THOMAStutorials

Date : **NEET FULL PORTION** **TEST ID: 58**

Time: 03 hrs **PCB** **Marks :720**

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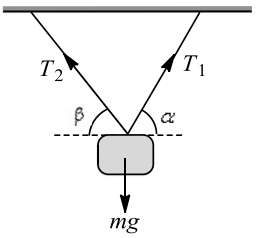
1. A student performs an experiment to determine the Young's modulus of a wire, exactly 2 m long, by Searle's method. In a particular reading, the student measures the extension in the length of the wire to be 0.8 mm with an uncertainty of $\pm$ 0.05 mm at a load of exactly 1.0 kg. The student also measures the diameter of the wire to be 0.4mm with an uncertainty of $\pm$ 0.01 mm. Take g = 9.8 ms^{-2} (exact). The Young's modulus obtained from the reading is
   a) $(2.0 \pm 0.3) \times 10^{11} Nm^{-2}$
   b) $(2.0 \pm 0.2) \times 10^{11} Nm^{-2}$
   c) $(2.0 \pm 0.1) \times 10^{11} Nm^{-2}$
   d) $(2.0 \pm 0.05) \times 10^{11} Nm^{-2}$
2. Find the dimensions of electric permittivity
   a) $[A^2M^{-1}L^{-3}T^4]$ b) $[A^2M^{-1}L^{-3}T^0]$
   c) $[AM^{-1}L^{-3}T^4]$ d) $[A^2M^0L^{-3}T^4]$
3. The velocity of a body depends on time according to the equation $v = 20 + 0.1t^2$. The body is undergoing
   a) Uniform acceleration
   b) Uniform retardation
   c) Non-uniform acceleration
   d) Zero acceleration
4. An airplane, diving at an angle of 53.0° with the vertical releases a projectile at an altitude of 730 m. The projectile hits the ground 5.00 s after being released. What is the speed of the aircraft?
   a) 282 ms^{-1} b) 202 ms^{-1}
   c) 182 ms^{-1} d) 102 ms^{-1}
5. A man can throw a stone to a maximum distance of 80 m. The maximum height to which it will rise in metre, is
   a) 30 m b) 20 m c) 10 m d) 40 m
6. A body of mass m is suspended by two strings making angle α and β with the horizontal as shown in figure. Tensions in the two strings are



   a) $T_1 = \frac{mg\cos\beta}{\sin(\alpha+\beta)} = T_2$
   b) $T_1 = \frac{mg\sin\beta}{\sin(\alpha+\beta)} = T_2$
   c) $T_1 = \frac{mg\cos\beta}{\sin(\alpha+\beta)}; T_2 = \frac{mg\cos\alpha}{\sin(\alpha+\beta)}$
   d) None of the above
7. A man is standing at the centre of frictionless pond of ice. How can he get himself to the shore
   a) By throwing his shirt in vertically upward direction
   b) By spitting horizontally
   c) He will wait for the ice to melt in pond
   d) Unable to get at the shore
8. A spring with spring constant k when stretched through 1 cm the potential energy is U.If it is stretched by 4 cm ,the potential energy will be
   a) 4U b) 8U c) 16U d) 2U
9. Moment of inertia along the diameter of a ring is
   a) $\frac{3}{2}MR^2$ b) $\frac{1}{2}MR^2$ c) MR^2 d) $2MR^2$
10. A solid sphere, disc and solid cylinder all of the same mass and made up of same material are allowed to roll down (from rest) on inclined plane, then
    a) Solid sphere reaches the bottom first
    b) Solid sphere reaches the bottom late
    c) Disc will reach the bottom first
    d) All of them reach the bottom at the same time
11. If the radius of a planet is R and its density is ρ, the escape velocity from its surface will be
    a) $v_e \propto \rho R$ b) $v_e \propto \sqrt{\rho R}$
    c) $v_e \propto \frac{\sqrt{\rho}}{R}$ d) $v_e \propto \frac{1}{\sqrt{\rho}R}$

12. A 1m long steel wire of cross-sectional area 1 mm^2 is extended by 1 mm. If $Y = 2 \times 10^{11} N\ m^{-2}$, then the work done is
a) 0.1 J b) 0.2 J c) 0.3 J d) 0.4 J

13. The coefficient of viscosity for hot air is
a) Greater than the coefficient of viscosity of cold air
b) Smaller than the coefficient of viscosity for cold air
c) Same as the coefficient of viscosity for cold air
d) Increases or decrease depending on the external pressure

14. A vessel of area of cross-section A has liquid to a height H. There is a hole at the bottom of vessel having area of cross-section a. The time taken to decrease the level from H_1 to H_2 will be
a) $\frac{A}{a}\sqrt{\frac{2}{g}}[\sqrt{H_1} - \sqrt{H_2}]$ b) $\sqrt{2gh}$
c) $\sqrt{2gh(H_1 - H_2)}$ d) $\frac{A}{a}\sqrt{\frac{g}{2}}[\sqrt{H_1} - \sqrt{H_2}]$

15. A body of area $1cm^2$ is heated to a temperature $1000K$. The amount of energy radiated by the body in 1 s is (Stefan's constant $\sigma = 5.67 \times 10^{-8} Wm^{-2}K^{-4}$)
a) 5.67 joule b) 0.567 joule
c) 56.7 joule d) 567 joule

16. The change in internal energy, when a gas is cooled from 927°C to 27°C
a) 300% b) 400% c) 200% d) 100%

17. A gas $\left(\gamma = \frac{5}{3}\right)$, expands isobarically. The percentage of heat supplied that increases thermal energy and that is involved in doing work for expansion is
a) l40: 60 b) 60: 40 c) 50: 50 d) 25: 30

