BHAVANI	15GN1R0074	2000
47	M.Pharm II (ceutics)	GOGINENI MAHESH	18GN1S0309	5000
48	M.Pharm II (ceutics)	K. TARUNIKA	18GN1S0310	5000
49	M.Pharm II (ceutics)	N.SAGAR	18GN1S0311	5000
50	M.Pharm II (ceutics)	K.SANDHYA	18GN1S0312	5000
51	M.Pharm II (ceutics)	M RAJITHA	17GN1S0307	5000
52	M.Pharm I (analysis)	NUSTRATH FARAHANA KOUSER	18GN1S0210	5000
53	M.Pharm I (analysis)	MOHAMMED SALMAN	18GN1S0211	5000
54	M.Pharm I (analysis)	MANTHENA SREEVANI	18GN1S0212	5000
55	M.Pharm I (analysis)	KAMALLAPELLY ANIL KUMAR	18GN1S0213	5000

Total students: **55**

Total Amount: Rs **2,13,000**



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Gunthapally (V), Abdullapurmet (M),  
R.R. Dist. Telangana

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Date:- 19/09/2018

To

The principle  
Arunthi Institute of pharmaceutical science,  
Gunthapally, Rangareddy (Dist).

Subject :- Requesting for fee Concession.

Respected Sir,

I am R. Bharani from

B. pharmacy IV year. Roll.no 156NIR0074. I beg to say  
that I am from poor family & I am not able  
to pay my JNTU fee. moreover, my father's income  
is very less. But I have a strong desire to study.  
So, kindly request to grant me a concession fee 2000.

Thanking you.

Approved  
J

Yours obediently  
R. Bharani,  
156NIR0074.

25/10/2018  
Gunthapally

To  
The principal  
Avanthi Institute of pharmaceutical sciences  
Gunthapally.

Subject: Requesting for fee Concession.

Respected sir,

I am J. Manisha from B. pharmacy II year  
Roll No. 17GNIR0067. I am from a poor family and I am  
not able to pay my JMTU fee. moreover, my father's  
income is very less. But I have a strong desire to  
study, so I kindly request to grant me a Concession  
fee 2000 ✓

Accepted  
J ✓

Thanking you,

Yours obediently  
J. manisha  
17GNIR0067



26-10-2018,  
Guntapally.

TO,

The Principal Sir,

Avanthi Institute of Pharmaceutical Science,  
Guntapally, Ranga Reddy (D)

Subject :- Requesting for fee. Concession.

Respected Sir,

I am A Sowmya. Sree. from  
B. Pharm. IV year Roll. No. 15GNIR0066. I  
beg to say that I am a poor family and  
I am not able to pay my JNTU fee. Moreover  
my father's income is very less. But I have a  
strong desire to study, so kindly request to  
grant me a Concession fee. 3200.

Thanking you,

Your's Obediently,

A. Sowmya. Sree

15GNIR0066.

Accepted  
JD

11-12-2018

Guntapally.

To,

The Principal,

Avanthi Institute of Pharmaceutical Sciences

Guntapally, Ranga Reddy (Dist)

Subject - Application for fee concession

Respected Sir,

I am K. Nandini from B.Pharm, II<sup>nd</sup> Year Roll no.

17GNT0020. With due respect I would like to inform you that I am unable to pay tuition fee, my father is an ordinary clerk in a small business concern. He is the only bread earner of the family. His total emoluments come up to 15000/- I per month. All the money goes to house hold expenses. He has to support a large family.

I am good at studies. please understand my situation and grant me a fee concession for tuition fee 6500/-

Approved  


Thanking you,

Yours Sincerely

K. Nandini

17GNT0020

Date ⇒

12-11-2018

To,  
The principal,  
Avanthi Institute of pharmaceutical sciences,  
Guntapally, Ranga Reddy (A.P)

Subject: Application for fee concession

Respected sir,

Most Respectfully I beg to state that I am a student of II year of your college. I belong to a poor family. My father is a farmer. All his income goes towards house hold expenses. so, he is unable to pay my college fee. I am a sincere student. I always get good marks in exams. I don't want to leave my study. I request you to grant me half fee concession this year. I will be forever grateful to you for this kind gesture.

Accepted  
JP

Thanking you,

your obediently,

B. Sunil

1761NIR0061

## Fee concession Letter

Date :- 11/12/2018,

To,  
The principle,  
Avantbi Institute of pharmaceutical Sciences,  
Gunthapally, Ranga Reddy (Dist).

Subject :- Requesting for a fee concession due to financially not strong and I am facing trouble depositing my college fee. I request a concession of 50% on my college fees so. I can continue my studies at your institute.

Recently my father got unemployed and our small business also suffering so after discussion with my family I am writing this request for your kind approval. I will be grateful for your kind favour & cooperation for discount.

Sincerely,

Date :- 11/12/18,

Shashidhar,

B. Pharmacy 3<sup>rd</sup> year,

16GNIT0004.

Approved  


Date:- 19/9/2018,  
Guntthapally.

To,

The principal,  
Avanthe Institute of pharmaceutical Sciences.  
Guntthapally, Ranga Reddy (DT).

Subject:- Requesting for fee Concession.

Respected Sir,

I am J. chunki from B.Pharm IV year.  
RollNo:- 15GNIR0070. I requesting, My father is a car  
driver, and he is a poor ~~may~~ poor man. That's why  
I can't afford the fee and I can't deposit it.  
I am an intelligent student who ~~all~~ always comes  
first in the class. Therefore, kindly ~~grant~~ me  
full Concession in fee 2000

Accepted  
J

Thank you.

your's faithfully;  
J. chunki

IV B. pharmacy  
RollNo:- 15GNIR0070  
Date 19/9/2018.

