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CODE A

Sample Paper - 1 Year Program

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Duration : 3.0 Hrs **Maximum Marks: 480**

PAPER SCHEME :

- The paper contains 120 Objective Type Questions divided into three sections: **Section - I (Physics), Section - II (Chemistry) and Section - III (Biology)**.
- Section I and II contain 30 Multiple Choice Questions each and Section III contains 60 questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :

- For each question in Section-I, II and III, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

GENERAL INSTRUCTIONS :

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

PART - I (PHYSICS)

1. A stone is dropped from the top of a 30 m high cliff. At the same instant another stone is projected vertically upwards from the ground with a speed of 30 m/s. The two stones will cross each other after a time: ($g = 10\ m/s^2$)

(A) 1 s **(B)** 2 s **(C)** 3 s **(D)** 4 s

2. A train accelerates from rest for time t_1 at a constant rate α and then it retards at the constant rate β for time t_2 and come to rest. The ratio of t_1/t_2 is equal to:

(A) α/β **(B)** β/α **(C)** α^2/β^2 **(D)** β^2/α^2

3. An experiment measured quantities a, b, c and then x is calculated from $x = ab^2/c^3$. If the percentage errors in a, b & c are ±1%, ±3% and ±2% respectively, the percentage error in x can be:

(A) ±13% **(B)** ±7% **(C)** ±4% **(D)** ±1%

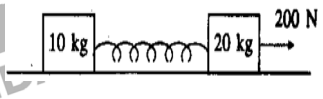
4. Two non zero vectors $\vec{A}$ and $\vec{B}$ are such that $|\vec{A} + \vec{B}| = |\vec{A} - \vec{B}|$. The angle between them is:

(A) 0° **(B)** 60° **(C)** 90° **(D)** 180°

5. A body of mass 2 kg, moving on a horizontal surface with an initial velocity of 4 m/s, comes to rest after 2 seconds. If one wants to keep this body moving on the same surface with a velocity of 4 m/s, the force required is:

(A) zero **(B)** 2 N **(C)** 4 N **(D)** 8 N

6. Two masses of 10 kg and 20 kg are connected by a massless spring as shown. A force of 200 N acts on the 20 kg mass. At a certain instant the acceleration of 10 kg mass is 12 m/s^2. The acceleration of the 20 kg mass at that instant is:



(A) 4 m/s^2 **(B)** 10 m/s^2

(C) 12 m/s^2 **(D)** none of these.

7. A force of (5 + 3x) N, acting on a body of mass 20 kg along the x -axis, displaces it from x = 2m to x = 6m. The work done by the force is:

(A) 20 J **(B)** 48 J **(C)** 68 J **(D)** 86 J

8. Two racing cars of masses m_1 and m_2 are moving in circles of radii r_1 and r_2 respectively. Their speeds are such that each makes a complete circle in the same length of time. The ratio of the angular speed of the first car to that of the second car is:

(A) $m_1 : m_2$ **(B)** $r_1 : r_2$ **(C)** 1 : 1 **(D)** $m_1 r_1 : m_2 r_2$

9. A solid sphere of mass 1kg and radius 3 cm is rotating about an axis passing through its centre with an angular velocity of 50 rad/s. The kinetic energy of rotation is:

(A) 9/20 J **(B)** 90 J **(C)** 910 J **(D)** 4500 J

10. A flywheel is in the form of a uniform circular disc of radius 1 m and mass 2 kg. The work which must be done on it to increase its frequency of rotation from 5 to 10 rev/s is approximately:

(A) 1.5×10^2 J **(B)** 3.0×10^2 J **(C)** 1.5×10^3 J **(D)** 3.0×10^3 J

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11. The value of acceleration due to gravity on the surface of the earth is *g*. If the diameter of the earth becomes double of its present value and its mass remains unchanged, the value of acceleration due to gravity on the surface of the earth would become:

(A) g/2 **(B)** g/4 **(C)** 2g **(D)** 4g

12. Imagine a light planet revolving around a very massive star in a circular orbit of radius R with period T. If the gravitational force of attraction between the planet and the star is proportional to $R^{-5/2}$, then T^2 is proportional to:

(A) R^3 **(B)** $R^{7/2}$ **(C)** $R^{3/2}$ **(D)** $R^{3.75}$

13. Two wires of the same material have diameters in the ratio 2 : 1 and lengths in the ratio 1 : 2. If they are stretched by the same force, their elongations will be in the ratio:

(A) 8 : 1 **(B)** 1 : 8 **(C)** 2 : 1 **(D)** 1 : 4

14. A mercury drop of radius 1 cm is sprayed into 10^6 drop of equal size. If the surface tension of mercury is 35×10^{-3} N/m. the energy expended is

(A) 4.35×10^{-3} J **(B)** 8.7×10^{-3} J **(C)** 4.35×10^{-2} J **(D)** 8.7×10^{-2} J

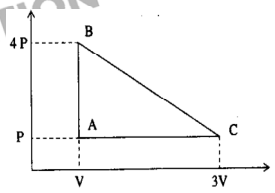
15. A lead bullet strikes a steel armour plate with a velocity of 300 m/s and is completely stopped. If the heat produced is shared equally between the bullet and the target, the rise in the temperature of the bullet is (specific heat of lead 0.03 cal/g°C)

(A) 89.3°C **(B)** 49.3°C **(C)** 178.6°C **(D)** 357.2°C

16. Oxygen and hydrogen gases are at the same temperature. The ratio of the average kinetic energy of an oxygen molecule and that of a hydrogen molecule is:

(A) 16 **(B)** 4 **(C)** 1 **(D)** 1/4

17. An ideal gas is taken around the cycle ABCA as shown in the PV diagram. The net work done by the gas during the cycle is:



(A) 12 PV **(B)** 6 PV

(C) 3 PV **(D)** PV

18. A piston of cross-sectional area 100 cm^2 is used in a hydraulic press to exert a force of 10^7 dynes on the water. The cross-sectional area of the other piston which supports a truck of mass 2000 kg is:

(A) 9.8×10^2 cm^2 **(B)** 9.8×10^3 cm^2

(C) 1.96×10^3 cm^2 **(D)** 1.96×10^4 cm^2

19. The weight of a body in air is 100 N. How much will it weigh in water, if it displaces 400 cc of water?

(A) 90 N **(B)** 94 N **(C)** 98 N **(D)** none of these.

20. A body falling freely on a planet covers 8 m in 2 s. The time period of a one metre long simple pendulum on this planet will be:

(A) 1.57 s **(B)** 3.14s **(C)** 6.28 s **(D)** none of these.

21. The vertical extension in a light spring by a weight of 1 kg, in equilibrium, is 9.8 cm. The period of oscillation of the spring, in seconds, will be:

(A) $2\pi/10$ **(B)** $2\pi/100$ **(C)** 20π **(D)** 200π

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22. A progressive wave of frequency 500 Hz is travelling with a speed of 350 m/s. A compressional maximum appears at a place at a given instant. The minimum time interval after which a rarefaction maximum occurs at the same point is:

(A) 1/250 s **(B)** 500 s **(C)** 1/1000 s **(D)** 1/350 s

23. A stretched string of length 2 m vibrates in 4 segments. The distance between consecutive nodes is:

(A) 0.5 m **(B)** 0.25 m **(C)** 1.0 m **(D)** 0.75 m

24. An aeroplane is flying horizontally with a velocity of 600 *km*/*h* at a height of 1960 *m*. When it is vertically at a point A on the ground, a bomb is released from it. The bomb strikes the ground at point *B*. The distance *AB* is:

(A) 1200 m **(B)** 0.33 km **(C)** 3.33 km **(D)** 33 km

25. The range of a particle when launched at an angle of 15^o with the horizontal is 1.5 *km*. What is the range of the projectile when launched at an angle of 45^o to the horizontal:

(A) 1.5 km **(B)** 3.0 km **(C)** 6.0 km (D) 0.75 km

26. On heating a liquid of coefficient of cubical expansion α in a container having coefficient of linear expansion $\alpha/3$, the level of liquid in the container will:

(A) rise

(B) fall

(C) remain almost the same.

(D) rise or fall depending on the density of the liquid.

27. A black body at 227°C radiates heat at the rate of 5 cal/cm^2/s. The rate of heat radiated in cal/cm^2/s at 727°C is:

(A) 40 **(B)** 80 **(C)** 160 **(D)** 240

28. Ship A is traveling with a velocity of 5 km/h due east. A second ship is heading 30° east of north. What should be the speed of second ship if it is to remain always due north with respect of the first ship?

(A) 10 km/h **(B)** 9 km/h **(C)** 8 km/h **(D)** 7 km/h

29. A certain force applied to mass m_1 gives it an acceleration of 10 m/s^2. The same force applied to mass m_2 gives it an acceleration of 15 m/s^2. If the two masses are joined together and the same force is applied to the combination, the acceleration will be:

(A) 6 m/s^2 **(B)** 3 m/s^2 **(C)** 9 m/s^2 **(D)** 12 m/s^2

30. The moment of inertia of a ring about an axis passing through its centre and perpendicular to its plane is 200 g-cm^2. Its moment of inertia about a diameter is:

(A) 100 g-cm^2 **(B)** 200 g-cm^2 **(C)** 300 g-cm^2 **(D)** 400 g-cm^2

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PART - II (CHEMISTRY)

31. Total number of protons in 10 g $CaCO_3$ are:

(A) 4.011×10^{24} **(B)** 1.0478×10^{24} **(C)** 3.0115×10^{24} **(D)** 7×10^{24}

32. Volume of NH_3 (at NTP) required to bring down the normality of 30cc., 1N H_2SO_4 to 0.2 N will be

(A) 1 litre **(B)** 0.62 litre **(C)** 0.54 litre **(D)** 1.91 litre

33. The total number of spectral lines emitted during the transition of an electron from 5th shell to 2nd shell are:

(A) 11 **(B)** 12 **(C)** 8 **(D)** 6

34. Maximum covalency of N and B respectively are

(A) 5, 3 **(B)** 3, 1 **(C)** 3, 3 **(D)** 4, 4

35. If a system absorbs 1 kJ heat at constant pressure of 1atm, the system volume changes from 3 litre to 10 litre. The change in internal energy will be

(A) 993 kJ **(B)** 4 kJ **(C)** – 6 kJ **(D)** 0.29 kJ

36. The pH of a buffer containing 2M acetic acid and 2 M sodium acetate will be (K_a for $CH_3COOH = 1.8\times10^{-5}$)

(A) 3.74 **(B)** 5.04 **(C)** 4.74 **(D)** 5.26

37. Which of the following carbocations is the least stable?

(A) $C_6H_5\overset{+}{C}H_2$ **(B)** $p-O_2N-C_6H_4-\overset{+}{C}H_2$

(C) $p-CH_3O-C_6H_4-\overset{+}{C}H_2$ **(D)** $p-Cl-C_6H_4-\overset{+}{C}H_2$

38. Which of these is aromatic?

(A) Cyclopentadienyl cation **(B)** Cycloheptadienyl cation

(C) Cyclopentadienyl anion **(D)** All of these

39. The compound that does not answer the Lassaigne's Test is

(A) Aniline **(B)** Glycine **(C)** Hydrazine **(D)** Urea

40. Isopentane can form 4 monobromo isomeric derivatives. How many of them are optically active?

(A) 1 **(B)** 2 **(C)** 3 **(D)** None of these

41. Hydrogen gas can be manufactured by

(A) Bosch process **(B)** Lane's process

(C) Electrolysis of water **(D)** All of these

42. What fraction of molecular weight, would be the equivalent weight of $Ca_3(PO_4)_2$?

(A) $\frac{1}{2}$ **(B)** $\frac{1}{6}$ **(C)** $\frac{1}{3}$ **(D)** $\frac{1}{4}$

43. The total number of angular nodes in the 3p orbital are:

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3

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44. The outer most electronic configuration of an element is $[Ar]3d^7 4s^2$. The atomic number of an element lying just below this element in its group will be

(A) 40 **(B)** 45 **(C)** 49 **(D)** 54

45. The hybridization of Xe in XeO_2F_2 is

(A) sp^3 **(B)** sp^3d **(C)** sp^3d^3 **(D)** sp^3d^2

46. Which of the following is diamagnetic?

(A) O_2 **(B)** O_2^+ **(C)** O_2^- **(D)** O_2^{2-}

47. The time taken for a certain volume of gas (x) to diffuse through a small hole is 2 minutes. It takes 5.65 minutes for same volume of oxygen to diffuse under similar conditions. The molecular weight of gas (x) is

(A) 8 **(B)** 4 **(C)** 16 **(D)** 32

48. The initial pressure of PCl_5 present in a 1 litre vessel at 200 K is 2 atm. At equilibrium the pressure increases to 3 atm with temperature increasing to 250 K. The percentage dissociation of PCl_5 at equilibrium is

(A) 0.2% **(B)** 15% **(C)** 20% **(D)** 70%

49. Which of these has the minimum (– I) effect?

(A) $-\overset{+}{N}R_3$ **(B)** $-\overset{+}{S}R_2$ **(C)** $-\overset{+}{N}H_3$ **(D)** $-COOH$