18. A cylinder of radius r and thermal conductivity K_1 is surrounded by a cylindrical shell of linear radius r and outer radius$2r$, whose thermal conductivity is K_2. There is no loss of heat across cylindrical surfaces, when the ends of the combined system are maintained at temperatures T_1andT_2. The effective thermal conductivity of the system, in the steady state is
a) $\frac{K_1K_2}{K_1 + K_2}$ b) $K_1 + K_2$ c) $\frac{K_1 + 3K_2}{4}$d) $\frac{3K_1 + K_2}{4}$

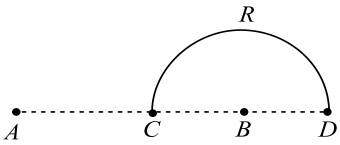
19. The equation of SHM is given by $x = 3\sin 20\pi t + 4\cos 20\pi t$
Where x is in cm and t is I second. The amplitude is
a) 7 cm
b) 4 cm
c) 5 cm
d) 3 cm

20. Two equations of two S.H.M. are $y = a\sin(\omega t - \alpha)$ and $y = b\cos(\omega t - \alpha)$. The phase difference between the two is
a) 0° b) α° c) 90° d) 180°

21. A closed Prgan pipe and an open organ pipe of same length produce 2 beats/second while vibrating in their fundamental modes. The length of the open organ pipe is halved and that of closed pipe is doubled. Then the number of beats produced per second while vibrating in the fundamental mode is
a) 2 b) 6 c) 8 d) 7

22. Three capacitors each of capacitance C and of breakdown voltage V are joined in series. The capacitance and breakdown voltage of the combination will be
a) $\frac{C}{3}, \frac{V}{3}$ b) $3C, \frac{V}{3}$ c) $\frac{C}{3}, 3V$ d) $3C, 3V$

23. Charges $+q$ and $-q$ are placed at point A and B respectively which are a distance $2L$ apart, C is the midpoint between A and B. The work done in moving a charge $+Q$ along the semicircle CRD is



a) $\frac{qQ}{4\pi \in_0 L}$ b) $\frac{qQ}{2\pi \in_0 L}$ c) $\frac{qQ}{6\pi \in_0 L}$ d) $-\frac{qQ}{6\pi \in_0}$

24. The displacement of a charge Qin the electric field
$\boldsymbol{E} = e_1\hat{\boldsymbol{i}} + e_2\hat{\boldsymbol{j}} + e_3\hat{\boldsymbol{k}}$ is$\boldsymbol{r} = a\hat{\boldsymbol{i}} + b\hat{\boldsymbol{j}}$. The work done is
a) $Q(ae_1 + be_2)$ b) $Q\sqrt{(ae_1)^2 + (be_2)^2}$
c) $Q(e_1 + e_2)\sqrt{a^2 + b^2}$ d) $Q\left(\sqrt{e_1^2 - e_2^2}\right)(a + b)$

25. In a region 10^{19}α −particales and 10^{19} protons move to the left, while 10^{19}electronsmove to the right per second. The current is
a) 3.2 A towards left b) 3.2 A towards right
c) 6.4 A towards left d) 6.4 A towards right

26. Two resistances are connected in two gaps of a meter bridge. The balance point is 20cm from the zero end. A resistance of 15Ω is connected

is series with the smaller of the two. The null point shifts to 40cm. The value of the smaller resistance in ohm is

a) 3 b) 6 c) 9 d) 12

27. A cell can be balanced against 110cm and 100cm of potentiometer wire, respectively with and without being short circuited through a resistance of 10 Ω. Its internal resistance is

a) 1.0 Ω b) 0.5 Ω c) 2.0 Ω d) Zero

28. Two particles of masses m_a and m_b and same charge are projected in a perpendicular magnetic field. They travel along circular paths of radius r_a and r_b such that $r_a > r_b$. Then which is true?

a) $m_a v_a > m_b v_b$
b) $m_a > m_b$ and $v_a > v_b$
c) $m_a = m_b$ and $v_a = v_b$
d) $m_b v_b > m_a v_a$

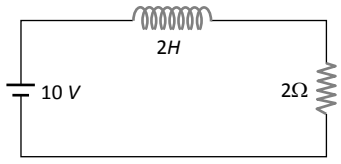
29. Let ϕ_1 and ϕ_2 be the angles of dip observed in two vertical planes at right angles to each other and ϕ be the true angle of dip, then

a) $\cos^2\phi = \cos^2\phi_1 + \cos^2\phi_2$
b) $\sec^2\phi = \sec^2\phi_1 + \sec^2\phi_2$
c) $\tan^2\phi = \tan^2\phi_1 + \tan^2\phi_2$
d) $\cot^2\phi = \cot^2\phi_1 + \cot^2\phi_2$

30. An electron of charge e moves in a circular orbit of radius r around the nucleus at a frequency v. The magnetic moment associated with the orbital motion of the electron is.

a) $\pi v e r^2$ b) $\frac{\pi v r^2}{e}$ c) $\frac{\pi v e}{r}$ d) $\frac{\pi e r^2}{v}$

31. In the figure magnetic energy stored in the coil is

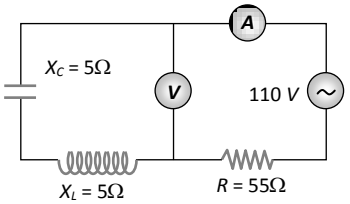


a) Zero b) Infinite
c) 25 $joules$ d) None of the above

32. There is a 5Ω resistance in an ac, circuit. Inductance of $0.1H$ is connected with it in series. If equation of ac e.m.f. is $5\sin 50t$, then the phase difference between current and e.m.f. is

a) $\frac{\pi}{2}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{4}$ d) 0

33. The reading of ammeter in the circuit shown will be



a) $2A$ b) $2.4\ A$ c) Zero d) $1.7\ A$

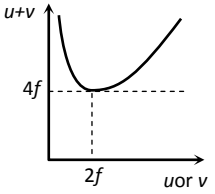
34. Assume that a lamp radiates power P uniformly in all directions. What is the magnitude of electric field strength at a distance r from the lamp?

