ROAD TO BOARD

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Studymate Foundation Paper

Date : 23/12/2018 Duration : 90 Min. Max. Marks : 90	Physics, Chemistry & Mathematics/Biology (Set-2)	CLASS XI

General Instructions:

1. All questions are compulsory.
2. Each question is allotted ONE mark for each correct response.
3. No deduction from the total score will be made if no response is indicated for the question in the answer sheet.
4. There is only **ONE** correct response for each question. Filling up **MORE THAN ONE** response in each question will be treated as wrong response.
5. The paper contains 90 questions (Physics 1-30, Chemistry 31-60, Mathematics 61-90 / Biology 61-90).
6. **NON-MEDICAL** students attempt Physics, Chemistry and Mathematics and **MEDICAL** Students attempt Physics, Chemistry and Biology.
7. Use of calculators is not allowed.

Physics

1. Error in the measurement of radius of a sphere is 1%. Then error in the volume is

(a) 1% (b) 5% (c) 3% (d) 8%

2. In the equation $S_{nth} = u + \frac{a}{2}(2n-1)$, the letters have their usual meanings. The dimensional formula of S_{nth} is

(a) $[M^1L^0T^1]$ (b) $[M^1L^{-1}T^{-1}]$ (c) $[M^0L^1T^{-1}]$ (d) $[M^0L^1T^0]$

3. If $|\vec{v_1} + \vec{v_2}| = |\vec{v_1} - \vec{v_2}|$ and $|\vec{v_2}|$ is finite then

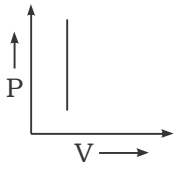
(a) $\vec{v_1}$ is parallel to $\vec{v_2}$ (c) $\vec{v_1} = \vec{v_2}$

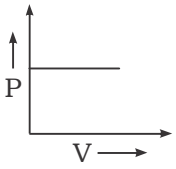
(c) $|\vec{v_1}| = |\vec{v_2}|$ (d) $\vec{v_1}$ and $\vec{v_2}$ is mutually perpendicular

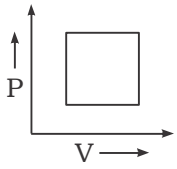
4. Two particles of equal masses are revolving in circular paths of radii r_1 and r_2 respectively with the same time period. The ratio of their centripetal force is

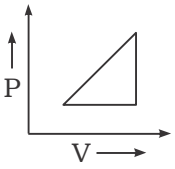
(a) r_1 / r_2 (b) $\sqrt{r_2 / r_1}$ (c) $(r_1/r_2)^2$ (d) $(r_2 / r_1)^2$

5. In which of the following cases, the work done by a gas is minimum?

(I) 

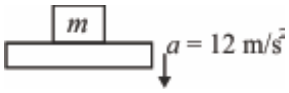
(II) 

(III) 

(IV) 

(a) (I) (b) (II) (c) (III) (d) (IV)

6. A block is kept on the floor of an elevator at rest. The elevator starts descending with an acceleration of 12 m/s^2. Taking g = 10 m/s^2, find out the displacement of the block during the first 0.2 sec after the start.

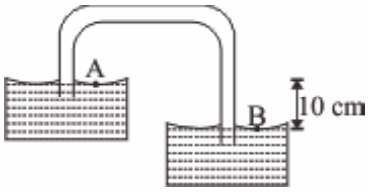


(a) 0.04 meter (b) 0.24 meter (c) 0.2 meter (d) 0.02 meter

7. A satellite is orbiting around the earth with a period T. If the earth suddenly shrinks to half its radius without change in mass, the period of revolution of the satellite will be

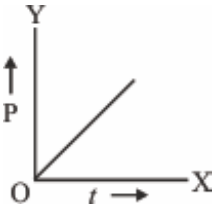
(a) $\frac{T}{\sqrt{2}}$ (b) $\frac{T}{2}$ (c) $\frac{T}{2\sqrt{2}}$ (d) $\sqrt{2}\,T$