50. In the estimation of nitrogen by the Duma's method, 0.59 gram of an organic compound gave 112 ml of nitrogen at NTP. The percentage of N in the compound will be

(A) 23.7 **(B)** 11.8 **(C)** 20 **(D)** 47.5

51. Alkali metals when dissolve in liquid NH_3 may from

(A) Blue colour solutions **(B)** Bronze colour solutions

(C) Both **(A)** and **(B)** **(D)** None of these

52. The acid having the highest pK_a value among the following is

(A) HCOOH **(B)** CH_3COOH **(C)** $ClCH_2COOH$ **(D)** FCH_2COOH

53. The essential condition for the feasibility of a reaction is that

(A) the reaction should be exothermic

(B) the entropy of products must be larger than that of reactants

(C) the reaction is to be accompanied with free energy decrease

(D) the reaction has to possess high activation energy

54. If 100 ml 0.1 M H_2SO_4 and 200 ml 0.1 M HNO_3 are mixed together and final volume made up to 500 ml then normality of the resultant mixture will be

(A) 0.02 **(B)** 0.04 **(C)** 0.08 **(D)** 0.06

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55. In the thermal dissociation of PCl_5, the total pressure of gases at equilibrium is 1.0 atmosphere when 50 % of PCl_5 is found to dissociate. The equilibrium constant of the reaction (K_p) in atmosphere is

(A) 0.25 **(B)** 0.33 **(C)** 1.00 **(D)** 0.5

56. When a piece of copper wire is immersed in a solution of aqueous silver nitrate, the solution becomes blue. This is a consequence of

(A) oxidation of silver **(B)** oxidation of copper

(C) formation of a copper complex **(D)** reduction of copper

57. The density of neon will be highest at

(A) STP **(B)** 0°C, 2 atmosphere

(C) 273°C, 1 atmosphere **(D)** 273°C, 2 atmosphere

58. The smallest ion among the following is

(A) Na^+ **(B)** Al^{+3} **(C)** Mg^{+2} **(D)** Si^{+4}

59. An element in +3 oxidation state has the electronic configuration $[Ar]3d^3$. Its atomic number is

(A) 24 **(B)** 23 **(C)** 22 **(D)** 21

60. The amount of $K_2Cr_2O_7$ (Equivalent Mass = 49.04 g) required to prepare 100 ml of its 0.05 N solution is

(A) 2.9424 g **(B)** 0.4904 g **(C)** 1.4712 g **(D)** 0.2452 g

PART - III (BIOLOGY)

61. According to ICBN the name of the class ends with suffix:

(A) —phyceae **(B)** —opsida **(C)** —eae **(D)** Both **(A)** and **(B)**

62. In the hierarchial classification, the number of obligate taxonomic categories is:

(A) 7 **(B)** 8 **(C)** 6 **(D)** 12

63. Virus envelope is known as:

(A) Capsid **(B)** Peplos **(C)** Nucleoprotein **(D)** Core

64. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antiobiotics are the one categorised as:

(A) Chemosynthetic autotrophs **(B)** Heterotrophic bacteria

(C) Cyanobacteria **(D)** Archaebacteria

65. Which of the following are likely to be present in deep sea water?

(A) Eubacteria **(B)** Blue-green algae

(C) Saprophytic fungi **(D)** Archaebacteria

66. Cyanobacteria differs from bacteria in many respects in

(1) Complete absence of flagella (2) Presence of both PS I, PS II

(3) Photosynthesis is anoxygenic (4) Carotene and Chlorophylls are present

(A) 1, 2, 3 are correct **(B)** 2, 3 are correct **(C)** 2, 3, 4 are correct **(D)** 1, 2, 4 are correct

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67. Phycocolloid algin occurs in

(A) Cytoplasm of red algae **(B)** Cell well of brown algae

(C) Cell wall of red algae **(D)** Cytoplasm of brown algae

68. In *Chlamydomonas*, meiosis occurs in

(A) Gamete **(B)** Zygote **(C)** Sporogonium **(D)** Zoospore

69. A prothallus is

(A) A structure in pteridophytes formed before the thallus develops

(B) A sporophytic free living structure formed in some pteridophytes

(C) A gametophytic free living structure formed in some pteridophytes

(D) A primitive structure formed after fertilization in some pteridophytes.

70. Select an incorrect statement.

(A) In majority of the dicotyledonous plants, the direct elongation of the radicle leads to the formation of primary root.

(B) Tap root system is seen in the mustard plant.

(C) In some plants, like grass and banyan tree, adventitious roots are not found.

(D) In monocotyledonous plants, the primary root is short lived.

71. Given below are the pairs of plants with sub-aerial stems. Find the dissimilar pair w.r.t. the modification.

(A) Mint, Jasmine **(B)** *Pistia, Eichhornia*

(C) Banana, Grass **(D)** Both **(A)** & **(B)**

72. In how many of given plants, single leaf arises from each node?

Alstonia, Mustard, China rose, Guava, Tomato, Chilli, *Calotropis,* Sunflower, *Nerium, Petunia*

(A) **Six** **(B)** Seven **(C)** Five **(D)** Eight

73. Which type of inflorescence is shown below?

(A) Racemose **(B)** Cymose

(C) Cyathium **(D)** Hypanthodium

74. A meristem may be defined as the group of cells which

(A) Does not divide

(B) Conserve food

(C) Divide continuously to give rise to new cells

(D) Elongate,mature and add to the group of cells

75. Parenchymatous tissue is the seat of

(A) Photosynthesis **(B)** Storage of food materials

(C) Secretion and excretion **(D)** All of the above

76. Layer of cells between endodermis and vascular bundles is called

(A) Epidermis **(B)** Pericycle **(C)** Hypodermis **(D)** Pith

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77. In dicot stem, the secondary growth takes place by:

(A) Primary cambium

(B) Secondary cambium

(C) Development of cambium in stele region

(D) Development of cambium in stele and in the cortical region

78. Which of the following is not a role of water?

(A) Essential for all physiological activities of plants.

(B) Acts as an poor solvent

(C) Helps in the uptake and distribution of mineral nutrients and other solutes required for growth and development.

(D) Plays a key role in photosynthesis and acts as a source of oxygen.

79. Select incorrect statement for diffusion?

(A) Larger the difference in concentration, slower is the flow of molecules.

(B) Diffusion is more rapid in gases than in liquids

(C) When there is no net movement of molecules, a state of equilibrium is reached

(D) Diffusion is a random movement of molecules

80. The inner wall of each guard cell, towards the pore or stomatal aperture, is:

(A) Thick and elastic **(B)** Thin and elastic

(C) Thin and inelastic **(D)** Thick and inelastic

81. Most minerals must enter the root by active absorption because:

(A) minerals are present in the soil as charged particles which cannot move across cell membranes

(B) the concentration of minerals in the soil is usually lower than the concentration of minerals in the root

(C) This needs energy in the form of ATP

(D) All of these

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82. Mineral ions in plants are:

(A) Never remobilised **(B)** Frequently remobilised

(C) Always remobilised **(D)** Remobilised in the form of inorganic ions

83. Nickel is an essential part of which of the following enzymes:

(A) Urease **(B)** Nitrogenase **(C)** Nitrate reductase **(D)** PEP carboxylase

84. During active intake of minerals in first phase:

(A) An initial rapid uptake of ions into the free space occurs

(B) The ions are taken slowly into the inner space

(C) The ions are taken rapidly into the inner space

(D) The ions are taken slowly into the outer space

85. The following processes occur during photosynthesis:

(I) Reduction of carbon dioxide (II) The splitting of water

(III) The synthesis of glucose (IV) Formation of oxygen gas

(V) Formation of ATP

Which one of the following combinations is correct for the light phase?

(A) I, II and III **(B)** III, IV and V **(C)** I, III and IV **(D)** II, IV and V

86. Stroma lamellae are characterised by all, except

(A) Presence of PS-I **(B)** Site of cyclic photophosphorylation

(C) Perform photosynthesis at wavelength >680 nm

(D) Presence of $NADP^+$ reductase

87. First carbohydrate formed in dark reaction is:

(A) PGAL **(B)** DHAP

(C) Erythrose 4 PO_4 **(D)** Xylulose 5 PO_4

88. Protein is mostly the respiratory substrate in:

(A) Protoplasmic respiration **(B)** Floating respiration

(C) Anaerobic respiration **(D)** Respiration of oily seeds

89. Glycolysis is also called

(A) EMP Pathway **(B)** Amphibolic pathway

(C) Triosis **(D)** Both **(A)** and **(C)**

90. How many multiprotein complexes occurs in ETC in mitochondria?

(A) 4 **(B)** 3 **(C)** 5 **(D)** 2

91. The main organelle involved in modification and routing of newly synthesized proteins to their destination is:

(A) Mitochondria **(B)** Endoplasmic reticulum

(C) Lysosome **(D)** Ribosomes

92. The central part of the proximal region of the _____ is proteinaceous and called "hub" which is connected with tubules of the peripheral triplets by radial spokes:

(A) Centromere **(B)** Nucleolus **(C)** Centrosome **(D)** Centriole

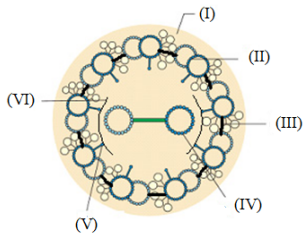
93. State these names at specific places – Interdoublet bridge, central sheath and Radial spoke respectively:

(A) (V), (IV) and (VI)

(B) (II), (VI) and (V)

(C) (II), (III) and (V)

(D) (III), (VI) and (V)



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94. The endomembranous system includes:

(A) ER, GB, lysosome and vacuoles **(B)** ER, GB, centrioles and lysosome

(C) Mitochondria, chloroplast and peroxisomes

(D) ER, GB, Mitochondria, chloroplast

95. The movement of chromatids towards the opposite poles brought about by dissolution of microtubules of chromosomal fibers attached to the centromere in:

(A) Prophase **(B)** Metaphase **(C)** Anaphase **(D)** Telophase

96. Chromosomes cluster at opposite spindle poles and their identity is lost as discrete elements in

(A) Anaphase **(B)** Anaphase II **(C)** Telophase **(D)** both **(A)** and **(B)**

97. Fill in the blank A & B in the given statement:

____I____ is the most abundant protein in animal world and **____II____** is the most abundant protein in the whole of the biosphere.

	I	II		I	II
(A)	RUBISCO	Collagen	**(B)**	Collagen	Elastin
(C)	Fibrin	Collagen	**(D)**	Collagen	RUBISCO

98. The statement which is not correct amongst the following is:

(A) Starch is a homopolymer of glucose containing amylose and amylopectin.

(B) Maltose is a disaccharide formed from two glucose units.

(C) Cellulose is a trisaccharide formed from 3 units of glucose.

(D) Inulin is a polymer of fructose.

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99. Arrange the steps of the catalytic cycle of an enzyme action in the correct descending order:

1. Active site of the enzyme breaks the chemical bonds of the substrate.
2. The enzyme shape is altered.
3. The substrate fits into the active site of the enzyme.
4. Enzyme molecule releases the product and is freed to bind another molecule of the substrate.

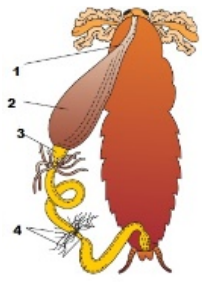
(A) 4-1-3-2 **(B)** 4-1-2-3 **(C)** 4-3-1-2 **(D)** 4-2-1-3

100. Which of the following animal groups is entirely aquatic?

(A) Mollusca and Cnidaria **(B)** Ctenophora and Mollusca

(C) Echinodermata and Ctenophora **(D)** Annelida and Echinodermata

101. The figure given below shows the alimentary canal of an animal. Select the option which shows the correct identification of the structure which is also called proventriculus and helps in grinding the food particles:



(A) 1 **(B)** 2

(C) 3 **(D)** 4

102. Characteristics of smooth muscle fibres are

(A) Spindle-shaped, unbranched, unstriated, uninucleate and involuntary

(B) Spindle-shaped, unbranched, unstriped, multinucleate and involuntary

(C) Cylindrical, unbranched, unstriped, multinucleate and involuntary

(D) Cylindrical, unbranched, striated, multinucleate and voluntary

103. The enzyme enterokinase:

(A) Stimulates release of pancreatic secretions

(B) Activates protein digesting enzymes

(C) Functions in lipid digestion

(D) Functions in carbohydrates digestion

104. One of the following is not an enzyme of digestive system:

(A) Trypsin **(B)** Amylase **(C)** Enterogastrone **(D)** Enterokinase

105. Functions of the stomach include all of the following, except:

(A) Churning of ingested food **(B)** Denaturation of proteins

(C) Initiation of protein digestion **(D)** Absorption of proteins

106. What common feature between human trachea & cockroach trachea is observed?

(A) Both are paired and unbranched **(B)** Both are supported by cartilaginous rings

(C) Both are non collapsible **(D)** Both originate from Pharynx

107. Match the items in column I with column II and choose the correct option:

	Column I		**Column II**
(i)	Tidal volume	(p)	2500-3000ml
(ii)	Residual volume	(q)	500ml
(iii)	IRV	(r)	1100-1200ml
(iv)	ERV	(s)	1000-1100ml

(A) (i) – q, (ii)– s, (iii)– p, (iv)– r **(B)** (i) – q, (ii)– p, (iii)– r, (iv)– s

(C) (i) – s, (ii)– p, (iii)– r, (iv)– q **(D)** (i) – q, (ii)– r, (iii)– p, (iv)– s

108. Mark the correct statement for human blood?

(1) All the WBCs are nucleated in blood vessels

(2) All the RBCs are enucleated in blood vessels

(3) Rh-antigen is present on the surface of every RBC

(4) Antibodies are present in the blood plasma

(A) 1, 2, 3, 4 **(B)** 2, 4 only **(C)** 1, 2, 4 **(D)** 1, 2 only

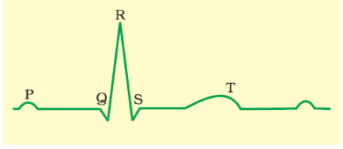
109. In the given diagram of ECG, T-wave represents:

(A) Electrical excitation of atria and systole of ventricle.