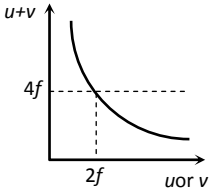
a) $\frac{P}{\pi c\varepsilon_0 r^2}$ b) $\frac{P}{2\pi c\varepsilon r^2}$ c) $\sqrt{\frac{P}{2\pi\varepsilon_0 r^2}}$ d) $\sqrt{\frac{P}{\pi\varepsilon_0 c r^2}}$

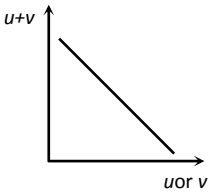
35. Two beams of red and violet colours are made to pass separately through a prism of $A = 60°$.In the minimum deviation position, the angle of refraction inside the prism will be

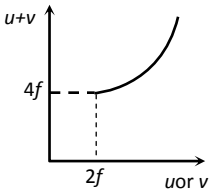
a) Greater for red colour
b) Equal but not 30°for both the colours
c) Greater for violet colour
d) 30°for both the colours

36. For a convex lens, if real image is formed the graph between $(u + v)$ and u or v is as follows

a) 

b) 

c) 

d) 

37. A narrow slit of width $2mm$ is illuminated by monochromatic light of wavelength $500nm$. The distance between the first minima on either side on a screen at a distance of $1m$ is

a) $5mm$ b) $0.5mm$ c) $1mm$ d) $10mm$

38. The specific charge for positive rays is much less than that for cathode rays. This is because

a) Masses of positive rays are much larger
b) Charge on positive ray is less
c) Positive rays are positively charged
d) Experimental method is wrong

39. A charged oil drop is suspended in uniform field of 3×10^4 $\mathrm{Vm^{-1}}$ so that it neither falls nor rises. The charge on the drop will be (Take the mass of the charge $= 9.9 \times 10^{-15}$Kg and g $= 10\ \mathrm{ms^{-2}}$)

a) 3.3×10^{-18}C b) 3.2×10^{-18} C

c) 1.6×10^{-18} C d) 4.8×10^{-18} C

40. Rutherford's atomic model could account for
a) Concept of stationary orbits
b) The positively charged control core of an atom
c) Origin of spectra
d) Stability of atoms

41. Complete the reaction $n + {}^{235}_{92}U \rightarrow {}^{144}_{56}Ba + \cdots + 3n$
a) ${}^{89}_{36}Kr$ b) ${}^{90}_{36}Kr$ c) ${}^{91}_{36}Kr$ d) ${}^{92}_{36}Kr$

42. The particle that possesses half integral spin as
a) Photon b) Pion
c) Proton d) K-meson

43. While using triode as an amplifier, we avoid making the grid positive because,
a) The mutual characteristics is not straight
b) It affects the amplification factor
c) It decreases the plate current
d) Of some different reason

44. The antenna current of an AM transmitter is 8 A when only the carrier is sent, but it increases to 8.93 A when the carrier is modulated by single sine wave. Find the percentage modulation.
a) 60.1 % b) 70.1 % c) 80.1 % d) 50.1 %

45. 1000 kHz carrier wave is amplitude modulated by the signal frequency 200-4000 Hz. The channel width of this case is
a) 8 kHz b) 4 kHz c) 7.6 kHz d) 3.8 kHz

46. An organic compound on analysis was found to contain 10.06% carbon, 0.84% hydrogen and 89.10% chlorine. What will be the empirical formula of the substance?
a) CH_2Cl_2 b) $CHCl_3$ c) CCl_4 d) CH_3Cl

47. A sample of ammonium phosphate $(NH_4)_3PO_4$contains 6.36 moles of hydrogen atoms. The number of moles of oxygen atom in the sample is
(atomic mass of N = 14.04, H = 1, P = 31, O = 16)
a) 0.265 b) 0.795 c) 2.12 d) 4.14

48. The number of electrons and neutrons of an element is 18 and 20 respectively. Its mass number is
a) 2 b) 17 c) 37 d) 38

49. A heavy element has atomic number X and mass number Y. Correct relationship between X and Y is
a) $X\ Y$ b) $X\ Y$
c) $X\ Y$ d) $X\ Z\ (1\ Y)^2$

50. The highest first ionisation potential is of
a) Carbon b) Boron
c) Oxygen d) Nitrogen

51. The AsF_5 molecule is trigonal bipyramidal. The hybrid orbitals used by the As atoms for bonding are
a) $d_{x^2-y^2}, d$, b) d_{xy}, s, p_x c) $s, p_x, p_y,$ d) $d_{x^2-y^2}, s,$

52. The bond angle between two hybrid orbitals is 105°. The percentage of s-character of hybrid orbital is between
a) $50 - 55\%$ b) $9 - 12\%$
c) $22 - 23\%$ d) $11 - 12\%$

53. Frenkel defect is caused due to
a) The shift of a positive ion from its normal lattice site to an interstitial site
b) An ion missing from the normal lattice site creating a vacancy
c) An extra positive ion occupying an interstitial position in the lattice
d) An extra negative ion occupying an interstitial position in the lattice

54. Calculate ΔH(in Joules) for,
C(graphics) → C(diamond),
From the following data
$C(graphite) + O_2(g) \rightarrow CO_2(g);\ \Delta H = -393.5$ kJ
$C(diamond) + O_2(g) \rightarrow CO_2(g);\ \Delta H = -395.4$ kJ
a) 1900 b) -788.9×10^3
c) 190000 d) $+788.9 \times 10^3$

55. Among the following which is true for mole of liquid?
a) $C_p \approx C_V$ b) $C_p - C_V = R$
c) $C_p - C_V > R$ d) $C_p < C_V$