Date: 12/11/2018

To,  
The Principal Sir  
Avinthi institute of pharmaceutical sciences.  
Gunthapally, Ranga reddy (Dt)

Subject: - Requesting for fee concession

Respected Sir,

I am Y. Rishikesh devidas from III<sup>rd</sup> year

B. Pharmacy Roll No: 16GNIR0036. I am from a poor family  
is not capable of fulfilling my tuition fee. My father  
is a ragpicker with very low income but I want to  
make my father bright. Therefore I am asking you for  
my fee 200 concession. I hope you will

Accepted



Thanking you Sir.

Yours obediently,  
Y. Rishikesh devidas  
16GNIR0036

Date:- 12/11/2018  
Gunturpally.

To

The principle  
Avanthi Institute of pharmaceutical Sciences,  
Gunturpally, Ranga Reddy (Dist)

Subject:- Requesting for fee Concession

Respected sir,

I am G. Vaishnavi from B. pharm IV year  
Roll-No :- 17GNIR0055, I requesting my father  
is a car driver and he is a poor man, That's  
why I can't afford the fee and I can't deposit  
it. I am an intelligent student who always  
scores first in the class. Therefore kindly  
grant me full concession in fee 200

Approved  
D

Thanking you

yours faithfully  
G. Vaishnavi  
IV pharmacy  
Roll-No:- 17GNIR0055

Date:- 26/10/2018,  
Guthapally.

TO,

The principle,  
Ananthi Institute of pharmaceutical sciences,  
Guthapally, Rangaswamy.

Subject:- I am requesting for fee concession. (5000/-)

Respected sir,

My name is TARUNIKA I am a student of your college studying in 1<sup>st</sup> year belong to a very poor family in which my father monthly income is only 1 to 2 thousand rupees with this much income it sometimes becomes difficult to maintain the entire home when the home is 2 sisters and 1 brother. Mean while it becomes almost impossible on my father

to pay the fee.

Therefore from the bottom of my heart I request you to kindly grant me a part 1 fee concession. If you do this then my family will be forgiving grateful to you.

Thanking you.

Accepted  
DR

Yours sincerely  
TARUNIKA  
1<sup>st</sup> year B. Pharmacy  
18GN150310.





# AVANTHI INSTITUTE OF PHARMACEUTICAL SCIENCES

(Approved by PCI, AICTE & Affiliated to JNTUH)

Gunthapally (V), Abdullapurmet (M), R.R. Dist., Near Ramoji Filmcity, Hyderabad - 501 512.



Gunthapally,

Date: 20-03-2019.

To

The Governing Body (GB),  
Avanthi Institute of Pharmaceutical Sciences,  
Gunthapally.

**Sub:** Letter of request sanction of Merit Scholarship amount from college budget.

**Reference:** 1. Avanthi Freeship and Merit Scholarship Policy.

2. College Academy Committee meeting held on 18/03/2019

Dear Sir/Madam,

This is to request you please sanction amount of Rs. 72,000 (Seventy two thousand Rupees) for 18 students into the college budget for the academic year 2018 -2019

The details are also enclosed for your consideration

Thanking you sir

Yours faithfully,



  
PRINCIPAL  
AVANTHI INSTITUTE OF  
PHARMACEUTICAL SCIENCES  
Gunthapally (V), Abdullapurmet (M),  
R.R. Dist., Hyderabad

*Committed to Excellence in Technical Education*



## Merit Scholarship Students List with Amount

### Academic Year

2018-2019

The following is the list of students 18 are selected from Avanthi Freeship Policy. As per the merit, the academic toppers are selected and given prizes, with the first topper awarded Rs. 5000 and the second topper as Rs. 3000.

SNO	COURSE	YEAR	HALL TICKET NO	NAME OF THE STUDENT	MERIT	AMOUNT
1	B PHARM	II	17GN1R0044	SUMAIYYA MEHREEN	I	5000
2	B PHARM	II	17GN1R0050	YELATI PRANAY KUMAR REDDY	II	3000
3	B PHARM	III	16GN1R0001	VASAM SHYAM SUNDER	I	5000
4	B PHARM	III	16GN1R0030	PALLERLA SANTHOSHI	II	3000
5	B PHARM	IV	15GN1R0064	YELLANGARI SADHANA REDDY	I	5000
6	B PHARM	IV	15GN1R0002	AMPILI DHANA SEKHAR	II	3000
7	PHARM D	II	17GN1T0014	POSHALA BINDHU	I	5000
8	PHARM D	II	17GN1T0005	GADDAM KOYALKAR SHIVANI	II	3000
9	PHARM D	III	16GN1T0003	ALE CHANDANA	I	5000
10	PHARM D	III	16GN1T0009	KOTHA KRISHNA SAHITHI REDDY	II	3000
11	PHARM D	IV	15GN1T0009	KADAGANCHI ARUN KUMAR	I	5000
12	PHARM D	IV	15GN1T0012	KOMMU SRUTHI	II	3000
13	PHARM D	V	14GN1T0004	CHOLLETI SWARNALATHA	I	5000
14	PHARM D	V	14GN1T0015	NAGUNUR REVATHI	II	3000
15	M P CEUTICS	I	17GN1S0305	SANKATI RUPA	I	5000
16	M P CEUTICS	I	17GN1S0304	SABBI MAHESHWARI	II	3000
17	M P ANALYSIS	I	17GN1S0402	GOSAMI KOMAL	I	5000
18	M P ANALYSIS	I	17GN1S0404	MOHD FAISAL MUNEER	II	3000

Total students: **18**

Total Amount: **Rs 72,000**

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R.R. Dist., Gunthapally.