(B) Depolarization of ventricle and repolarization of atria.

(C) Return of the ventricles from excited to normal state and end of ventricular systole.

(D) The beginning of ventricular systole.



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110. All of them are characters of reptiles, except:

(A) Lizards shed their scales as skin cast **(B)** Scutes are present on their body

(C) Heart is three-chambered in all reptiles **(D)** They are poikilotherms

111. Match column I with column II

	Column I	**Column II**
(i)	PCT	(p) Reabsorption of urea
(ii)	DCT	(q) Reabsorption of maximum electrolytes
(iii)	Henle's loop	(r) Minimum reabsorption
(iv)	Collecting duct	(s) Conditional reabsorption

(A) (i)–q, (ii)–p, (iii)–s, (iv)–r **(B)** (i)–p, (ii)–r, (iii)–s, (iv)–q

(C) A-q, B-s, C-r, D-p **(D)** A-r, B-s, C-p, D-q

112. Which of the following forms thoracic cage of man?

(A) Ribs and sternum **(B)** Ribs and thoracic vertebrae

(C) Ribs, sternum and lumbar vertebrae **(D)** Ribs, sternum and thoracic vertebrae

113. During the contraction of a vertebrate skeletal muscle fibre, calcium ions:

(A) break cross bridges by acting as a cofactor in the hydrolysis of ATP

(B) bind with troponin, changing its shape so that myosin-binding sites on actin are exposed

(C) transmit action potentials from the motor neuron to muscle fibres

(D) re-establish the polarization of plasma membrane following an action potential

114. Which of the following statements is/ are incorrect about *Periplaneta americana*?

I. They are nocturnal omnivores that live in the damp places.

II. Its body is segmented and divisible in two regions i.e. head and abdomen.

III. Antennae have sensory receptors to monitor the environment.

IV. Head can move in all directions due to the presence of flexible neck.

The correction option is

(A) I and IV **(B)** Only II **(C)** Only IV **(D)** II and III

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115. The canal passing through the midbrain is called:

(A) Medulla oblongata **(B)** Cerebral aqueduct

(C) Eustachian tube **(D)** Aqueous chamber

116. Eye lens is held in the place by:

(A) Muscle fibres of iris **(B)** Ligaments attached to the ciliary body

(C) A transparent gel called vitreous humor

(D) Thin watery fluid called aqueous humor

117. Which of the following is the function of ear ossicles?

(A) To collect the vibrations in the air

(B) To equalise the pressures on either sides of the ear drum

(C) To secrete ear wax

(D) To increase the efficiency of transmission of sound waves to the inner ear

118. The ductless glands:

(A) Produce non-nutrient intercellular messengers

(B) Found only in non chordates

(C) Are absent in human body

(D) Are called exocrine glands

119. The two glands located in the neck region are:

(A) Thyroid gland and parathyroid gland **(B)** Pituitary gland and pineal gland

(C) Adrenal gland and thymus **(D)** Pineal gland and thyroid gland

120. Hypothalamus forms an important link between:

(A) Digestive system and nervous system

(B) Nervous system and respiratory system

(C) Nervous system and endocrine system

(D) Integumentary system and reproductive system

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End of Sample Paper | 1 Year Medical | Paper I

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Answers to Sample Paper | 1 Year Medical

Sample Paper – I

PHYSICS		CHEMISTRY		BIOLOGY			
1.	(A)	**31.**	(C)	**61.**	(D)	**91.**	(B)
2.	(B)	**32.**	(C)	**62.**	(A)	**92.**	(D)
3.	(A)	**33.**	(D)	**63.**	(A)	**93.**	(D)
4.	(C)	**34.**	(D)	**64.**	(B)	**94.**	(A)
5.	(C)	**35.**	(D)	**65.**	(D)	**95.**	(C)
6.	(A)	**36.**	(C)	**66.**	(D)	**96.**	(C)
7.	(C)	**37.**	(B)	**67.**	(B)	**97.**	(D)
8.	(C)	**38.**	(C)	**68.**	(B)	**98.**	(C)
9.	(A)	**39.**	(C)	**69.**	(C)	**99.**	(B)
10.	(C)	**40.**	(B)	**70.**	(C)	**100.**	(C)
11.	(B)	**41.**	(D)	**71.**	(B)	**101.**	(C)
12.	(B)	**42.**	(B)	**72.**	(A)	**102.**	(A)
13.	(B)	**43.**	(B)	**73.**	(B)	**103.**	(B)
14.	(A)	**44.**	(B)	**74.**	(C)	**104.**	(C)
15.	(C)	**45.**	(B)	**75.**	(D)	**105.**	(D)
16.	(C)	**46.**	(D)	**76.**	(B)	**106.**	(C)
17.	(C)	**47.**	(B)	**77.**	(D)	**107.**	(D)
18.	(D)	**48.**	(C)	**78.**	(B)	**108.**	(C)
19.	(D)	**49.**	(D)	**79.**	(A)	**109.**	(C)
20.	(B)	**50.**	(A)	**80.**	(A)	**110.**	(C)
21.	(A)	**51.**	(C)	**81.**	(D)	**111.**	(C)
22.	(C)	**52.**	(D)	**82.**	(B)	**112.**	(D)
23.	(A)	**53.**	(C)	**83.**	(A)	**113.**	(B)
24.	(C)	**54.**	(C)	**84.**	(A)	**114.**	(B)
25.	(B)	**55.**	(B)	**85.**	(D)	**115.**	(B)
26.	(C)	**56.**	(B)	**86.**	(D)	**116.**	(B)
27.	(B)	**57.**	(B)	**87.**	(A)	**117.**	(D)
28.	(A)	**58.**	(D)	**88.**	(A)	**118.**	(A)
29.	(A)	**59.**	(A)	**89.**	(D)	**119.**	(A)
30.	(A)	**60.**	(D)	**90.**	(C)	**120.**	(C)

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CODE A

Sample Paper - 1 Year Program

Admission & Scholarship Test | Medical

Duration : 3.0 Hrs **Maximum Marks: 480**

PAPER SCHEME :

- The paper contains 120 Objective Type Questions divided into three sections: **Section - I (Physics), Section - II (Chemistry) and Section - III (Biology)**.
- Section I and II contain 30 Multiple Choice Questions each and Section III contains 60 questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :

- For each question in Section-I, II and III, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

GENERAL INSTRUCTIONS :

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

PART - I (PHYSICS)

1. A stone falls from the top of tower in 8 s. How much time it will take to cover the first quarter of the distance starting from top?

(A) 4 s **(B)** 2 s **(D)** 1 s **(D)** 5 s

2. A particle moving with constant acceleration covers distance of 30 m in 3rd second. It covers a distance of 50 m in the 5th second. What is the acceleration of the particle?

(A) 3 m/s **(B)** 5 m/s² **(D)** 8 m/s² **(D)** 10 m/s²

3. A body travels uniformly a distance of (13.8 ±0.2) m in a time (4.0 ±0.3) s. The velocity of the body within error limits is:

(A) $(3.45 \pm 0.2)\ ms^{-1}$ **(B)** $(3.45 \pm 0.3)\ ms^{-1}$

(D) $(3.45 \pm 0.4)\ ms^{-1}$ **(D)** $(3.45 \pm 0.5)\ ms^{-1}$

4. Two forces have magnitudes in the ratio 3 : 5 and the angle between their directions is 60°. If their resultant is 35 N, their magnitudes are:

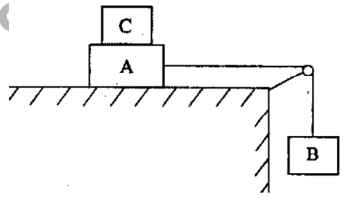
(A) 12 N, 20 N **(B)** 15 N, 25 N **(D)** 18 N, 30 N **(D)** 21 N, 28 N

5. The mass of an elevator is 4000 kg. When the tension in the supporting cable is 48000 N, the acceleration of the elevator is: ($g = 10\ m/s^2$)

(A) $2\ m/s^2$ upwards **(B)** $2\ m/s^2$ downwards

(D) $20\ m/s^2$ upwards **(D)** $20\ m/s^2$ downwards

6. Two masses A and B of 10 kg and 5 kg respectively are connected with a string passing over a frictionless pulley fixed at the comer of a table as shown. The coefficient of static friction between A and the table is 0.2. The minimum mass C that should be placed on A to prevent it from moving is equal to:



(A) 12 kg **(B)** 5 kg **(D)** 10 kg **(D)** 15 kg

7. A cord is used to lower vertically a block of mass M a distance d at a constant downward acceleration of g/4. Then the work done by the cord on block is:

(A) Mgd/4 **(B)** -Mgd/4 **(D)** 3Mgd/4 **(D)** -3Mgd/4

8. On a dry road, the maximum permissible speed of a car in a circular path is 10 m/s. If the road becomes wet, the maximum speed is $5\sqrt{2}$ m/s. If the coefficient of friction for dry road is μ, then that for the wet road is:

(A) μ/2 **(B)** μ/3 **(D)** 2μ/3 **(D)** 3μ/4

9. A uniform horizontal circular platform of mass 200 kg is rotating at 10 rpm about a vertical axis passing through its centre. A boy of mass 50kg is standing at its edge. If the boy moves to the centre of the platform, the frequency of rotation would become:

(A) 7.5 rpm **(B)** 12.5 rpm **(D)** 15 rpm **(D)** 20 rpm

10. The ratio of the time taken by a solid sphere and that taken by a disc of the same mass and radius to roll down a smooth inclined plane from rest from the same height is:

(A) 15 : 14 **(B)** $\sqrt{15} : \sqrt{14}$ **(D)** 14 : 15 **(D)** $\sqrt{14} : \sqrt{15}$

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11. How much deep inside the earth (radius R) should a man go so that his weight becomes one-fourth of that on earth's surface:

(A) R/4 **(B)** R/2 **(D)** 3R/4 **(D)** none of these

12. Two satellites are moving in the same circular orbit around earth. They must have same:

(A) mass **(B)** angular momentum

(D) kinetic energy **(D)** speed

13. A substance breaks down by a stress of $10^6 N/m^2$. If the density of the material of the wire is 3×10^3 kg/m^3, then the length of the wire of that substance which will break under its own weight when suspended vertically is:

(A) 3.4m **(B)** 34 m **(D)** 340 m **(D)** None of these.

14. The force necessary to pull a circular plate of radius 5 cm from the surface of water (surface tension 75 dynes/cm) is:

(A) 30 dynes **(B)** 60 dynes **(D)** 750 dynes **(D)** 750π dynes

15. The temperature at the bottom of a 40 m deep lake is 12°C and that at the surface is 35°C. An air bubble of volume 1.0 cm^3 rises from the bottom to the surface. Its volume becomes (atmospheric pressure = 10 m of water):

(A) 2.0 cm^3 **(B)** 3.2 cm^3 **(D)** 5.4cm^3 **(D)** 8.0 cm^3

16. The pressure of a gas contained in a closed vessel is increased by 0.4 % when heated by 1°C. The initial temperature was:

(A) 250 K **(B)** 250°C **(D)** 500 K **(D)** 500°C

17. When a gas expands adiabatically?

(A) no energy is required for expansion

(B) energy is required and it comes from the wall of the container of the gas

(D) internal energy of the gas is used in doing work

(D) law of conservation of energy does not hold.