56. The equilibrium constant for the reaction $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ at temperature $T$is 4×10^{-4}. The value of K_c for the reaction $NO(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{1}{2}O_2(g)$ at the same temperature is
a) 25 b) 50 c) 75 d) 100

57. Which of the following acts as an oxidising as well as reducing agent?
a) Na_2O b) Na_2O_2 c) $NaNO_3$ d) $NaNO_2$

58. One mole of acidified $K_2Cr_2O_7$ on reaction with excess KI will liberate……mole(s) of I_2.
a) 6 b) 1 c) 7 d) 3

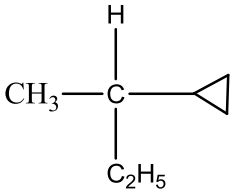
59. H_2O_2 is manufactured these days
a) By burning hydrogen in excess of oxygen
b) By the action of H_2O_2 on BaO_2

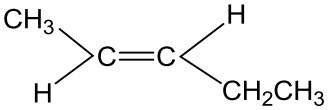
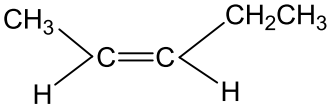
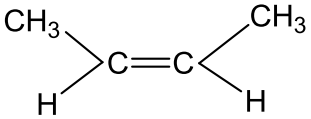
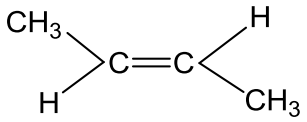
c) By the action of H_2SO_4 on Na_2O_2
d) By electrolysis of 50% H_2SO_4

60. The chemical formula of plaster of Paris is
a) $CaSO_4 . \frac{1}{2} H_2O$ b) $CaSO_4 . H_2O$
c) $CaSO_4 . 2H_2O$ d) $CaSO_4 . 3H_2O$

61. The soldiers of Napolean army while at Alps during freezing winter suffered a serious problem as regards to the tin buttons of their uniform. White metallic tin buttons got converted to grey powder. This transformation is related to
a) A change in the crystalline structure of tin
b) An interaction with nitrogen of the air at very low temperature
c) A change in the partial pressure of oxygen in the air
d) An interaction with water vapour contained in the humid air

62. Boron nitride has the structure of the type
a) Graphite type
b) Diamond type
c) Both diamond and graphite type
d) NaCl type

63. Amongst the following compounds, the optically active alkane having lowest molecular mass is
a) $CH_3 - CH_2 - CH_2 - CH_3$
b) $CH_3 - CH_2 - \underset{\displaystyle CH_3}{\underset{|}{CH}} - CH_3$
c) 
d) $CH_3 - CH_2 - C \equiv CH$

64. $CH_3C \equiv CH \xrightarrow[(2)\ CH_3CH_2Br]{(1)NaNH_2} A \xrightarrow[\text{Lindlar's catalyst}]{H_2} B$
What is B in the above reaction?
a) 
b) 
c) 
d) 

65. Reactive species in halogenation of benzene in cold and dark
a) $Cl^{\bullet}$ b) Cl^{+}
c) Cl^{-} d) None of these

66. Chlorofluorocarbons (CFCs) are widely used in air conditioners, refrigerators etc because of being
a) Highly reactive b) Flammable
c) Non reactive d) All of these are true

67. Doping of silicon (Si) with boron (B) leads to
a) n −type semiconductor
b) p −type semiconductor
c) Metal
d) Insulator

68. An alloy of copper, silver and gold is found to have copper constituting the ccp lattice. If silver atoms occupy the edge centres and gold is present at body centre, the alloy has a formula
a) Cu Ag Au b) $Cu_4\ Ag_2\ Au$
c) $Cu_4\ Ag_3\ Au$ d) $Cu_4\ Ag_4\ Au$

69. 0.004 M Na_2SO_4 is isotonic with 0.01 M glucose.Degree of dissociation of Na_2SO_4 is
a) 61 b) 244 c) 366 d) 122

70. Mole fraction ($\mathcal{X}$) of any solution is equal to
a) $\frac{\text{no. of moles of solute}}{\text{volume of solution in litre}}$
b) $\frac{\text{no. of gram} - \text{equivalent of solute}}{\text{volume of solution in litre}}$
c) $\frac{\text{no. of moles of solute}}{\text{mass of solvent in kg}}$
d) $\frac{\text{no. of moles of any constituent}}{\text{total number of moles of all constituents}}$

71. The emf of a Daniell cell at 298 K is E_1, Zn| $ZnSO_4$ || $CuSO_4$ | Cu. When the concentration of (0.01 M) (1.0 M)
$ZnSO_4$ is 1.0 M and that of $CuSO_4$ is 0.01 M, the emf changed to E_2. What is the relationship between $E_1$and E_2?
a) $E_1 = E_2$ b) $E_1 > E_2$
c) $E_1 < E_2$ d) $E_2 = 0 \neq E_1$

72. For a zero order reaction, the plot of concentration of reactant vs time is (intercept refers to concentration axis)
a) Liner with positive slope and zero intercept
b) Linear with negative slope and zero

intercept
c) Linear with negative slope and non-zero intercept
d) Linear with positive slope and non-zero intercept

73. Which expression is wrong for fist order reaction?
a) $k = \frac{2.303}{t}\log\left(\frac{A_0}{A_t}\right)$
b) $k = \frac{t}{2.303}\log\left(\frac{A_0}{A_t}\right)$
c) $-k = \frac{t}{2.303}\log\left(\frac{A_t}{A_0}\right)$
d) Rate=k[A]

74. Gold number gives
a) The amount of gold present in the colloid
b) The amount of gold required to protect the colloid
c) The amount of gold required to break the colloid
d) None of the above

75. Metal occur in the native from because of their
a) High electronegativity
b) High reactivity
c) Low reactivity
d) Low density