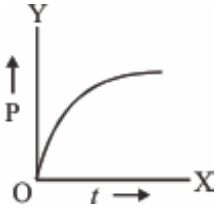
8. Figure shows a siphon. The liquid is water. The pressure difference $P_B - P_A$ between the points A and B is

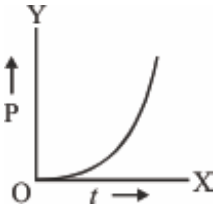


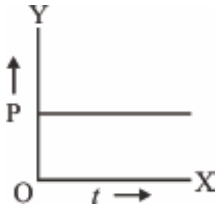
(a) 400 Nm^{-2} (b) 3000 Nm^{-2} (c) 1000 Nm^{-2} (d) Zero

9. A motor drives a body along a straight line with a constant force. The power P developed by the motor must vary with time t. Identify the correct graph.

(a) 

(b) 

(c) 

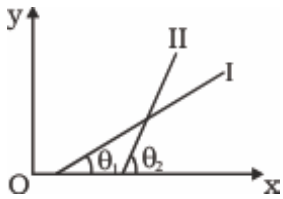
(d) 

10. In which of the following media will sound travel the fastest?

(a) Solid (b) Both solid and liquid

(c) Liquid (d) Gas

11. In the following given curves the relation between the slopes will be



(a) $\tan\theta_1 > \tan\theta_2$ (b) $\tan\theta_2 > \tan\theta_1$ (c) $\tan\theta_1 = \tan\theta_2$ (d) None of these

12. What will be the value of acceleration due to gravity at the surface of a planet having radius $\left(\frac{1}{4^{th}}\right)$ to radius of earth and density half of the earth :

(a) $\frac{g}{2}$ (b) 2g (c) $\frac{g}{8}$ (d) g

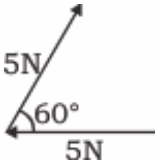
13. A stone is dropped into a well. If the depth of water below the top be h and velocity of sound in air be v, then the time after which splash of sound is heard is

(a) $\sqrt{\frac{2h}{g}}+\frac{h}{v}$ (b) $\sqrt{\frac{2h}{g}}-\frac{h}{v}$ (c) $\sqrt{\frac{2h}{g}}$ (d) $\sqrt{\frac{2h}{g}}\times\frac{h}{v}$

14. In the relation $\left(P+\frac{a}{V^2}\right)(V-b)=R\theta$. Where p = pressure, V = volume, R = gas const., θ = temperature & a and b are some constant. the dimension of b is

(a) $M^{\circ}L^{3}T^{\circ}$ (b) $M^{\circ}L^{-3}T^{\circ}$ (C) $ML^{2}T^{\circ}$ (d) None of these

15. Two force, each numerically equal to 5N, are acting as shown in the figure. Then the resultant is



(a) 2.5 N (b) 5 N (c) $5\sqrt{3}$N (d) 10 N

16. A carnot engine has an efficiency of 50% when its sink temperature is 27°C. What must be the change in its source temperature for making efficiency 60%?

(a) 250 K (b) 200 K (c) 180 K (d) 150 K

17. Find the torque of a force $\vec{F}=(-3\hat{i}+\hat{j}+5\hat{k})N$ acting at the point $\vec{r}=(7\hat{i}+3\hat{j}+\hat{k})m$ about the origin

(a) $14\hat{i}-38\hat{j}+16\hat{k}$ (b) $4\hat{i}+4\hat{j}+6\hat{k}$ (c) $-14\hat{i}+38\hat{j}-16\hat{k}$ (d) $-4\hat{i}-4\hat{j}-6\hat{k}$

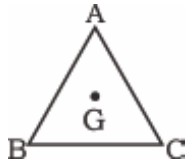
18. Three particles each of mass m are located at the vertices of an equilateral triangle ABC. They start moving with equal speed v each along the medians of the triangle and collide at its centroid G. If after collision, A comes to rest and B retraces its path along GB, then C