18. The pressure in a water tap at the base of a building is 3×10^6 dynes/cm^2 and on its top it is 1.6×10^6 dynes/cm^2. The height of the building is approximately:

(A) 7 m **(B)** 14 m **(D)** 70 m **(D)** 140 m

19. A solid weighs 5 N in air, 4 N in water and 4.5 N in some other liquid. The specific gravity of the liquid is:

(A) 0.5 **(B)** 1.5 **(D)** 0.9 **(D)** None of these

20. A simple harmonic oscillator has amplitude A and time period T. Its maximum speed is:

(A) 4A/T **(B)** 2A/T **(D)** 4πA/T **(D)** 2πA/T

21. A mass M is suspended from a spring of negligible mass. The spring is pulled a little and then released so that it executes simple harmonic oscillations with period T. If the mass is increased by m, the period becomes 5T/4. The ratio (m/M) is:

(A) 4/5 **(B)** 5/4 **(D)** 9/16 **(D)** 25/16

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22. Two sound waves, each of amplitude A and frequency ω, superpose at a point with a phase difference of π/2. The amplitude and frequency of the resultant wave are, respectively:

(A) A/√2, ω/2 **(B)** A/√2, ω **(D)** A√2, ω/2 **(D)** A√2, ω

23. A tuning fork of frequency 340 Hz is vibrated just above a cylindrical tube of length 120 cm. Water is slowly poured in the tube. If the speed of sound in air is 340 m/s, then the minimum height of water required for resonance is:

(A) 25 cm **(B)** 45 cm **(D)** 75 cm **(D)** 95 cm

24. An aeroplane flying 490 *m* above ground level at 100 *m/s*, releases a block. How far on ground will it strike:

(A) 0.1 km **(B)** 1 km **(D)** 2 km **(D)** None

25. For a projectile, the ratio of maximum height reached to the square of flight time is ($g = 10\ ms^{-2}$)

(D) 5 : 4 **(D)** 5 : 2 **(D)** 5 : 1 **(D)** 10 : 1

26. A second's pendulum gives correct time at 25°C. The pendulum shaft is thin and is made of steel. How many seconds will it lose per day at 35°C? ($\alpha_{steel} = 11 \times 10^{-6}$ /°C)

(A) 1.75s **(B)** 2.5s **(D)** 3.5s **(D)** 4.75s

27. A black body at a high temperature T K. radiates energy at the rate of E W/m^2. When the temperature falls to T/2 K, the radiated energy in W/m^2 will be:

(A) E/4 **(B)** E/2 **(D)** 2E **(D)** E/16

28. A monkey is climbing a vertical tree with a velocity of 5 m/s and a dog is running towards the tree with a velocity of 5√3 m/s. The velocity of the dog relative to the monkey is:

(A) 10 m/s at 30° with the horizontal **(B)** 10 m/s at 60° with the horizontal

(D) 8 √3 m/s at 30° with the horizontal **(D)** 8 √3 m/s at60° with the horizontal

29. A block of mass 2 kg rests on a rough inclined plane making an angle of 30° with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on block is:

(A) 9.8 N **(B)** 0.7 × 9.8 N **(D)** 9.8 × √3 N **(D)** 0.7 × 9.8 x √3 N

30. A rod of length l, hinged at the bottom, is held vertically and then allowed to fall. The linear velocity of its top when it hits the floor is

(A) $(2gl)^{1/2}$ **(B)** $(2g/l)^{1/2}$ **(D)** $(3gl)^{1/2}$ **(D)** $(3g/l)^{1/2}$

PART - II (CHEMISTRY)

31. Central atom of the following compound has one lone pair of electrons and three bond pairs of electrons

(A) H_2S **(B)** $AlCl_3$ **(C)** NH_3 **(D)** BF_3

32. The rate of diffusion of methane at a given temperature is twice that of a gas X. The molecular weight of X is

(A) 4 **(B)** 32 **(C)** 8 **(D)** 64

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33. Equal weights of CH_4 and CO_2 are mixed in an empty vessel at 25°C. The fraction of the total pressure exerted by methane is

(A) $\frac{11}{15}$ **(B)** $\frac{15}{22}$ **(C)** $\frac{15}{11}$ **(D)** $\frac{22}{15}$

34. One gram of a metallic oxide upon reduction gives 0.68 g of metal. The equivalent of metal is

(A) 68 **(B)** 34 **(C)** 51 **(D)** 17

35. On combustion, carbon forms two oxides CO and CO_2. Heat of formation of CO_2 gas is 94.3 K cal and that of CO is 26.0 Kcal. Heat of combustion of carbon is

(A) 26.0 Kcal **(B)** 94.3 Kcal **(C)** 68.3 Kcal **(D)** 120.3 Kcal

36. Structure of ammonia is

(A) pyramidal **(B)** trigonal planar
(C) tetrahedral **(D)** trigonal-bipyramidal

37. The hydrogen ion concentration of 0.1 N solution of CH_3COOH, which is 30% dissociated is

(A) 0.03 **(B)** 3.0 **(C)** 0.3 **(D)** 30.0

38. At NTP volume of oxygen evolved from 10 ml of a 20 volume solution of H_2O_2 is

(A) 20 ml **(B)** 200 ml **(C)** 100 ml **(D)** 250 ml

39. An organic compound on analysis gave C = 39.9%, H = 6.79% and O = 53.4%. The empirical formula of the compound is

(A) CHO_2 **(B)** CH_2O **(C)** $C_2H_2O_2$ **(D)** CHO

40. When a liquid boils, there is:

(A) an increase in entropy **(B)** a decrease in entropy
(C) an increase in heat of vapourization **(D)** an increase in free energy

41. When acetylene is treated with HBr, we get

(A) Methyl bromide **(B)** Ethylene bromide
(C) Ethyl bromide **(D)** Ethylidine bromide

42. Which one of the following has the highest dipole moment?

(A) AsH_3 **(B)** SbH_3 **(C)** PH_3 **(D)** NH_3

43. The solubility products of CuS, Ag_2S and HgS are 10^{-31}, 10^{-44}, 10^{-54}, respectively. The solubility of these sulphides are in the order

(A) $Ag_2S > HgS > CuS$ **(B)** $HgS > Ag_2S > CuS$
(C) $Ag_2S > CuS > HgS$ **(D)** $CuS > Ag_2S > HgS$

44. Reductive ozonolysis of  using Zn+ H_2O gives

(A) Butane-1, 4-dione **(B)** Butane-1, 4-dial
(C) Butanoic acid **(D)** Butane

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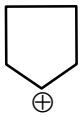
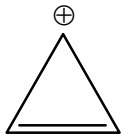
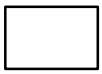
45. The hydride ion H^- is stronger base than its hydroxide ion OH^-. Which of the following reactions will occur if sodium hydride (NaH) is dissolved in water?

(A) $2H^-(aq) + H_2O \longrightarrow H_2O + H_2 + 2e^-$

(B) $H^-(aq) + H_2O \longrightarrow OH^- + H_2$

(C) $H^- + H_2O \longrightarrow$ No reaction **(D)** Na_2O is formed

46. Which of these species is aromatic?

(A)  **(B)**  **(C)**  **(D)** 

47. Carbogen is a mixture of:

(A) O_2 and CO_2 **(B)** O_2 and CO **(C)** CO and CO_2 **(D)** none of these

48. Which of these carbides is a methanide?

(A) Be_2C **(B)** CaC_2 **(C)** Mg_2C_3 **(D)** Li_2C_2

49. Which of the following does not exist in solid state?

(A) $KHCO_3$ **(B)** $Ba(HCO_3)_2$ **(C)** $NaHCO_3$ **(D)** K_2CO_3

50. The weight of a molecule of a compound $C_{60}H_{122}$ is

(A) 842 g **(B)** 1.4×10^{-21} g

(C) 5.025×10^{23} g **(D)** $\frac{1}{6.023 \times 10^{23}}$ g

51. The equivalent mass of NH_3 in the reaction is

$N_2 \longrightarrow 2NH_3$

(A) $\frac{17}{3}$ **(B)** $\frac{17}{6}$ **(C)** 17 **(D)** $\frac{17}{2}$

52. Aqueous solution of which of these oxychloride with same concentration has maximum pH?

(A) NaClO **(B)** $NaClO_2$ **(C)** $NaClO_3$ **(D)** $NaClO_4$

53. Number of electrons lost by 2 g Cl^- ion during its oxidation to Cl_2 is

(A) 3.39×10^{22} **(B)** 6.023×10^{23} **(C)** 3.39×10^{23} **(D)** 6.023×10^{22}

54. If N and S are present in an organic compound during Lassaigne test then both change into

(A) Na_2S and NaCN **(B)** NaSCN

(C) Na_2SO_3 and NaCN **(D)** Na_2S and NaCNO

55. What is the solubility of calcium fluoride in a saturated solution if its solubility product is 3.2×10^{-11}?

(A) 2.0×10^{-4} mol/litre **(B)** 12.0×10^{-3} mol/litre

(C) 0.2×10^{-4} mol/litre **(D)** 2×10^{-3} mol/litre

56. The difference of water molecules in gypsum and plaster of paris is

(A) $\frac{5}{2}$ **(B)** 2 **(C)** $\frac{1}{2}$ **(D)** $1\frac{1}{2}$

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57. Identify the configuration of a transition metal out of these

(A) $1s^2, 2s^22p^6, 3s^23p^6, 4s^2$ **(B)** $1s^2, 2s^22p^6, 3s^23p^63d^{10}, 4s^24p^1$

(C) $1s^2, 2s^22p^6, 3s^23p^63d^{10}, 4s^24p^6$ **(D)** $1s^2, 2s^22p^6, 3s^23p^63d^2, 4s^2$

58. Which sequence is correct regarding first ionization energy of Coinage metals?

(A) Cu > Ag > Au **(B)** Cu < Ag < Au

(C) Cu > Ag < Au **(D)** Ag > Cu < Au

59. Which of the following gains electrons most easily?

(A) Mg (g) **(B)** Be (g) **(C)** O (g) **(D)** N (g)

60. In PO_4^{-3} ion, the formal charges on each oxygen atom and P – O bond order respectively are

(A) – 0.75, 0.6 **(B)** – 0.75, 1.0 **(C)** – 0.75, 1.25 **(D)** – 3, 1.25

PART - III (BIOLOGY)

61. ICBN stand for:

(A) International classification of biological nomenclature

(B) International class of biological nomenclature

(C) International code of botanical nomenclature

(D) International classification of biological naming

62. 'Taxa' differs from 'taxon' due to

(A) this being a higher taxonomic category than taxon

(B) this being lower taxonomic category than taxon

(C) this being the plural of taxon

(D) this being the singular of taxon

63. Archaebacteria differ from eubacteria in:

(A) Mode of reproduction **(B)** Cell membrane structure

(C) Mode of nutrition **(D)** Cell shape

64. Which of the following shows coiled RNA strand and capsomeres?

(A) Retrovirus **(B)** Polio virus

(C) Tobacco mosaic virus **(D)** Measles virus

65. Five kingdom system of classification suggested by R.H. Whittaker is not based on:

(A) Complexity of body organisation **(B)** Presence or absence of a well-defined nucleus

(C) Mode of reproduction **(D)** Mode of nutrition.

66. Which of the following granules functions as storage reservoir for phosphate in bacteria?

(A) Sulphur granules **(B)** Cyanophycean granules

(C) Volutin granules **(D)** PHB granules

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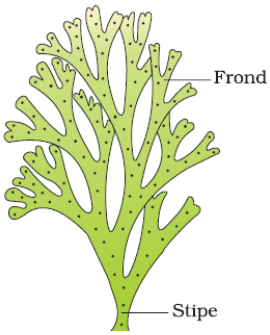
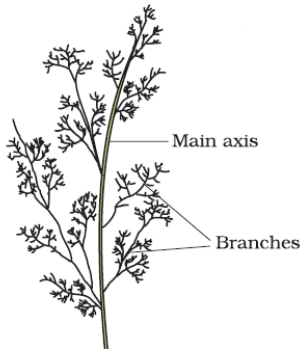
67. Identify the given figures of algae and select the correct option?



(I)



(II)

(A) (I) - *Fucus*, (II) - *Polysiphonia* **(B)** (I) - *Dictyota*, (II) - *Polysiphonia*

(C) (I) - *Dictyota*, (II) - *Porphyra* **(D)** (I) - *Porphyra*, (II) - *Polysiphonia*

68. The first seeded plants are the

(A) Bryophytes **(B)** Gymnospersms **(C)** Algae **(D)** Pteridophytes

69. Plants of this group are diploid and well adapted to extreme conditions. They grow bearing sporophylls in compact structures called cones. The group in reference is:

(A) Monocots **(B)** Dicots **(C)** Pteridophytes **(D)** Gymnosperms

70. The main functions of the root system are all of the following, except

(A) Absorption of water and minerals from the soil

(B) Providing a proper anchorage to the plant parts

(C) Storing reserve food material

(D) Synthesis of 2, 4-D (2, 4-dichlorophenoxyacetic acid)

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71. Identify the option with **mismatched** condition.

	Plant	Stem modification	Function
1.	*Colocasia*	Tuber	Storage of food
2.	Pumpkin	Stem tendril	Support and storage of food
3.	Ginger	Rhizome	Perennation
4.	*Pistia*	Offset	Vegetative propagation
5.	*Citrus*	Spines	Protection from browsing

(A) **1, 2 & 5** **(B)** 2, 3 & 5 **(C)** 2, 3 & 4 **(D)** 1, 2, 3 & 5

72. When the leaves are small and short lived, the petioles expand and become green to synthesise food as in

(A) Cactus **(B)** *Euphorbia* **(C)** *Ruscus* **(D)** **Australian *Acacia***

73. Select an incorrect statement w.r.t. cymose type of inflorescences.

(A) The main axis terminates in a flower.

(B) The main axis is limited in growth.

(C) Flowers are borne in a basipetal order.

(D) All statements are correct.