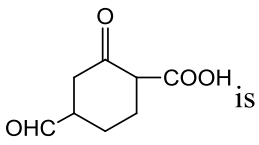
76. Among the following groups of oxides, the group containing oxides that cannot be reduced by carbon to give the respective metals is
a) Cu_2O, K_2O b) PbO, Fe_3O_4
c) Fe_2O_3, ZnO d) CaO, K_2O

77. The metal which does not form ammonium nitrate by reaction with dilute nitric acid is
a) Al b) Fe c) Pb d) Mg

78. For d-block elements the first ionisation potential is of the order
a) Zn $> Fe > Cu > Cr$
b) Sc $=$ Ti $< V = Cr$
c) Zn $< Cu < Ni < Co$
d) V $> Cr > Mn > Fe$

79. Which of the following has got incompletely filled f-subshell?
a) Gadolinium b) Lutetium
c) Lawrencium d) Tantalum

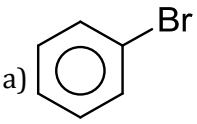
80. The IUPAC name of

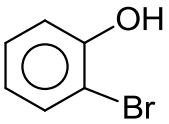


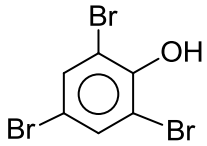
is
a) 4-formyl-6-oxocyclohexane-1-carboxylic acid
b) 2-oxo-4-formyl cyclohexane-1-carboxylic acid
c) 6-oxo-4-formyl cyclohexane-1-carboxylic acid
d) 4-formyl-2-oxo cyclohexane-1-carboxylic acid

81. Which of the following will not give iodoform test?
a) Isopropyl alcohol b) Ethanol
c) Ethanal d) Benzyl alcohol

82. Arrange the following in order of decreasing acidic strength. p-nitrophenol (I), p-cresol (II), m-cresol (III), phenol (IV)
a) I > II > III > IV b) IV > III > II > I
c) I > III > II > IV d) III > II > I > IV

83. The product obtained by the reaction of HBr with phenol is
a) 

b) 

c) 

d) There is no reaction

84. What is the product in the reaction
$CH_3MgBr \xrightarrow[(ii)H_2O]{(i)CO_2} X$?
a) Acetaldehyde b) Acetic acid
c) Formic acid d) Formaldehyde

85. Decreasing order of basicity of the three isomers of methoxyaniline is
a) $p\text{-}CH_3OC_6H_4NH_2 > o - CH_3OC_6H_4NH_2 > m - CH_3OC_6H_4NH_2$
b) $p\text{-}CH_3OC_6H_4NH_2 > m - CH_3OC_6H_4NH_2 > o - CH_3OC_6H_4NH_2$
c) $o\text{-}CH_3OC_6H_4NH_2 > p - CH_3OC_6H_4NH_2 > m - CH_3OC_6H_4NH_2$
d) $o\text{-}CH_3OC_6H_4NH_2 > m - CH_3OC_6H_4NH_2 > p - CH_3OC_6H_4NH_2$

86. $Y \underset{Z}{\overset{\text{Reduction}}{\rightleftharpoons}} [R_2C{=}NH] \xrightarrow{H_3O^+} X$
In the above sequence of reaction X, Y, Z are respectively
a) Aldehyde, ketone, NH_3
b) Ketone, 1° amine, $KMnO_4$
c) Ketone, 2° amine, $KMnO_4$
d) Ketimine, 1° amine, H_2SO_5

87. The change in the optical rotation of freshly prepared solution of glucose is known as
a) Tautomerism b) Racemization
c) Specific rotation d) Mutarotation

88. The monomer of PVC is
a) Ethane b) Chloroethene
c) Dichloroethene d) Tetra chloroethene

89. The monomer or Teflon is
a) Monofluoroethene b) Difluoroethene
c) Trifluoroethene d) Tetrafluoroethene

90. Aspirin is a/an
a) Narcotic drug b) Antipyretic
c) Antimalarial d) Antiseptic

91. Who coined the term 'Phylum'?
a) Cuvier b) Aristotle c) Ernst Haeckel d) Hooker

92. National botanical research Institute is situated at
a) Lucknow b) Kolkata c) Mumbai d) Chennai

93. Two plants can be conclusively said to belong to the same species if they
a) Can reproduce freely with each other and form seeds
b) Have more than 90 percent similar genes
c) Look similar and possess identical secondary metabolites
d) Have same number of chromosomes.

94. Euglenoid species that have chlorophyll are
a) Facultative autotrophs
b) Facultative heterotrophs
c) Obligate heterotrophs
d) Obligate autotrophs

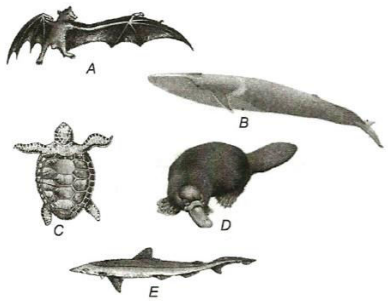
95. Plasmids are mostly found in
a) Virus b) Bacteria c) Fungi d) Viroid

96. Gemmae are asexual buds, which originate from small receptacles called gemma cups. These are found in
a) *Funeria* b) *Marchentia*
c) *Fern* d) *Sphagnum*

97. In the alternation of generations the sporophytic generations is …A… and the gametophytic generation is …B… . Here A and B refer to
a) A-2*n*; B-*n* b) A-*n*; B-2*n*
c) A-*n*; B-*n* d) A-2*n*; B-2*n*

98. Two common characters found in centipede, cockroach and crab are
a) Compound eyes and anal cerci
b) Jointed legs and chitinous exoskeleton
c) Green gland and tracheae
d) Book lungs and antennae