(a) also comes to rest

(b) moves with a speed v along CG

(c) moves with a speed v along BG

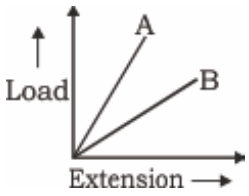
(d) moves with a speed v along AG



19. A man can swim in still water with a velocity of 10 km/h, when the water of the river is flowing with some velocity. When the man swims at an angle of 30° with the normal on the bank of the river, he reaches the point just opposite to the starting point. The velocity of the water of the river is

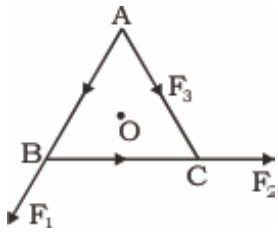
(a) 10 km/h (b) 5 km / h (c) $5\sqrt{2}$km / h (d) $10\sqrt{2}$km / h

20. The dimensions of two wires A and B are the same But their materials are different. Their load-extension graphs are shown. If Y_A and Y_B are the values of Young's modulus of elasticity of A and B respectively, then



(a) $Y_A > Y_B$ (b) $Y_A < Y_B$ (c) $Y_A = Y_B$ (d) $Y_B = 2Y_A$

21. O is the centre of an equilateral triangle ABC. F_1, F_2 and F_3 are the three forces acting along the sides AB, BC and AC respectively. What should be the value of F_3 so that the total torque about O is zero?



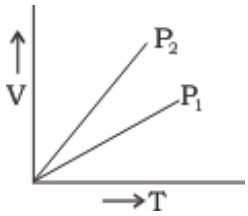
(a) $2(F_1 + F_2)$

(b) $\frac{F_1 + F_2}{2}$

(c) $F_1 - F_2$

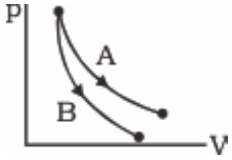
(d) $F_1 + F_2$

22. V versus T curves at constant pressures P_1 and P_2 for an ideal gas are shown in figure. Here



(a) $P_1 > P_2$ (b) $P_1 < P_2$ (c) $P_1 = P_2$ (d) $P_1 \geq P_2$

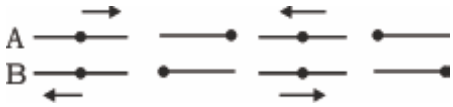
23. Consider the processes A and B shows in figure. It is possible that



(a) both the processes are isothermal (b) both the processes are adiabatic

(c) A is isothermal and B is adiabatic (d) A is adiabatic and B is isothermal

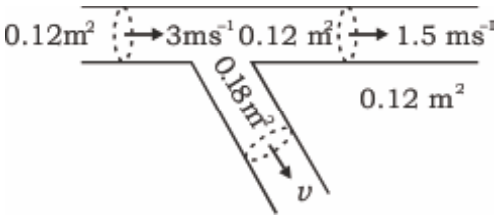
24. Figure represents two simple harmonic motions



The parameter which has different values in the two motions is

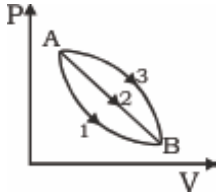
(a) amplitude (b) frequency (c) phase (d) maximum velocity

25. An incompressible liquid travels as shown in figure. The speed of the fluid in the lower branch will be



(a) 1 ms^{-1} (b) 1.5 ms^{-1} (c) 2.25 ms^{-1} (d) 3 ms^{-1}

26. An ideal gas of mass m in a state A goes to another state B via three different process as shown in figure. If Q_1, Q_2 and Q_3 denote the heat absorbed by the gas along the three paths, then



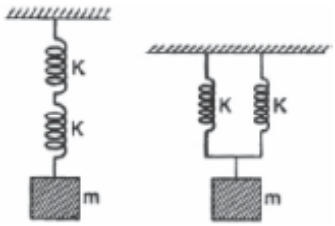
(a) $Q_1 < Q_2 < Q_3$ (b) $Q_1 < Q_2 = Q_3$ (c) $Q_1 = Q_2 > Q_3$ (d) $Q_1 > Q_2 > Q_3$