74. Protoderm and Procambium are:

(A) Permanent tissues **(B)** Meristematic tissues

(C) Intercalary meristems **(D)** Secondary tissues

75. Which one of the following is an effective tissue of growing organs with sufficient elasticity?

(A) Parenchyma **(B)** Collenchyma **(C)** Sclerenchyma **(D)** All the above

76. Casparian strips in endodermis is composed of:

(A) Cellulose **(B)** Pectin **(C)** Suberin **(D)** Lignin

77. "Sap wood" is also called

(A) Duramen **(B)** Alburnum **(C)** Autumn wood **(D)** Early wood

78. Select incorrect statement for water potential / free energy:

(A) We can move the water up against gravity

(B) Sum of water potential between two points is a measure of the amount of work (energy) needed to move water from one point to the other

(C) Water moves from the point where water potential is greater, to the other point where water potential is less

(D) Pressure provides energy to water

79. Which is not a result of diffusion?

(A) Distribution of water, gases and solutes

(B) Supply of carbon dioxide from atmosphere to the leaves

(C) Loss of water vapour from leaves to the atmosphere.

(D) Transport of photosynthates

80. When turgidity increases within the two guard cells flanking each stomatal aperture or pore, the thin outer walls _____and force the inner walls into a _____shape.

(A) Bulge in, oval **(B)** Bulge out, spindle

(C) Bulge in, crescent **(D)** Bulge out, crescent

81. Select incorrect statement regarding active uptake of ions

(A) Active uptake of ions is partly responsible for the water potential gradient in roots, and therefore for the uptake of water by osmosis.

(B) Specific proteins in the membranes of root hair cells actively pump ions from the soil into the cytoplasm's of the epidermal cells.

(C) Ions are absorbed from the soil by only active transport

(D) Ions are absorbed from the soil by both passive and active transport

82. Which of the following mineral requires chelation in alkaline soil to increase its solubility?

(A) Iron **(B)** Manganese **(C)** Magnesium **(D)** Phosphorus

83. Boron is not required for:

(A) Pollen germination **(B)** Photolysis of water

(C) Sugar translocation **(D)** Uptake and utilisation of Ca^{++} ions

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84. During/in active absorption of ions:

(A) Carriers are involved for both influx and efflux of ions

(B) Immobile carriers with pores pump ions

(C) Ions move in outer space against electrochemical gradients

(D) Downhill transport of ions occurs

85. Chlorophyll-b has-CHO group at _____ of head porphyrin.

(A) C–3 **(B)** C–7 **(C)** C–5 **(D)** C–8

86. Select an incorrect statement w.r.t. non-cyclic photophosphorylation.

(A) In PS-II the reaction centre chl-a absorbs 680 nm wavelength of red light

(B) Electrons in the reaction centre of PS-I are excited when they receive red light of wavelength 700 nm

(C) $NADP^+$ is reduced to $NADPH + H^+$

(D) The excited electron does not pass on to $NADP^+$ but is cycled back to the PS-I complex through the ETS

87. The first acceptor of CO_2 in rice plant during carbon fixation cycle is:

(A) PEP **(B)** Malic acid **(C)** RUBP **(D)** PGA

88. Respiration is basically

(A) Anabolic and exergonic process **(B)** Catabolic and exergonic process

(C) Anabolic and excergonic process **(D)** Catabolic and endergonic process

89. How many substrate phosphorylation reaction occur in Glycolysis

(A) 4 **(B)** 2 **(C)** 8 **(D)** 6

90. In mitochondria, during ETS protons accumulate in the:

(A) Outer membrane **(B)** Inner membrane

(C) Intermembrane space **(D)** Matrix

91. Which of the following characteristic/s is/are seen in only male *Ascaris*:

(i) Males remove body wastes through the excretory pore.

(ii) Males are triploblastic, coelomate animals.

(iii) Males are shorter than females.

(A) Both i & ii **(B)** Both i & iii **(C)** iii only **(D)** i only

92. Which group of animals belongs to phylum Aschelminthes?

(A) *Ascaris, Ancylostoma, Pheretima* **(B)** *Ascaris, Wuchereria, Ancylostoma*

(C) *Ascaris, Aurelia, Wuchereria* **(D)** *Aurelia, Fasciola, Ascaris*

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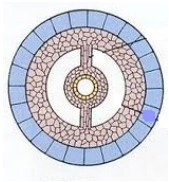
93. Refer to the diagram given below & find out which organism possess this type of coelom:



(A) Earthworm **(B)** Liver fluke

(C) Pin worm **(D)** Filarial worm

94. Which of the following statements is true for epithelial tissue?

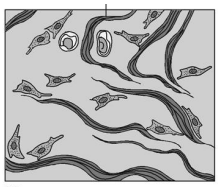
(A) It arises only from the ectoderm.

(B) Its free surface either faces a body fluid or the outside environment.

(C) It has large amount of intercellular matrix.

(D) It is incapable of performing absorptive functions.

95. The tissue depicted in the following diagram is:



(A) Cartilage present at the ends of long bones

(B) Dense regular connective present in the tendons

(C) Dense irregular connective tissue present in the skin

(D) Loose connective tissue found in the capsule of abdominal organs

96. The first pair of wings in cockroach arises from ……. and the second pair from …….. :

(A) prothorax, mesothorax **(B)** mesothorax, metathorax

(C) metathorax, mesothorax **(D)** mesothorax, prothorax

97. Read the following statements and identify the correct option:

(I) In prokaryotic cells, the nuclear membranes, chloroplasts, mitochondria, microtubules and different kinds of pili are absent.

(II) In eukaryotic cell, the nuclear membranes, chloroplasts, mitochondria and pili are present.

(III) In prokaryotic cell, the ribosome is of 70 S type, same as in mitochondria of eukaryotic animal cell.

(A) I and II are wrong III is correct **(B)** I is correct, II and III are wrong

(C) I and II are correct, III is wrong **(D)** I and III are correct and II is wrong

98. The main organelle involved in modification and routing of newly synthesized proteins to their destination is:

(A) Plastid **(B)** Golgi body **(C)** Lysosome **(D)** Ribosomes

99. Kinetochore is:

(A) A type of chromophore **(B)** Disc present at centromere

(C) Portion between centromere and telomere **(D)** Constituent of chromomere

100. Who was the first to explain that the cells divide and new cells are formed from the pre-existing cells?

(A) Anton Von Leeuwenhoek **(B)** Rudolf Virchow

(C) Robert Brown **(D)** Purkinje

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101. During cell cycle the sequences is:

(A) $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$ **(B)** $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$

(C) $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$ **(D)** $G_1 \rightarrow G_2 \rightarrow M \rightarrow S$

102. On treating a starch molecule with iodine, starch turns blue. What is the reason for this?

(A) Starch reduces iodine into iodides.

(B) The helical arrangement of starch molecule traps the iodine.

(C) Iodine reacts chemically with starch.

(D) The pH of starch containing food is altered with iodine which changes its color.

103. In a holoenzyme, the prosthetic group:

(A) is a firmly bound non proteinaceous organic part.

(B) is a loosely bound inorganic part.

(C) is a loosely bound non proteinaceous organic part.

(D) is a tightly bound inorganic part .

104. The number of teeth that grow twice in human life is:

(A) 4 **(B)** 12 **(C)** 20 **(D)** 28

105. Mark the wrong match?

	Structure	**Function**
(A)	Caecum	–Small blind sac which hosts some symbiotic micro-organisms.
(B)	Vermiform appendix	–A narrow finger like tubular projection, which is a vestigial organ.
(C)	Descending part of colon	–Opens into the rectum which opens out through the anus.
(D)	Stomach	–Located in the lower right portion of the abdominal cavity.

106. Mark the wrong match?

(A) Intrinsic factor secreted by parietal cells → Essential for absorption of vitamins B_{12}.

(B) Bile → activates lipases.

(C) Succus entericus → digestion of nucleic acid into nucleotides.

(D) Enterokinase → secreted by intestinal mucosa activates trypsinogen into trypsin.

107. A man who is lying on a recliner and watching a football match is having around 19ml of O_2/100mlof blood in his arteries, what would be the volume of O_2/100 ml of blood in his veins?

(A) 14 ml **(B)** 19 ml **(C)** 10 ml **(D)** 9 ml

108. The nasal chamber opens into:

(A) Oropharynx **(B)** Nasopharynx **(C)** Laryngopharynx **(D)** Larynx

109. Fibrinogen present in the blood plasma is required for:

(A) Excretion **(B)** Respiration **(C)** Blood clotting **(D)** All of these

110. Serum is:

(A) Fluid in blood from which all blood corpuscles are removed.

(B) Fluid in blood from which RBCs are removed.

(C) Fluid in blood from which blood cells and fibrinogen are removed.

(D) Same as plasma.

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111. The first heart sound is produced due to:

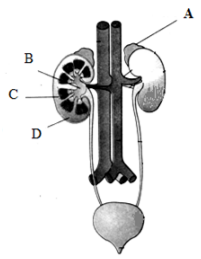
(A) Simultaneous opening of both the atrioventricular valves

(B) Simultaneous closure of both the atrioventricular valves

(C) Simultaneous opening of both the semilunar valves

(D) Simultaneous closure of both the semilunar valves

112. Identify correctly the labeled parts in the following diagram:



(A) A = Adrenal gland, B = Pelvis, C = Medulla, D = Cortex

(B) A = Adrenal gland, B = Pelvis, C = Cortex, D = Medulla

(C) A = Adrenal gland, B = Cortex, C = Pelvis, D = Medulla

(D) A = Renal capsule, B = Pelvis, C = Medulla, D = Cortex

113. Which of the following statement is incorrect?

(A) Ureter, blood vessels and nerves enter kidney through Hilum.

(B) Kidney is situated between the levels of last thoracic and fourth lumbar vertebra close to the dorsal inner wall of the abdominal cavity.

(C) Human kidney measures 10-12 cm in length, 5-7 cm in width, 2-3 cm in thickness.

(D) Average weight of each kidney is 120-170 gms.

114. Floating ribs of thoracic cage are:

(A) 1st to 7th Pair **(B)** 8th to 9th pair **(C)** 8th to 10th Pair **(D)** 11th to 12 Pair

115. Acetabulum occur in:

(A) cranium **(B)** vertebrae **(C)** pelvic girdle **(D)** pectoral girdle

116. Hypothalamic hormones directly regulate the synthesis and secretion of:

(A) Thyroid hormones **(B)** Pituitary hormones

(C) Adrenal hormones **(D)** Parathormone

117. ACTH controls the secretion of:

(A) Insulin **(B)** Norepinephrine **(C)** Epinephrine **(D)** Glucocorticoids

118. The membranous labyrinth is surrounded by a fluid called:

(A) Perilymph **(B)** Endolymph

(C) Cerebrospinal fluid **(D)** Vitreous humor

119. The lower membrane of the scala vestibuli is the:

(A) Tympanic membrane **(B)** Reissner's membrane

(C) Basilar's membrane **(D)** Tectorial membrane

120. How many bones in the cranium of human beings are paired?

(A) Four **(B)** Two **(C)** One **(D)** Eight

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End of Sample Paper | 1 Year Medical | Paper II

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Answers to Sample Paper | 1 Year Medical

Sample Paper – II

PHYSICS		CHEMISTRY		BIOLOGY			
1.	(B)	**31.**	(C)	**61.**	(C)	**91.**	(C)
2.	(D)	**32.**	(D)	**62.**	(C)	**92.**	(B)
3.	(D)	**33.**	(A)	**63.**	(B)	**93.**	(A)
4.	(B)	**34.**	(D)	**64.**	(C)	**94.**	(B)
5.	(A)	**35.**	(B)	**65.**	(B)	**95.**	(C)
6.	(B)	**36.**	(A)	**66.**	(C)	**96.**	(B)
7.	(D)	**37.**	(A)	**67.**	(B)	**97.**	(A)
8.	(A)	**38.**	(B)	**68.**	(B)	**98.**	(B)
9.	(C)	**39.**	(B)	**69.**	(D)	**99.**	(B)
10.	(D)	**40.**	(A)	**70.**	(D)	**100.**	(B)
11.	(C)	**41.**	(D)	**71.**	(A)	**101.**	(A)
12.	(D)	**42.**	(D)	**72.**	(D)	**102.**	(B)
13.	(B)	**43.**	(C)	**73.**	(D)	**103.**	(A)
14.	(D)	**44.**	(B)	**74.**	(B)	**104.**	(C)
15.	(C)	**45.**	(B)	**75.**	(B)	**105.**	(D)
16.	(A)	**46.**	(B)	**76.**	(C)	**106.**	(C)
17.	(C)	**47.**	(A)	**77.**	(B)	**107.**	(A)
18.	(B)	**48.**	(A)	**78.**	(B)	**108.**	(B)
19.	(A)	**49.**	(B)	**79.**	(D)	**109.**	(C)
20.	(D)	**50.**	(B)	**80.**	(D)	**110.**	(C)
21.	(C)	**51.**	(A)	**81.**	(C)	**111.**	(B)
22.	(D)	**52.**	(A)	**82.**	(A)	**112.**	(A)
23.	(B)	**53.**	(A)	**83.**	(B)	**113.**	(B)
24.	(B)	**54.**	(B)	**84.**	(A)	**114.**	(D)
25.	(A)	**55.**	(A)	**85.**	(A)	**115.**	(C)
26.	(D)	**56.**	(D)	**86.**	(D)	**116.**	(B)
27.	(D)	**57.**	(D)	**87.**	(C)	**117.**	(D)
28.	(A)	**58.**	(C)	**88.**	(B)	**118.**	(A)
29.	(A)	**59.**	(C)	**89.**	(B)	**119.**	(B)
30.	(C)	**60.**	(C)	**90.**	(C)	**120.**	(B)

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CODE A

Sample Paper - 1 Year Program

Admission & Scholarship Test | Medical

Duration : 3.0 Hrs **Maximum Marks: 480**

PAPER SCHEME :

- The paper contains 120 Objective Type Questions divided into three sections: **Section - I (Physics), Section - II (Chemistry) and Section - III (Biology)**.
- Section I and II contain 30 Multiple Choice Questions each and Section III contains 60 questions. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE CHOICE is correct**.