99. Which of the following do not belong to class-Mammalia?

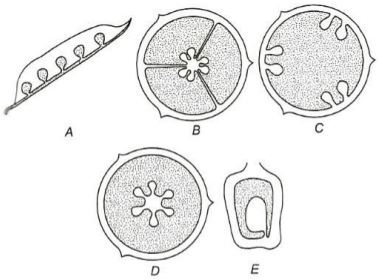


a) B and E b) A and C
c) E and C d) D and E

100. In echolocation, the animal that produces high frequency sounds is
a) Monkey b) Butterfly
c) Squirrel d) Bat

101. Pneumatophores are present in
a) Mangroves b) Xerophytes
c) Hydrophytes d) Lithophytes

102. Identify the types of placentation in the given diagrams (*A* to *E*)



a) A-Marginal, B-Axile, C-Parietal, D-Free central, E-Basal
b) A-Marginal, B- Basal, C-Parietal, D-Free central, E-Axile
c) A-Parietal, B-Basal, C-Marginal, D-Free central, E-Axile
d) A-Parietal, B-Axile, C-Marginal, D-Free central, E-Basal

103. Modified shoots wherein the shoot apical meristem changes to floral meristem is called
a) Flower b) Inflorescence
c) Shoot buds d) Both (a) and (c)

104. The fruit is chambered, developed from inferior ovary and has seeds with succulent testa in
a) Pomegranate b) Orange
c) Guava d) Cucumber

105. Which of the following cell do not respire?
a) Epidermal cell b) Cork cell
c) RBC d) Sieve tube cell

106. Initiation of lateral roots and vascular cambium during secondary growth organs occurs due to activity of
a) Endodermis b) Pericycle
c) Casparian strip d) Periderm

107. Earthworm feeds upon
a) Small animals b) Small plants
c) Organic matter and decaying leaves d) All of the above

108. Consider the following statements about *Rana tigrina*
I. The skin of frog sheds after every few weeks
II. Camouflage is a common defensive mechanism of frog
III. Chest muscles are involved in the process of respiration
IV. Their nervous system consists of a brain, spinal cord and nerves
Which of the above statement is incorrect?
a) Only I
b) I and III
c) Only III
d) I and IV

109. The scientist who was awarded Nobel-Prize in 1959 for *in vitro* synthesis of polyribonucleotide?
a) Mendel b) Calvin c) Khurana d) Ochoa

110. Which of the following is the site of lipid synthesis?
a) Rough ER b) Smooth ER
c) Golgi bodies d) Ribosome

111. 'G' in DNA strand base pairs with 'C' by 3... bonds
a) Hydrogen
b) Von der Waal
c) Covalent
d) Ionic

112. Biomolecules are constantly being changed into some other biomolecules and are made from ....
a) Amino acids
b) Biomolecules only
c) Monosaccharides
d) Enzymes

113. Which of the following stage of mitosis follows the S and G_2-phases of interphases?
a) Prophase b) Metaphase
c) Anaphase d) Telophase

114. During meiosis, the alleles of the parental pair separate or segregated from each other. How many allele(s) is/are then transmitted to a gamete?
a) Four b) Two c) Six d) One

115. Potometer works on the principle of
a) Amount of water absorbed equals the amount transpired
b) Osmotic pressure
c) Root pressure
d) Potential difference between the tip of the tube and that of the plant

116. In tall plants, because of which factor, continuous water column extends upward?
a) Atmospheric pressure
b) Osmotic pressure
c) Suction pull
d) Root pressure

117. Which one of the following is not a part of symplast?
a) Cell wall b) Plasma membrane c) Plasmodesmata d) Cytoplasm

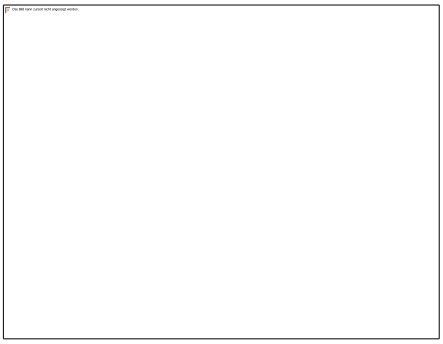
118. For the uptake of ions in the first phase of absorption of minerals, the pathway followed is called
a) Active uptake b) Passive uptake
c) Neutral d) None of these

119. Which of the following is one of the component of ATP?
a) Potassium b) Phosphorus
c) Magnesium d) Manganese

120. Which would do maximum harm to a tree?
a) Loss of half of its branches b) Loss of all its bark
c) Loss of all its leaves d) Loss of half of its leaves

121. The first action spectrum of photosynthesis was described by Engelman was related to
a) Algae b) Mint plant
c) Bacteria d) Bryophytes

122. Choose the correct combination of labeling the molecules involved in the pathway of anaerobic respiration in yeast.



a) A – Ethanol, B – CO_2, C – Acetaldehyde
b) A - CO_2 , B – Ethanol, C- Acetaldehyde
c) A - CO_2, B - Acetaldehyde, C- Ethanol
d) A – Ethanol, B - Acetaldehyde, C - CO_2

123. In plants the cells in the interior parts are
a) Dead and for mechanical support
b) Live and for various purpose
c) Both (a) and (b)
d) None of the above

124. The ability of plants to follow different pathway to form different structures in response to environment is called
a) Plasticity b) Elasticity
c) Growth d) Development

125. Which hormone is called the dormancy hormone?
a) IAA b) NAA c) ABA d) GA

126. Increase in the girth of plant (organ) takes place by
a) Vascular cambium
b) Cork cambium
c) Both (a) and (b)
d) Root and shoot apical meristem

127. Which is the hardest material of the human body?
a) Dentine b) Enamel c) Teeth d) Bone

128. Which is the largest gland of human body?
a) Gastric gland b) Pancreas
c) Liver d) Salivary gland

129. Which one of the following has the smallest diameter?
a) Right primary bronchus
b) Left primary bronchus
c) Trachea
d) Respiratory bronchiole