27. A particle moves in a circular path with a uniform speed. Its motion is

(a) periodic (b) oscillatory

(c) simple harmonic (d) angular simple harmonic

28. Two identical springs, each of spring constant K, are connected in series and parallel as shown in figure. A mass m is suspended from them. The ratio of their frequencies of vertical oscillations will be



(a) 2 : 1 (b) 1 : 1 (c) 1 : 2 (d) 4 : 1

29. Which of the following is correct?

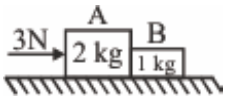
(a) A particle moving with constant speed can have variable acceleration

(b) A particle moving with constant velocity can have variable acceleration

(c) If velocity of the particle is zero, acceleration must be zero

(d) If acceleration of the particle is zero, velocity must be zero

30. Two blocks A and B of masses 2 kg and 1 kg rest on a friction less surface. A force of 3 N acts on A as shown in figure. The force exerted by A on B is



(a) 1 N (b) 3 N

(c) 2 N (d) Zero

Chemistry

31. The increasing order of the ionic radii of the given isoelectronic species is

(a) S^{2-}, Cl^-, Ca^{2+}, K^+ (b) Ca^{2+}, K^+, Cl^-, S^{2-} (c) K^+, S^{2-}, Ca^{2+}, Cl^- (d) Cl^-, Ca^{2+}, K^+, S^{2-}

32. The species having bond order different from that in CO is

(a) NO^- (b) NO^+ (c) CN^- (d) N_2

33. Which of the following is a polar molecule?

(a) BF_3 (b) SF_4 (c) SiF_4 (d) XeF_4

34. In order to increase the volume of a gas by 10%, the pressure of the gas should be

(a) decreased by 10% (b) decreased by 1% (c) increased by 10% (d) increased by 1%

35. The density of a gas is 1·964 g dm^{-3} at 273 K and 76 cm Hg. The gas is

(a) CH_4 (b) C_2H_6 (c) CO_2 (d) Xe

36. For a reaction A + 2B $\rightarrow$ C, the amount of C formed by starting the reaction with 5 moles of A and 8 moles of B is

(a) 5 moles (b) 8 moles (c) 16 moles (d) 4 moles

37. Which has the maximum number of molecules among the following?

(a) 44 g of CO_2 (b) 48 g O_2 (c) 8 g H_2 (d) 64 g SO_2

38. The wave number of the spectral line in the emission spectrum of hydrogen will be equal to 8/9 times the Rydberg's constant if the electron jumps from

(a) $n = 3$ to $n = 1$ (b) $n = 10$ to $n = 1$ (c) $n = 9$ to $n = 1$ (d) $n = 2$ to $n = 1$

39. The following quantum numbers are possible for how may orbitals?

$n = 3, l = 2, m = +2$

(a) 1 (b) 2 (c) 3 (d) 4

40. The correct decreasing order first ionization enthalpies of five elements of the second period is

(a) Be > B > C > N > F (b) N > F > C > B > Be (c) F > N > C > Be > B (d) F > C > N > B > Be

41. $Zn^{2+} \rightarrow Zn(s)$; $E° = -0.76$ V $Cu^{2+} \rightarrow Cu(s)$; $E° = -0.34$ V

Which of the following is spontaneous?

(a) $Zn^{2+} + Cu \rightarrow Zn + Cu^{2+}$ (b) $Cu^{2+} + Zn \rightarrow Cu + Zn^{2+}$

(c) $Zn^{2+} + Cu^{2+} \rightarrow Zn + Cu$ (d) none of these

42. The salt responsible for permanent hardness of H_2O is

(a) Na_2SO_4 (b) $Mg(HCO_3)_2$ (c) NaCl (d) $MgCl_2$

43. The least stable hydride of 15th group is

(a) NH_3 (b) PH_3 (c) AsH_3 (d) BiH_3

44. The sequence of ionic mobility in aqueous solution is

(a) $Rb^+ > K^+ > Cs^+ > Na^+$ (b) $Na^+ > K^+ > Rb^+ > Cs^+$

(c) $K^+ > Na^+ > Rb^+ > Cs^+$ (d) $Cs^+ > Rb^+ > K^+ > Na^+$

45. Which pair of the following chlorides do not impart colour to the flame?

(a) $BeCl_2$ and $SrCl_2$ (b) $BeCl_2$ and $MgCl_2$ (c) $MgCl_2$ and $CaCl_2$ (d) $BaCl_2$ and $SrCl_2$