MARKING SCHEME :

- For each question in Section-I, II and III, **4 marks** will be awarded for correct answer and **–1 negative marking** for incorrect answer.

GENERAL INSTRUCTIONS :

- For answering a question, an **ANSWER SHEET (OMR SHEET)** is provided separately. Please fill your **Name, Roll Number, Seat ID, Date of Birth** and the **PAPER CODE** properly in the space provided in the **ANSWER SHEET.** IT IS YOUR OWN RESPONSIBILITY TO FILL THE OMR SHEET CORRECTLY.
- A blank space has been provided on each page for rough work. You will not be provided with any supplement or rough sheet.
- The use of log tables, calculator and any other electronic device is strictly prohibited.
- Violating the examination room discipline will immediately lead to the cancellation of your paper and no excuses will be entertained.
- No one will be permitted to leave the examination hall before the end of the test.
- Please submit both the question paper and the answer sheet to the invigilator before leaving the examination hall.

PART - I (PHYSICS)

1. From the top of a building, 16 m high, water drops are falling at equal intervals of time such that when the first drop reaches the ground, the fifth drop just starts. The distances between the successive drops, in metres, at that instant is

(A) 8, 4, 2, 1 **(B)** 7, 5, 3, 1 **(C)** .5, 5, 2.5, 1 **(D)** None of the above

2. A train accelerates from rest for time t_1 at a constant rate α and then it retards at the constant rate β for time t_2 and come to rest. The ratio of t_1/t_2 is equal to

(A) α/β **(B)** β/α **(C)** α^2/β^2 **(D)** β^2/α^2

3. The percentage errors in the measurement of mass and speed are 2% and 3% respectively. How much will be the maximum error in the estimate of the kinetic energy obtained by measuring mass and speed?

(A) 11% **(B)** 8% **(C)** 5% **(D)** 1%

4. If $\vec{A} = 4\hat{i} + 3\hat{j} - 2\hat{k}$ and $\vec{B} = 8\hat{i} + 6\hat{j} - 4\hat{k}$, the angle between $\vec{A}$ and $\vec{B}$ is

(A) 45° **(B)** 60° **(C)** 0° **(D)** 90°

5. A weight of 290 N and another of 200 N are suspended by a rope on either side of a frictionless pulley. The acceleration of each weight (in m/s^2) is

(A) 1.5 **(B)** 1.8 **(C)** 2.2 **(D)** 2.5

6. A body kept on a smooth inclined plane having inclination 1 in x will remain stationary relative to the inclined plane if the plane is given a horizontal acceleration equal to

(A) $\frac{g}{\sqrt{x^2-1}}$ **(B)** $\frac{gx}{\sqrt{x^2-1}}$ **(C)** $\frac{\sqrt{x^2-1}}{g}$ **(D)** $g\sqrt{x^2-1}$

7. Uniform chain of length L and mass M is lying on a smooth table and one-third of its length is hanging vertically down over the edge of the table. The work required to pull the hanging part on the table is

(A) MgL **(B)** MgL/3 **(C)** MgL/9 **(D)** MgL/18

8. A 4 kg stone tied at the end of a string 1 m long is whirled in a vertical circle. At the instant when the string makes an angle θ with the vertical, the linear speed of the stone is 4 m/s and the tension in the string is 103.2 N. Then the value of θ is

(A) 0° **(B)** 30° **(C)** 60° **(D)** 90°

9. A particle performs uniform circular motion with angular momentum *l*. If the frequency of the motion of the particle is doubled and its kinetic energy halved, the angular momentum becomes

(A) 2*l* **(B)** 4*l* **(C)** *l*/2 **(D)** *l*/4

10. A constant torque acting on a uniform circular wheel changes its angular momentum from A_0 to $4A_0$ in 4 seconds. The magnitude of this torque is

(A) $3A_0/4$ **(B)** A_0 **(C)** $4A_0$ **(D)** $12\ A_0$

11. The escape velocity from the earth is 11 km/s. The escape velocity (in km/s) from a planet having twice the radius and the same mean density as those of the earth is

(A) 5.5 **(B)** 11 **(C)** 22 **(D)** None of these

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12. 3A satellite of mass m is moving around the earth in a circular orbit of radius *r*. If the mass of the earth is *M*, then the energy required to take the satellite to an orbit of radius 3*r* is

(A) *GMm/r* **(B)** *GMm/2r* **(C)** *GMm/3r* **(D)** *GMm/6r*

13. The extension produced in a wire by the application of a load is 3.0 mm. The extension in a wire of the same material and length but half the radius, by the same load, is

(A) 0.75 mm **(B)** 1.5 mm **(C)** 6.0mm **(D)** 12.0 mm.

14. A long cylindrical glass vessel has a small hole of radius r at its bottom. The depth to which the vessel can be lowered vertically in a deep water bath (surface tension T, density d) without any water entering inside is

(A) T/rdg **(B)** 2T/rdg **(C)** 3T/rdg **(D)** 4T/rdg

15. The temperatures of equal masses of three different liquids A, B and C are 12°C, 19°C and 28°C, respectively. When A and B are mixed, the temperature is 16°C and when B and C are mixed, it is 23°C. The temperature when A and C are mixed is

(A) 10.1°C **(B)** 20.2°C **(C)** 30.3°C **(D)** 40.4°C

16. Two gases are enclosed in a container at constant temperature. One of the gases, which is diatomic, has relative molecular mass eight times the other, which is monoatomic. The ratio of the r.m.s speed of the molecules of the monoatomic gas to that of the molecules of the diatomic gas is

(A) 8 **(B)** 4 **(C)** $2\sqrt{2}$ **(D)** 2

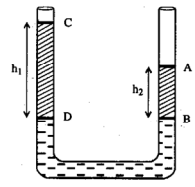
17. If the amount of heat given to a system be 35 J and the amount of work done by the system be –15J, then change in internal energy of system is

(A) –50J **(B)** 20J **(C)** 30 J **(D)** 50 J

18. A piece of wood of relative density 0.36 floats in oil of relative density 0.90. The fraction of volume of wood above the surface of oil is

(A) 0.3 **(B)** 0.4 **(C)** 0.6 **(D)** 0.8

19. In a U tube experiment, a column AB of water is balanced by a column CD of paraffin, as shown in the figure. The relative density of paraffin is



(A) h_2/h_1 **(B)** h_1/h_2

(C) $(h_1-h_2)/h_1$ **(D)** $h_2/(h_1+h_2)$

20. The bob of a simple pendulum of period T is given a negative charge. If it is allowed to oscillate above a positively charged plate, the new time period will be

(A) equal to T **(B)** more than T **(C)** less than T **(D)** infinite.

21. A particle of mass 0.5 kg executes S.H.M. Its energy is 0.04 J. If its time period is π seconds, its amplitude is

(A) 10 cm **(B)** 15 cm **(C)** 20 cm **(D)** 40 cm

22. A string stretched by a weight of 4 kg is vibrating in its fundamental mode. The additional weight required to produce an octave of the first is

(A) 4 kg **(B)** 8kg **(C)** 12 kg **(D)** 16 kg

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23. A car, sounding a horn of frequency 1000 Hz, is moving directly towards a huge wall at a speed of 15 m/s. If speed of sound is 340 m/s, then the frequency of the echo heard by the driver is

(A) 1046 Hz **(B)** 954 Hz **(C)** 1092 Hz **(D)** 908 Hz

24. From the top of a building 20 m high, a ball is projected horizontally. If the line joining the point of projection to the point where it hits the ground makes an angle of 45° with the horizontal, then the initial velocity of the stone is ($g = 10\ m/s^2$)

(A) 5 m/s **(B)** 10 m/s **(C)** 15 m/s **(D)** 20 m/s

25. The equation of motion of a projectile are given by $x = 36\ t$ *metre* and $2y = 96\ t - 9.8\ t^2$ *metre*. The angle of projection is

(A) $\sin^{-1}\left(\frac{4}{5}\right)$ **(B)** $\sin^{-1}\left(\frac{3}{5}\right)$ **(C)** $\sin^{-1}\left(\frac{4}{3}\right)$ **(D)** $\sin^{-1}\left(\frac{3}{4}\right)$

26. Two rods of the same length and diameter, having thermal conductivities K_1 and K_2, are joined in parallel. The equivalent thermal conductivity of the combination is

(A) K_1K_2/K_1+K_2 **(B)** $K_1 + K_2$ **(C)** $(K1 + K_2)/2$ **(D)** $(K_1K_2)^{1/2}$

27. A body, having a surface area of 5.0 cm^2, radiates 300 J of energy per minute at a temperature of 727°C. The emissivity of the body is (Stefan's constant = $5.67 \times 10^{-8}\ W/m^2/K^4$)

(A) 0.09 **(B)** 0.18 **(C)** 0.36 **(D)** 0.54

28. A boat which has a speed of 5km/h in still water crosses a river of width 1 km along the shortest possible path in 15 minutes. The velocity of the river water in km/h is

(A) 1 **(B)** 3 **(C)** 4 **(D)** 5

29. In a rocket of mass 1000 kg fuel is consumed at the rate of 40 kg/s. The velocity of the gases ejected from the rocket is 5×10^4 m/s. The thrust on the rocket is

(A) 2×10^3 N **(B)** 5×10^4 N **(C)** 2×10^6 N **(D)** 2×10^9 N

30. A solid sphere of mass 1kg and radius 3 cm is rotating about an axis passing through its centre with an angular velocity of 50 rad/s. The kinetic energy of rotation is

(A) 9/20 J **(B)** 90 J **(C)** 910 J **(D)** 4500 J

PART - II (CHEMISTRY)

31. If K_1 and K_2 are the respective equilibrium constants for the two reactions,

$XeF_6(g) + H_2O(g) \rightleftharpoons XeOF_4(g) + 2HF(g)$ $XeO_3(g) + XeF_6(g) \rightleftharpoons XeOF_4(g) + XeO_2F_2(g)$

the equilibrium constant of the reaction, $XeO_3(g) + 2HF(g) \rightleftharpoons XeO_2F_2(g) + H_2O(g)$ will be

(A) $\frac{K_1}{(K_2)^2}$ **(B)** $K_1 . K_2$ **(C)** $\frac{K_1}{K_2}$ **(D)** $\frac{K_2}{K_1}$

32. In the reaction, $4NH_3(g) + 5O_2(g) \longrightarrow 4NO(g) + 6H_2O(l)$ when 1 mole of ammonia and 1 mole of O_2 are made to react to completion what will happen?

(A) 1.0 mole of H_2O will be produced **(B)** 1.0 mole of NO will be produced

(C) all the oxygen will be consumed **(D)** all the ammonia will be consumed

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33. 2-bromopentane is heated with potassium ethoxide in ethanol. The major product obtained is

(A) 2-ethoxypentane **(B)** Pentene-1 **(C)** Pentane **(D)** Pent-2-ene

34. The first ionization potentials (eV) of Be and B respectively are

(A) 8.29, 9.32 **(B)** 9.32, 9.32 **(C)** 8.29, 8.29 **(D)** 9.32, 8.29

35. A group which deactivates the benzene ring towards electrophilic substitution but which directs the incoming group principally to the ortho and para-positions is

(A) $-NH_2$ **(B)** $-Cl$ **(C)** $-NO_2$ **(D)** $-C_2H_5$

36. The solubility product constant K_{sp} of $Mg(OH)_2$ is 9.0×10^{-12}. If a solution is 0.010 M with respect to Mg^{2+} ion, what is the maximum hydroxide ion concentration which could be present without causing the precipitation of $Mg(OH)_2$?