130. Right lung of rabbit is divided into
a) Four lobes b) Two lobes
c) Six lobes d) Eight lobes

131. In bird and mammals, the oxygenated blood received by …A… and deoxygenated blood receive by …B… . The ventricles pump in out without any mixing up of oxygenated and deoxygenated blood
Choose the correct option for A and B
a) A-left atria, B-right atria
b) B-right atria, A-left atria
c) A-right ventricle, B-left ventricle
d) A-left ventricle, B-right ventricle

132. Pacemaker in heart is situated
a) In the wall of left atrium
b) In the wall of right atrium
c) On inter-auricular septum
d) On inter-ventricular septum

133. Erythropoietin is secreted from
a) Pituitary gland b) Pancreas
c) Adrenal gland d) Kidney

134. Reabsorption of glucose occurs in ….. of the nephron
a) Loop of Henle b) PCT
c) DCT d) Collecting duct

135. Choose the correct ones
I. **Afferent arteriole** carries the blood away from the glomerulus toward renal vein
II. **Efferent arteriole** carries the blood to glomerulus
III. **Podocytes** form minute spaces (slit pores) for the filtration of blood into the Bowman's capsule
IV. **In Henle's loop** There are most reabsorption of the major substances from the glomerular filtrate
V. **Distal convoluted tubule** reabsorption K^+ ions into the surrounding blood capillaries
The correct option is
a) I, II and III b) III, IV and V
c) Only III d) Only IV

136. In a vertebrate, which germ layer forms the skeleton muscles?
a) Ectoderm b) Endoderm
c) Mesoderm d) Both (a) and (c)

137. Hardness of the bones is due to
a) Hard matrix made up of calcium salts
b) Soft matrix made up of sodium salts
c) Hard matrix made up of sodium salts
d) Soft matrix made up of chondroitin salts

138. During muscle contraction, ATP provides energy for
a) Cross bridge detachment
b) Building up action potential
c) Releasing Ca^{2+} from sarcoplasmic reticulum
d) Cross-bridge attachment of myosin to actin

139. Sense of smell is perceived by

a) Pituitary b) Hypothalamus
c) Olfactory lobe d) Cerebrum

140. Rhodopsin is also known as visual
a) Red b) Yellow c) Brown d) Purple

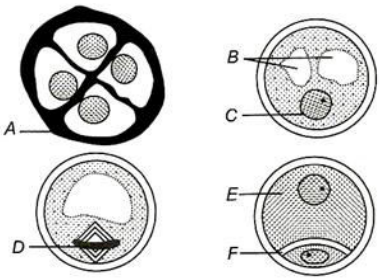
141. Insulin receptors are
a) Extrinsic protein b) Intrinsic protein
c) G – protein d) Trimeric protein

142. Hormones which interact with intracellular receptors are
I. Steroid hormones
II. ACTH
IIII. Iodothyronines
IV. MSH
Choose the option with correct combination
a) I and III b) II and IV c) II and III d) I and IV

143. Who worked on embryological aspects and popularized the use of embryological characters in taxonomy?
a) P. Guha b) P. Maheshwari
c) Ivanovosky d) D. Graaf

144. Internal fertilization is the one in which syngamy
a) Occur outside the body b) Occur inside the body
c) Followed by meiosis d) None of these

145. Identify the structures marked A to F in the given diagram



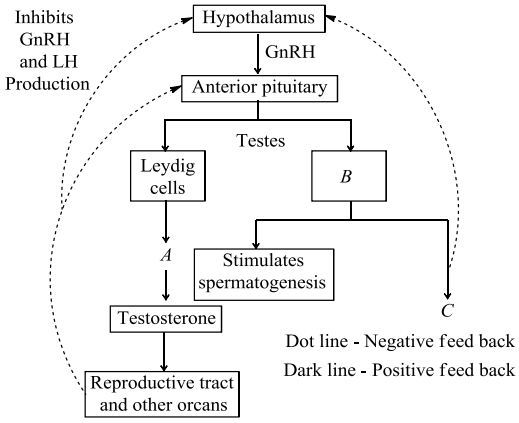
a) A-Asymmetric nucleus, B-Nucleus, C-Generative cell, D-Vegetative cell, E-Pollen, F-Pollen tetrad
b) A- Pollen tetrad , B- Pollen, C-Generative cell, D-Vegetative cell, E-Asymmetric spindle, F-Nucleus
c) A-Pollen tetrad,B-Vacuole, C-Nucleus, D-Asymmetric spindle, E-Vegetative cell, F-Generative cell
d) A-Vacuole, B-Nucleus, C-Pollen tetrad, D-Vegetative cell, E-Asymmetric spindle, F-Generative cell

146. Microsporangia develops in to
a) Pollens b) Microgametes
c) Megagametes d) Pollen sacs

147. … A… egg cell, …B… zygote, …C… endosperm. Find out the correct ploidy nature of A, B and C

a) A $-2n$, B $-3n$, C $-4n$
b) A $-1n$, B $-1n$, C $-3n$
c) A $-1n$, B $-2n$, C $-3n$
d) A $-1n$, B $-2n$, C $-4n$

148. Find out A, B and C in the figure given below

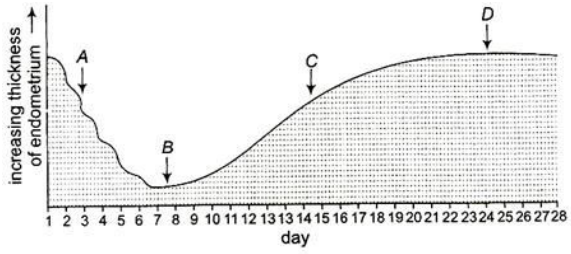


a) A-Sertoli cell, B-Testosterone, C-Inhibin
b) A- Inhibin, B- Sertoli cell, C-Testosterone
c) A-Testosterone, B-Sertoli cell, C-Inhibin
d) A-Testosterone, B-Sertoli cell, C-Testosterone