46. The value of enthalpy change (ΔH) for the reaction

$C_2H_5OH(l) + 3O_2(g) \rightarrow 2CO_2(g) + 3H_2O(l)$

at 27°C is –1366·5 kJ mol^{-1}. The value of internal energy change for the above reaction at this temperature will be

(a) –1371·5 kJ (b) –1369·0 kJ (c) –1364·0 kJ (d) –1361·5 kJ

47. For reaction $2Cl(g) \rightarrow Cl_2(g)$, the signs of ΔH and ΔS respectively are

(a) +,– (b) +,+ (c) –,– (d) –,+

48. Which one of the following molecular hydrides acts as a Lewis acid?

(a) CH_4 (b) NH_3 (c) H_2O (d) B_2H_6

49. The hydrogen ion concentration of a 10^{-8} M HCl aqueous solution at 298 K ($K_w = 10^{-13}$) is

(a) $9·525 \times 10^{-8}$ M (b) $1·0 \times 10^{-8}$ M (c) $1·0 \times 10^{-6}$ M (d) $1·0525 \times 10^{-7}$ M

50. Which of the following species can function both as oxidising as well as reducing agent?

(a) Cl^- (b) ClO^-_4 (c) ClO^- (d) MnO^-_4

51. Among the following, the alkene on ozonolysis giving rise to only one aldehyde as the product is

(a) But-1-ene (b) Propane

(c) But-2-ene (d) 2-Methylprop-1-ene

52. Which of the following compounds will show geometrical isomerism?

(a) cyclohexene (b) hex-2-ene

(c) hex-3-yne (d) 1,1-diphenylethylene

53. The alkene that will give the same product with HBr in the absence as well as in the presence of peroxide as

(a) But-2-ene (b) But-1-ene (c) propane (d) hex-1-ene

54. 'White lung cancer' is caused by

(a) asbestos (b) silica (c) textiles (d) paper

55. London smog is found in

(a) Summer during day time (b) Summer during morning time

(c) Winter during morning time (d) Summer during day time

56. The stability of +1 oxidation state increases in the sequence

(a) Ga < In < Al < Tl (b) Al < Ga < In < Tl (c) Tl < In < Ga < Al (d) In < Tl < Ga < Al

57. The structure of diborane (B_2H_6) contains

(a) four 2c-2e bonds and two 3c-2e bonds (b) two 2c-2e bonds and four 3c-2e bonds

(c) two 2c-2e bonds and two 3c-2e bonds (d) four 2c-2e bonds and four 3c-2e bonds

58. In hexa-1, 3-dien-5-yne, the number of C–C, σ, C–C π and C–H σ bonds respectively are

(a) 5, 4 and 6 (b) 6, 3 and 5 (c) 5, 3 and 6 (d) 6, 4 and 5

59. The IUPAC name of the compound $CH_3CH = CHC \equiv CH$ is

(a) Pent-4-yn-2-ene (b) Pent-3-en-1-yne (c) Pent-4-en-4-yne (d) Pent-1-yn-3-ene

60. Which of the following species is not electrophilic in nature?

(a) Cl^+ (b) BH_3 (c) H_3O^+ (d) $^+NO_2$

FOR NON-MEDICAL STUDENTS ONLY

Mathematics

61. The value of $\sin(45° + \theta) - \cos(45° - \theta)$ is

(a) $2\cos\theta$ (b) $2\sin\theta$ (c) 1 (d) 0

62. If $\sin\theta + \cos\theta = 1$, then the value of $\sin 2\theta$ is equal to

(a) 1 (b) ½ (c) 0 (d) –1

63. If $x^n - 1$ is divisible by $x - k$, then the least positive value of k is

(a) 1 (b) 2 (c) 3 (d) 4

64. The value of $1 + i^2 + i^4 + i^6 + ... + i^{20}$ is

(a) 1 (b) –1 (c) 0 (d) 2

65. What is the value of $\frac{i^{4n+1} - i^{4n-1}}{2}$?

(a) 1 (b) i (c) –1 (d) $-i$

66. In a town of 840 persons, 450 persons read Hindi, 300 read English and 200 read both. Then the number of person who read neither is