(A) 1.5×10^{-7} M **(B)** 3.0×10^{-7} **(C)** 1.5×10^{-5} M **(D)** 3.0×10^{-5} M

37. Zero dipole moment is possessed by

(A) CIF **(B)** PCl_3 **(C)** $CFCl_3$ **(D)** SiF_4

38. Isostructural pairs out of following are

(A) (NF_3, NO_3^-) and (BF_3, H_3O^+) **(B)** (NF_3, HN_3) and (NO_3^-, BF_3)

(C) (NF_3, H_3O^+) and (NO_3^-, BF_3) **(D)** (NF_3, H_3O^+) and (HN_3, BF_3)

39. $C_2H_2 \xrightarrow[\text{one mole}]{NaNH_2} A \xrightarrow{CH_3CH_2Cl} B$. B will be

(A) Isobutylene **(B)** 2-Butene **(C)** 1-Butyne **(D)** 2-Butyne

40. $CH_2=CH_2 \xrightarrow[CCl_4]{Cl_2} A \xrightarrow{Aq\,KOH} B \xrightarrow[ZnCl_2]{Anhydrous} C$. C will be

(A) Acrolein **(B)** Crotonaldehyde **(C)** Acetaldehyde **(D)** CH_3CH_2OH

41. $CH_3CH_2CH=CH_2 + HBr \rightarrow A \xrightarrow[KOH]{Alc} B \xrightarrow[alk]{dil} C$. C will be

(A) 2-butanol **(B)** butane-2, 3-diol **(C)** butane-1, 4-diol **(D)** 1-butanol

42. In Kjeldahl method, V ml of H_2SO_4 of molarity M are taken for absorbing NH_3 and V_1 ml is vol of NaOH of molarity M for titration of excess H_2SO_4, then % of nitrogen is given by (m gm is mass of organic compound)

(A) $\dfrac{1.4\times M\left(V-\dfrac{V_1}{2}\right)}{m}$ **(B)** $\dfrac{1.4\times M\times 2\left(V-\dfrac{V_1}{2}\right)}{m}$

(C) $\dfrac{1.4\times M\left(V-\dfrac{V_1}{2}\right)}{2m}$ **(D)** $\dfrac{1.4\times M\times 2\left(V-\dfrac{V_1}{2}\right)}{500\,m}$

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43. Benzene reacts with acetyl chloride in the presence of $AlCl_3$ to give

(A) Chlorobenzene **(B)** Toluene **(C)** Acetophenone **(D)** None of these

44. $HC \equiv CH \xrightarrow[Ba(CN)_2]{HCN} A \xrightarrow{Polymerise} B$. B is used to prepare

(A) Pipes **(B)** Foils **(C)** Fibre **(D)** Transparent domes

45. A solution of NH_4HSO_4 is electrolysed. Substance obtained is

(A) H_2SO_4 **(B)** H_2O_2 **(C)** NH_4OH **(D)** $(NH_4)_2O_2$

46. Relative hydrated ionic radii is in the order as

(A) $Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$ **(B)** $Na^+ > Li^+ > K^+ > Rb^+ > Cs^+$

(C) $Cs^+ > Rb^+ > K^+ > Na^+ > Li^+$ **(D)** $Li^+ > Cs^+ > Na^+ > K^+ > Rb^+$

47. Mircro cosmic salt is

(A) $Na(NH_4)HPO_4$ **(B)** $NaHKPO_4$

(C) $(NH_4)NaPO_4$ **(D)** $Na_2(NH_4)PO_4$

48. Which one is not correct for boron and silicon?

(A) Chloride of both B and Si fume in moist air

(B) Mg combines with B and Si both

(C) Both of them exhibit allotropy

(D) Carbide of boron is not hard where SiC is very hard

49. Two elements A (At. Wt. 75) and B (At. Wt. 16) combine to give a compound with 75.8% of A. Formula of compound is

(A) AB **(B)** A_2B **(C)** AB_2 **(D)** A_2B_3

50. H_2S contains 5.88%, hydrogen H_2O contains 11.11% of hydrogen, while SO_2 contains 50% S. These figures illustrate

(A) law of conservation of mass **(B)** law of constant proportion

(C) law of multiple proportion **(D)** law of reciprocal proportion

51. Molarity of $\frac{N}{100}KMnO_4$ in dilute alkaline medium is equal

(A) $\frac{M}{300}$ **(B)** $\frac{M}{200}$ **(C)** $\frac{M}{100}$ **(D)** $\frac{M}{50}$

52. Density of Neon will be highest at

(A) STP **(B)** 0°C, 2 atm **(C)** 273°C, 1 atm **(D)** 273°C, 2 atm

53. Increasing the temperature of an aqueous solutions will cause

(A) decrease in molarity **(B)** decrease in % by volume

(C) decrease in mole fraction **(D)** decrease in % by mass

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54. $A_2B_3 \rightarrow 2A^{+3} + 3B^{-2}$, K_{sp} is given by where x mol L^{-1} is solubility

(A) $K_{sp} = (2x)(3x)$ **(B)** $K_{sp} = (2x)^2(3x)$

(C) $K_{sp} = (2x)^2(3x)^3$ **(D)** $K_{sp} = 2x(3x)^3$

55. Out of following which is correct?

(A) $\Delta H = \Delta E - n_g RT$ **(B)** $\Delta G = \Delta H - \Delta S$

(C) $\Delta G^\circ = -2.303\,RT\log K$ **(D)** $\Delta H = \dfrac{\Delta E}{2.303\,R}\left(\dfrac{1}{T_1} - \dfrac{1}{T_2}\right)$

56. Which of the following is not an electrophile?

(A) SO_3 **(B)** $\overline{C}Cl_2$ **(C)** $\overset{+}{N}O_2$ **(D)** NH_2^-

57. The hybrid orbitals used by bromine atom in BrF_3 are

(A) sp^2 **(B)** sp^3 **(C)** sp^3d **(D)** sp^3d^2

58. The first ionization potential of Mg, Al, P and S follows the order

(A) $Mg < Al < P < S$ **(B)** $Al < Mg < P < S$

(C) $Al < Mg < S < P$ **(D)** $Mg < Al < S < P$

59. As per the uncertainty principle, $\Delta x.\Delta p \geq$

(A) h **(B)** $h/4\pi$ **(C)** x **(D)** Zero

60. The enthalpy change in an isothermal reversible expansion of an ideal gas is

(A) Positive **(B)** Negative **(C)** Zero **(D)** Infinitely large

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PART - III (BIOLOGY)

61. Classification of organisation based on evolutionary as well as genetic relationship is called

(A) Biosystematics **(B)** Phenetics

(C) Numerical taxonomy **(D)** Cladistics

62. Founder of binomial nomenclature was

(A) Linnaeus **(B)** Mendel **(C)** Darwin **(D)** Lamarck

63. The motile bacteria are able to move by

(A) Pili **(B)** Fimbriae **(C)** Flagella **(D)** Cilia

64. True nucleus is absent in:

(A) *Vaucheria* **(B)** *Volvox* **(C)** *Anabaena* **(D)** *Mucor*

65. Which is not correct for fungi belonging to the class Deuteromycetes?

(A) Commonly called imperfect fungi **(B)** Reproduce only by asexual spores

(C) Includes only parasitic fungi **(D)** Mycelium is septate and branched

66. Archegoniophore is present in

(A) *Adiantum* **(B)** *Funaria* **(C)** *Marchantia* **(D)** *Chara*

67. *Selaginella* and *Salvinia* are considered to represent a significant step towards evolution of seed habit because

(A) Female gametophyte is free and gets dispersed like seeds

(B) Female gametophytes lack archegonia

(C) Megaspores possess endosperm and embryo surrounded by seed coat

(D) Embryo develops in female gametophyte which is retained on parent sporophyte.

68. Select an incorrect statement.

(A) The root is covered at the apex by a thimble-like structure called the root cap

(B) Roots in some plants change their shape and structure and become modified.

(C) Pneumatophores, help to get CO_2 for photosynthesis.

(D) Tap roots of carrot, turnips and adventitious roots of sweet potato, get swollen and store food.

69. Type of modified stem meant for vegetative reproduction in pineapple is also present in

(A) Strawberry **(B)** Jasmine **(C)** *Chrysanthemum* **(D)** Grass

70. The rachis in palmately compound leaves

(A) Is absent **(B)** Represents petiole

(C) Represents midrib of leaf **(D)** Branched

71. Select an incorrect statement w.r.t. racemose type of inflorescences.

(A) The main axis continues to grow.

(B) The flowers are borne laterally.

(C) Flowers are borne in an acropetal succession.

(D) All statements are correct.

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72. Promeristem gives rise to

(A) Lateral Meristem **(B)** Cork Cambium

(C) Apical Meristem **(D)** Secondary Meristem

73. Collenchyma differs from sclerenchyma in

(A) Retaining protoplasm at maturity **(B)** Having thick walls

(C) Having wide lumen **(D)** Being meristematic

74. The layer of cells outside the phloem meant for giving rise to the root branches is called

(A) Cambium **(B)** Corpus **(C)** Endodermis **(D)** Pericycle

75. Other names of secondary cortex, cork cambium and cork are

(A) Phellem, phelloderm and phellogen **(B)** Phellogen, phellem and phelloderm

(C) Phelloderm, phellogen and phellem **(D)** Phellogen, phelloderm and phellem

76. The casparian strip is composed of a wax-like substance called

(A) Suberin **(B)** Cutin **(C)** Lignin **(D)** Anthocyanin

77. Imbibition is a type of:

(A) Osmosis **(B)** Active transport **(C)** Bulk flow **(D)** Diffusion

78. Unloading of mineral ions occurs at the fine vein endings through:

(A) Diffusion **(B)** Active uptake **(C)** Both **(A)** and **(B)** **(D)** Mass flow

79. The opening of the stoma is also aided due to the orientation of the microfibrils in the cell walls of the guard cells. Cellulose microfibrils are oriented _____rather than _____making it easier for the stoma to open.

(A) Longitudinally, radially **(B)** Radially, longitudinally

(C) Randomly, radially **(D)** Randomly, longitudinally

80. In Hydroponics:

(A) pH is maintained at 8-9 **(B)** Reuse of water and minerals is possible

(C) Chemically active medium is used **(D)** Yield is not uniform

81. Classification of essential elements is:

(A) A quantitative feature **(B)** Based on the size of minerals

(C) A qualitative feature **(D)** Based on the size of the plant

82. Plants absorb minerals from the soil:

(A) Independently of water absorbtion

(B) By a process independent of water absorbtion

(C) Only when soil solution is hypertonic to cell sap

(D) Only when soil solution is hypotonic to cell sap

83. Shaded plants have

(A) More PSII **(B)** Large grana **(C)** Less PSI **(D)** All of these

84. Release of electrons in photosynthesis occurs from?

(A) Reaction centre **(B)** Quantasome

(C) Antenna molecules **(D)** Both **(A)** & **(B)**

85. In Calvin (C_3 cycle)

(A) 12 ATPs are used for uplifting 12 $NADPH_2$ to act as hydrogen donor

(B) 2 CO_2 entry results in net output of one PGAL.

(C) PGAL is first carbohydrate synthesised

(D) All statements are correct

86. RQ depends upon

(A) Presence or absence of oxygen **(B)** O_2 content of substrate

(C) Nature of substrate **(D)** All of these

87. How many substrate level phosphorylation take place in TCA cycle

(A) 1 **(B)** 2 **(C)** 3 **(D)** 4

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88. Terminal electron acceptor in electron transport system in mitochondria is:

(A) O_2 **(B)** cyt a **(C)** H_2O **(D)** cyt a_3

89. Increased vacuolation, cell enlargement and new cell wall deposition are the characteristics of cells in _____ phase of growth.

(A) Meristematic **(B)** Elongation **(C)** Maturation **(D)** Differentiation

90. Which of the following physiological effects is caused in plants by gibberellic acid?

(A) Shortening of genetically tall plants **(B)** Elongation of genetically dwarf plants

(C) Rooting in stem cuttings **(D)** Yellowing of young leaves

91. Which of the following statement regarding cilia is not correct?

(A) Cilia contains nine doublet microtubules surrounded by two single microtubules.

(B) The organized beating of cilia is controlled by fluxes of Ca^{+2} across the membrane.

(C) Cilia are hair like cellular appendages.

(D) Microtubules of cilia are composed of tubulin proteins.

92. Choose the correct statement:

(A) Lizards show autotomy

(B) Most lizards are oviparous

(C) Poison gland in snakes are modified parotid gland

(D) All of these

93. Which of the following occurs more than one and less than five in a chromosome?

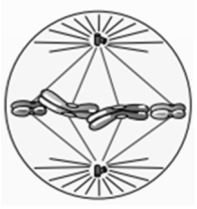
(A) Chromatid **(B)** DNA **(C)** Centromere **(D)** Telomere

94. Red colour of tomato is due to:

(A) Lycopene in chloroplast **(B)** Anthocyanin in leucoplast

(C) Xanthophyll in chloroplast **(D)** Lycopene in chromoplast

95. The given diagram (A) and (B) represents which stage of meiosis?

	(1)	**(2)**
		
(A)	(1) Prophase I	(2) Metaphase I
(B)	(1) Metaphase I	(2) Anaphase I
(C)	(1) Metaphase	(2) Anaphase
(D)	(1) Anaphase	(2) Telophase

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96. Which of the following is not related with synthesis phase of cell cycle?

(A) Duplication of centriole occurs.

(B) 2C amount of DNA is doubled into 4C.

(C) Tubulin and histone protein are synthesized.

(D) Synthesis of histone protein occurs.

97. The statement which is not correct amongst the following is:

(A) Starch is a homopolymer of glucose containing amylose and amylopectin.

(B) Maltose is a disaccharide formed from two glucose units.

(C) Cellulose is a polysaccharide formed from multiple units of glucose.