149. Human male ejaculates …A… to …B… million sperm. Atleast …C… should have normal shape and size and …D… should show vigorous motility. Here A, B, C and D refers to
a) A-100, B-200, C-30%, D-40%
b) A-200, B-300, C-60%, D-40%
c) A-300, B-400, C-60%, D-40%
d) A-400, B-500, C-60%, D-40%

150. Uterine endometrium, epithelial glands and connective tissue are broken in menstrual phase. This is due to
a) Over secretion of FSH
b) Lack of oestrogen
c) Lack of progesterone
d) Over production of progesterone

151. The diagram shows the changes that take place in the endometrium during a normal menstruation



a) A-ovulation; B-menstruation
b) A-ovulation; C-menstruation

c) C-ovulation; A-menstruation d) B-ovulation; D-menstruation

152. Amniocentesis is the detection of
a) Chromosomal pattern by taking amniotic fluid b) Chorionic fluid from developing embryo
c) Chromosomal pattern after child birth d) Chromosomal pattern before fertilisation

153. Common STD in India is
a) Syphilis b) Gonorrhea c) AIDS d) Herpes

154. In previous question find out total seeds (plants) having round seed texture
a) 12 b) 10 c) 9 d) 11

155. Choose the chemical used in artificial polyploidy
a) Polyethylene glycol
b) Sodium alginate
c) Acenaphthene
d) Sodium hypochlorite

156. Who proposed chromosomal theory of linkage?
a) Morgan
b) Castle
c) Both (a) and (b)
d) Bateson

157. Identify the triplet codons, which code for the amino acids serine and proline.
1. UCC
2. CCA
3. AAG
4. GGG
a) I and III b) II and IV c) III and IV d) I and II

158. Inducible operon occurs in …A… pathways. Repressible operon occurs in …B… pathways. Here A and B refers to
a) A-catabolic; B-anabolic
b) A-catabolic; B-catabolic
c) A-anabolic; B-anabolic
d) A-anabolic; B-catabolic

159. In which of the following era first mammal like reptile originated?
a) Permian period
b) Triassic period
c) Jurassic period
d) Tertiary period

160. Organs differ in origin but performing similar function
a) Analogous b) Homologous c) Vestigial d) Atavism

161. Female *Anopheles* mosquito is a vector of
a) Filaria b) Malaria c) Typhoid d) AIDS

162. Tobacco contains
a) Nicotine b) Amphitamins
c) Carbon monoxide d) Both (a) and (c)

163. Smoking addiction is harmful because it produces polycyclic aromatic hydrocarbons, which cause
a) Reduction in oxygen transport
b) Increase in blood pressure
c) Cancer
d) Retardation of growth of foetus

164. When the breeders wants to incorporate desired characters into the crop plants, they should
I. increase yield and improve
II. increased tolerance to salinity
III. resistance to pathogen viruses, fungi and bacteria
IV. increased tolerance to insect pests
Choose the correct option
a) I and II b) I, II and III
c) II, III and IV d) All of these

165. GDP stands for
a) Gross Domestic Product b) Grant Domestic Payment
c) Grant Domestic Product d) Gross Domestic Payment

166. In rice fields biological nitrogen fixation is chiefly brought by
a) Lichen b) Brown algae
c) Cyanobacteria d) *Rhizobium*

167. Morphine, which is used as an analgesic is obtained from
a) *Cinchona officinalis*
b) *Papaver somniferum*
c) *Taxusbrevifolia*
d) *Berberisnilghiriensis*

168. Genetically bacteria have been successfully used in the commercial production of:
a) Human insulin b) Testosterone
c) Thyroxine d) Melatonin

169. If recombinant DNA carrying antibiotic resistance (*e. g.*, ampicillin) is transferred into *E. coli* cell, the host cell is transformed into ampicillin-resistant cells. The ampicillin resistant gene in this case is called a
a) Vectors b) Plasmid
c) Selectable marker d) Cloning sites

170. Somaclones are obtained by

a) Tissue culture b) Plant breeding
c) Irradiation d) Genetic engineering

171. Main objective of production/use of herbicide resistant GM crops is to
a) Eliminate weeds from the field without the use of manual labour
b) Eliminate weeds from the field without the use of herbicides
c) Encourage eco-friendly herbicides
d) Reduce herbicide accumulation in food articles for health safety

172. This method of finding a gene is used when researchers know very little about the gene they are trying to find. This process results in a complete gene library: a collection of copies of DNA fragments that represent the entire genome of an organism. Identify the method.
a) Cloning
b) Shotgun cloning
c) Gene synthesis cloning
d) PCR

173. $A \xrightarrow{\oplus}$ Population density (N) $\xleftarrow{\ominus} B$
If *A* increases the population density and *B* decreases then identify *A* and *B*
a) A-Natality; B-Mortality
b) A-Immigration; B-Emigration
c) Both (a) and (b)
d) A-Emigration; B-Immigration

174. The growth rate of a population stabilizes after
a) Logarithmic phase
b) Stationary phase
c) Carrying capacity
d) Negative acceleration phase

175. Excessive moisture inhibit the process of decomposition due to
a) Anaerobiasis
b) Aerobiasis
c) Photoxidation
d) Photophosphorylation

176. Energy enters the ecosystem through
a) Herbivore b) Carnivore
c) Producer d) Decomposer

177. Which of the following pairs of an animal and a plant represents endangered organisms in India?
a) *Bentinckianicobarica* and red panda
b) Tamarind and rhesus monkey
c) *Cinchona* and leopard
d) Banyan and black buck

178. Manas sanctuary is located at
a) Rajasthan b) Asom c) Bihar d) Gujarat

179. Earth's climate
a) Has been stable over the history of the planet
b) Is changing as a result of natural and human processes
c) Will stabilize over the next century, according to the predictions of most scientists
d) Has been documented to have changed once due to the evolution of green photosynthesizing plants

180. SO_2 pollution affects
a) Chloroplast b) Nucleus
c) Mitochondria d) Cell membrane