(a) 240 (b) 290 (c) 180 (d) 160

67. Let $n(A) = m$ and $n(B) = n$. Then the total number of non-empty relations that can be defined from A to B is

(a) m^n (b) $n^m - 1$ (c) $mn - 1$ (d) $2^{mn} - 1$

68. The domain and range of the real function f defined by $f(x) = \frac{4-x}{x-4}$ is given by

(a) Domain = R, Range = {–1, 1}
(b) Domain = R – {–1}, Range = R
(c) Domain = R – {4}, Range = {–1}
(d) Domain = R – {–4}, Range = {–1, 1}

69. The value of $\frac{1-\tan^2 15°}{1+\tan^2 15°}$ is

(a) 1 (b) $\sqrt{3}$ (c) $\frac{\sqrt{3}}{2}$ (d) 2

70. The value of tan 3A – tan 2A – tan A is equal to

(a) tan 3A tan 2A tan A
(b) –tan 3A tan 2A tan A
(c) tan A tan 2A – tan 2A tan 3A – tan 3A tan A
(d) None of these

71. In an A.P. the p^{th} term is q and the $(p + q)$th term is 0. Then the q^{th} term is

(a) $-p$ (b) p (c) $p + q$ (d) $p - q$

72. Sum of $1^2 + 2^2 + 3^2 + ...+ n^2$ is

(a) $\frac{n(n+1)(n+2)}{6}$ (b) $\frac{n(n+1)(2n+1)}{6}$ (c) $\frac{n(n+1)(n-1)}{3}$ (d) $\frac{n(n-1)(n-2)}{3}$

73. Equation of line passing through (1, 2) and parallel to the line $y = 3x - 1$ is

(a) $y + 2 = x + 1$ (b) $y + 2 = 3(x + 1)$ (c) $y - 2 = 3(x - 1)$ (d) $y - 2 = x - 1$

74. If a, b, c are in A.P., then the straight line $ax + by + c = 0$ will always pass through

(a) (1, 2) (b) (1, – 2) (c) (2, 1) (d) (–2, 1)

75. The equation of the circle which passes through the point (4, 5) and has its centre at (2, 2) is

(a) $(x-2)^2 + (y-2)^2 = 13$
(b) $(x-2)^2 + (y-2)^2 = 26$
(c) $(x-2)^2 + (y+2)^2 = 13$
(d) $(x+2)^2 + (y+2)^2 = 13$

76. Given that x, y and b are real numbers $x < y$, $b < 0$, then

(a) $\frac{x}{b} < \frac{y}{b}$ (b) $\frac{x}{b} \le \frac{y}{b}$ (c) $\frac{x}{b} > \frac{y}{b}$ (b) $\frac{x}{b} \ge \frac{y}{b}$

77. There are 10 lamps in a hall. Each one of them can be switched on independently. Find the number of ways in which the hall can be illuminated.

(a) $2^{10} - 1$ (b) 2^{10} (c) 10! (d) 10^2

78. Every body in a room shakes hands with everybody else. The total number of shakes is 66. The total number of persons in the room is