(D) Inulin is a polymer of NAG.

98. Identify the group that includes nucleotides:

(A) Adenosine , guanosine, Cytidine

(B) Adenylic acid, adenosine, Uridine

(C) Adenylic acid, Uridylic acid, guanylic acid

(D) Adenosine, thymidine, Uridine

99. Holoenzyme is:

(A) Apoenzyme + cofactor + prosthetic group

(B) Prosthetic group + cofactor

(C) Apoenzyme + apoenzyme

(D) Apoenzyme + cofactor

100. Which characteristic is not true for chordates?

(A) Pharynx is perforated by gill slits

(B) Presence of post anal tail

(C) Heart is dorsal

(D) Bilaterally symmetrical, triploblastic, coelomate

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101. Given below are the characteristics of the following animal. Which of these are true?

(i) Migrate to fresh water for spawning

(ii) They have paired fins

(iii) Circulation is of open type

(iv) Vertebral column is cartilaginous

(A) ii & iii **(B)** i & iii **(C)** i & iv **(D)** ii & iv

102. The muscle tissue type that consists of single, very long, cylindrical, multinucleate cells with very obvious striations is:

(A) skeletal muscle only **(B)** cardiac and smooth muscle

(C) cardiac and skeletal muscle **(D)** cardiac muscle only

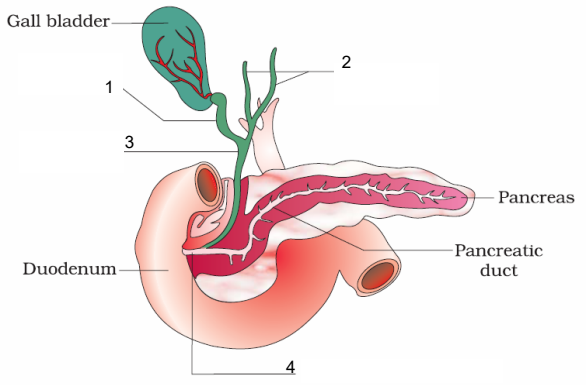
103. Which of the following statement is false?

(A) Cell body of neuron has nucleus **(B)** Nissl's granules are present in cyton

(C) Unmyelinated axons do not have Schwann cells

(D) A neuron can have one dendrite & one axon

104. In the given diagram cystic duct and common bile duct are:



(A) 1 and 4 **(B)** 2 and 3 **(C)** 1 and 3 **(D)** 4 and 2

105. After ingestion, the first type of macromolecule to be worked on by enzymes in the human digestive system is:

(A) protein **(B)** carbohydrate **(C)** cholesterol **(D)** glucose

106. The diffusion membrane, through which gaseous exchange occur in the lungs comprises of:

(A) Alveolar epithelium & capillary endothelium.

(B) Alveolar epithelium & capillary endothelium and the basement membrane between them.

(C) Only alveolar epithelium.

(D) Alveolar epithelium and basement membrane of alveoli.

107. Read the given statement and fill in the blanks:

"Blood is the medium for transport of gases. About ___**(I)**___% of CO_2 is transported in dissolved form through plasma while around ____**(II)**_____% is transported through RBC."

	(I)	**(II)**
(A)	7%	70%
(B)	70%	20-25%
(C)	20-25%	7%
(D)	7%	20-25%

108. Mark the correct statement regarding the events of cardiac cycle:

(A) Atrial filling is always active and it is followed by first heart sound

(B) Second heart sound occurs after the completion of ventricular systole

(C) Closing of semilunar valve in heart depends upon increase in auricular pressure and decrease in ventricular pressure respectively

(D) Joint diastole begins after the completion of atrial systole

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109. In resting stage normal activity of heart is regulated by:

(i) Nodal tissue of heart (ii) Medulla oblongata

(iii) Purkinje fibres

(iv) Branches of sympathetic and parasympathetic nervous system

(A) i, ii, iii, iv **(B)** i, ii only **(C)** i, iii only **(D)** ii, iv only

110. The structural and functional units of kidney:

(A) Neuron **(B)** Nephridia

(C) Uriniferous tubule **(D)** Renal tubule

111. Renal corpuscle consists of:

(A) Glomerulus only **(B)** Afferent and efferent arterioles

(C) Glomerulus and Bowman's capsule **(D)** Malphigian body and Renal tubule

112. Following are the events which occur during muscle contraction. Arrange them in a proper sequence:

(i) The sarcoplasmic reticulum releases the stored Ca^{++} which binds with the specific sites present on the troponin component of the thin filaments.

(ii) A neurotransmitter is released at the neuromuscular junction.

(iii) The sarcolemma is depolarised which results in the inflow of Na^{+} inside the sarcomere.

(iv) Conformational change occurs in the troponin molecule and the active sites present on F-actin molecules are exposed.

(v) Myosin head, now binds with active site of actin.

(vi) During relaxation, the Ca^{++} is pumped back into the sarcoplasmic reticulum. Troponin masks the active sites for the myosin.

(A) c, b, d, a, e, f **(B)** b, c, d, a, e, f **(C)** b, c, a, d, e, f **(D)** b, c, a, e, d, f

113. Which of the following is not correct for red muscle fibres?

(A) Myoglobin content is very high

(B) Amount of mitochondria is very high

(C) They have very high concentration of endoplasmic reticulum

(D) They are also called aerobic muscle fibres

114. In the digestive system of cockroach gastric caecae are present at the junction of:

(A) Mid gut and hind gut **(B)** Hind gut and fore gut

(C) Fore gut and mouth **(D)** Mid gut and fore gut

115. On application of a stimulus on the axonal membrane:

(A) There is a rapid influx of K^{+} at that site

(B) There is a rapid efflux of Na^{+} at that site

(C) There is a rapid influx of Na^{+} at that site

(D) There is a rapid efflux of K^{+} at that site

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116. All of the following are parts of forebrain, except

(A) Cerebellum **(B)** Corpus callosum

(C) Association areas **(D)** Hypothalamus

117. The eustachian tube connects _____with the _____:

(A) External auditory canal, middle ear cavity

(B) Middle ear cavity, pharynx

(C) External auditory canal, labyrinth

(D) Cochlea, larynx

118. The hormone which regulates the basal metabolism in our body is secreted from:

(A) Adrenal cortex **(B)** Pancreas **(C)** Pituitary **(D)** Thyroid

119. Calcitonin is a thyroid hormone which:

(A) Elevates calcium level in blood **(B)** Has no effect on calcium

(C) Elevates potassium level in blood **(D)** Lowers calcium level in blood

120. The gonadotropic hormones are secreted by:

(A) Anterior lobe of pituitary **(B)** Interstitial cells of testes

(C) Adrenal cortex **(D)** Posterior part of thyroid

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End of Sample Paper | 1 Year Medical | Paper III

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Answers to Sample Paper | 1 Year Medical

Sample Paper – III

PHYSICS		CHEMISTRY		BIOLOGY			
1.	(B)	**31.**	(D)	**61.**	(D)	**91.**	(A)
2.	(B)	**32.**	(C)	**62.**	(A)	**92.**	(D)
3.	(B)	**33.**	(D)	**63.**	(C)	**93.**	(A)
4.	(C)	**34.**	(D)	**64.**	(C)	**94.**	(D)
5.	(B)	**35.**	(B)	**65.**	(C)	**95.**	(C)
6.	(A)	**36.**	(D)	**66.**	(C)	**96.**	(C)
7.	(D)	**37.**	(D)	**67.**	(D)	**97.**	(D)
8.	(A)	**38.**	(C)	**68.**	(C)	**98.**	(C)
9.	(D)	**39.**	(C)	**69.**	(A)	**99.**	(D)
10.	(A)	**40.**	(C)	**70.**	(A)	**100.**	(C)
11.	(C)	**41.**	(B)	**71.**	(D)	**101.**	(C)
12.	(C)	**42.**	(B)	**72.**	(C)	**102.**	(A)
13.	(D)	**43.**	(C)	**73.**	(A)	**103.**	(C)
14.	(B)	**44.**	(C)	**74.**	(D)	**104.**	(C)
15.	(B)	**45.**	(B)	**75.**	(C)	**105.**	(B)
16.	(C)	**46.**	(A)	**76.**	(A)	**106.**	(B)
17.	(D)	**47.**	(A)	**77.**	(D)	**107.**	(D)
18.	(C)	**48.**	(D)	**78.**	(C)	**108.**	(B)
19.	(A)	**49.**	(D)	**79.**	(B)	**109.**	(A)
20.	(C)	**50.**	(D)	**80.**	(B)	**110.**	(C)
21.	(C)	**51.**	(C)	**81.**	(A)	**111.**	(C)
22.	(C)	**52.**	(B)	**82.**	(B)	**112.**	(C)
23.	(C)	**53.**	(A)	**83.**	(B)	**113.**	(C)
24.	(B)	**54.**	(C)	**84.**	(A)	**114.**	(D)
25.	(A)	**55.**	(C)	**85.**	(D)	**115.**	(C)
26.	(C)	**56.**	(D)	**86.**	(D)	**116.**	(A)
27.	(D)	**57.**	(C)	**87.**	(A)	**117.**	(B)
28.	(B)	**58.**	(C)	**88.**	(A)	**118.**	(D)
29.	(C)	**59.**	(B)	**89.**	(D)	**119.**	(D)
30.	(A)	**60.**	(C)	**90.**	(B)	**120.**	(A)

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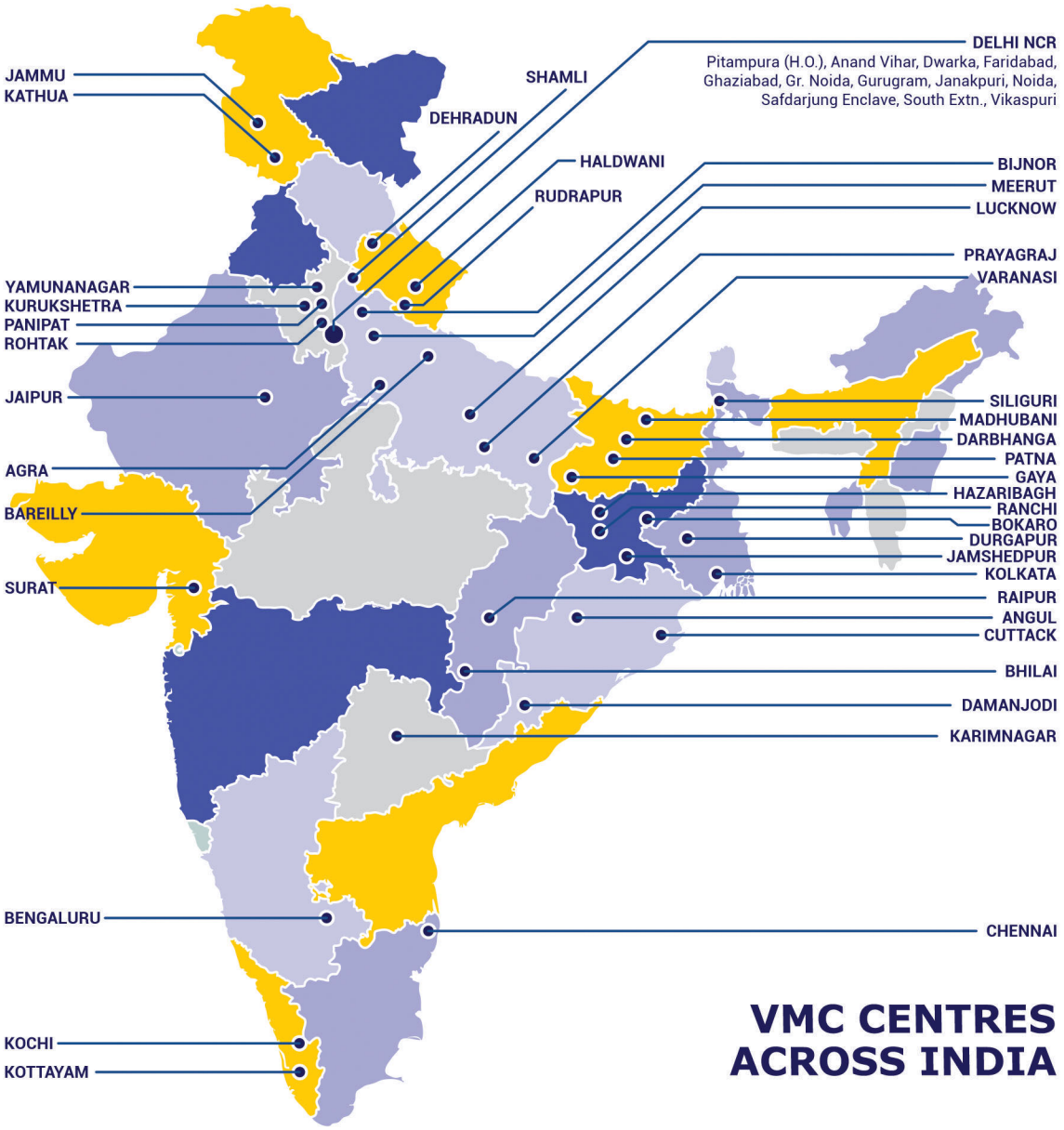

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