(a) 11 (b) 12 (c) 13 (d) 14

79. The total number of terms in the expansion of $(x + a)^{51} - (x - a)^{51}$ after simplification is

(a) 102 (b) 25 (c) 26 (d) None of these

80. If the coefficient of x^7 and x^8 in $\left(2+\frac{x}{3}\right)^n$ are equal, then n is

(a) 56 (b) 55 (c) 45 (d) 15

81. If ${}^nC_{12} = {}^nC_8$, then n is equal to

(a) 20 (b) 12 (c) 6 (d) 30

82. The mean deviation of the data 2, 9, 9, 3, 6, 9, 4 from the mean is

(a) 2.23 (b) 2.57 (c) 3.23 (d) 3.57

83. If the focus of a parabola is (0, –3) and its directrix is $y = 3$, then its equation is

(a) $x^2 = -12y$ (b) $x^2 = 12y$ (c) $y^2 = -12x$ (d) $y^2 = 12x$

84. In a non-leap year, the probability of having 53 tuesdays or 53 wednesdays is

(a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) None of these

85. A single letter is selected at random from the word 'PROBABILITY'. The probability that it is a vowel is

(a) $\frac{1}{3}$ (b) $\frac{4}{11}$ (c) $\frac{2}{11}$ (d) $\frac{3}{11}$

86. The length of the foot of perpendicular drawn from the point $P(3, 4, 5)$ on y-axis is

(a) 10 (b) $\sqrt{34}$ (c) $\sqrt{113}$ (d) $5\sqrt{2}$

87. $\lim_{x\to 0}\frac{\sin x}{x(1+\cos x)}$ is equal to

(a) 0 (b) $\frac{1}{2}$ (c) 1 (d) –1

88. $\lim_{x\to 0}\frac{|x|}{x}$ is equal to

(a) 1 (b) –1 (c) 0 (d) Does not exist

89. If $f(x) = x \sin x$, then $f'\left(\frac{\pi}{2}\right)$ is equal to

(a) 0 (b) 1 (c) –1 (d) $\frac{1}{2}$

90. $\lim_{x\to \pi}\frac{\sin x}{x-\pi}$ is

(a) 1 (b) 2 (c) –1 (d) –2

FOR MEDICAL STUDENTS ONLY

Biology

61. Which of the following pairs of animals has non glandular skin?

(a) Snake and Frog (b) Chameleon and Turtle

(c) Frog and Pigeon (d) Crocodile and Tiger

62. Which one of the following statements is incorrect?

(a) Mesoglea is present in between ectoderm and endoderm in Obelia.

(b) Radial symmetry is found in Asterias

(c) Fasciola is a pseudocoelomate animal

(d) Taenia is a triploblastic animal

63. Phylum _____ have two different types of symmetry "Radial & bilateral".

(a) Coelenterata (b) Platyhelminthes (c) Nematoda (d) Echinodermata

64. Body cavity is the cavity present between body wall and gut wall. In some animals the body cavity is not lined by mesoderm. Such animals are called

(a) Acoelomate (b) Pseudocoelomate (c) Coelomate (d) Haemocoelomate

65. Rearrange the following zones as seen in the root in vertical section and choose the correct option.

A. Root hair zone
B. Zone of meristems
C. Rootcap zone
D. Zone of maturation
E. Zone of elongation

Options:

(a) C, B, E, A, D (b) A, B, C, D, E (c) D, E, A, C, B (d) E, D, C, B, A

66. As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics

(a) will decrease
(b) will increase
(c) remain same
(d) may increase or decrease

67. Match the following and choose the correct option:

A. Family	i. tuberosum
B. Kingdom	ii. Polymoniales
C. Order	iii. Solanum
D. Species	iv. Plantae
E. Genus	v. Solanacea

Options

(a) i-D, ii-C, iii-E, iv-B, v-A
(b) i-E, ii-D, iii-B, iv-A, v-C
(c) i-D, ii-E, iii-B, iv-A, v-C
(d) i-E, ii-C, iii-B, iv-A, v-D

68. Difference between Virus and Viroid is

(a) absence of protein coat in viroid but present in virus

(b) presence of low molecular weight RNA in virus but absent in viroid

(c) both (a) and (b)

(d) none of the above

69. A Prothallus is

(a) a structure in pteridophytes formed before the thallus develops.

(b) a sporophytic free living structure formed in pteridophytes.

(c) a gametophyte free living structure formed in pteridophytes.

(d) a primitive structure formed after fertilization in pteridophytes.

70. If the diploid number of a flowering plant is 36. What would be the chromosome number in its endosperm ?

(a) 36 (b) 18 (c) 54 (d) 72

71. Pericycle in roots is never thick and sclerenchymatous because

(a) It does not act as mechanical tissue in roots.

(b) It gives rise to root hair

(c) It is place of origin of lateral roots

(d) It gives rise both to root hairs and root branches

72. Coleoptile and coleorhiza are protective coverings in maize grain. Which is true?

(a) Coleorhiza is a covering of plumule (b) Coleoptile is covering of radicle

(c) Coleoptile is covering of plumule (d) Coleorhiza is covering of endosperm

73. If a plant bears unisexual, bisexual and even neutral flowers, it is called

(a) Bisexual (b) Polygamous (c) Bigamous (d) Monoecious

74. Lateral line system found in fishes has been lost in Amphibia because of

(a) Development of sturdy legs

(b) Change over to herbivorous feeding

(c) Occurrence of metamorphosis in Amphibia

(d) Evolution to terrestrial habitat

75. Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristic features of phylum

(a) Coelenterata (b) Porifera (c) Mollusca (d) protozoa

76. The protoplasmic strands connecting the two adjacent plant cells through which exchange of material occur are called

(a) Plasmalemma (b) Plasmodesmata (c) Tonofibrils (d) Spindle fibers

77. In cockroach, the excretory organs are Malpighian tubules. They are found on the

(a) Distal region of mid gut (b) Proximal region of mid gut

(c) Proximal region of hind gut (d) Junction of mid gut and hind gut

78. Which of the following is an anticoagulant and checks blood coagulation in blood vessels?

(a) Prothrombin (b) Globulin (c) Thromboplastin (d) Heparin

79. The oblique cross connections to form a contractile network of fibers and the intercalated discs are characteristically found in

(a) Striated muscle (b) Unstriated muscle(C) Cardiac muscle (d) Radial muscle

80. Go through the following statement.

(i) The cambium is generally more active on the inner side than on the outer.

(ii) The autumn wood is darker and has a higher density than spring wood.

(iii) In stem, the secondary xylem shows distinction into protoxylem and metaxylem and occurs in the form of patches.

(iv) The tracheids and vessels of the sapwood get plugged by the ingrowth of the adjacent parenchyma cells into their cavities, called tyloses.

Which of these are correct?

(a) (i), (ii) & (iii) (b) (i), (ii) & (iv) (c) (i) & (ii) (d) (i), (iii) & (iv)

81. Enzymes are biocatalysts. They

(a) increase the rate of biochemical reaction, decrease the activation energy

(b) increase the rate of biochemical reaction, increase the activation energy

(c) decrease the rate of biochemical reaction, increase the activation energy

(d) decrease the rate of biochemical reaction, decrease the activation energy

82. When the margins of sepals or petals overlap one another without any particular direction, the condition is termed as

(a) imbricate (b) twisted (c) valvate (d) vexillary

83. When a fresh water protozoan is placed in marine water

(a) contractile vacuole disappears

(b) contractile vacuole increases in size

(c) a number of contractile vacuoles appear

(d) the contractile vacuole remains unchanged

84. DNA replication in bacteria occurs

(a) within nuclelous (b) prior to fission

(c) just before transcription (d) during S phase

85. On hydrolysis, Nucleoside does not yield

(a) Phosphoric acid (b) Pentose sugar (c) Purine (d) Pyrimidine

86. Thorns of Bougainvillea and tendrils of Cucurbita shows

(a) Homology (b) Analogy (c) Adaptive radiation (d) Atavism

87. Viruses have

(a) DNA core, Lipid coat (b) DNA or RNA core, Protein coat

(c) DNA or RNA core, Plasma membrane (d) DNA containing nucleus, lipid envelope

88. In Lichens, algal component is known as

(a) Mycobiont (b) Phycobiont (c) Schizont (d) Heterocyst

89. The outer covering of cartilage is called as

(a) Peritoneum (b) Periosteum (c) Endosteum (d) Perichondrium

90. Arteries have

(a) thick wall, narrow lumen (b) thick wall, broad lumen

(c) thin wall, broad lumen (d) thin wall, narrow lumen

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