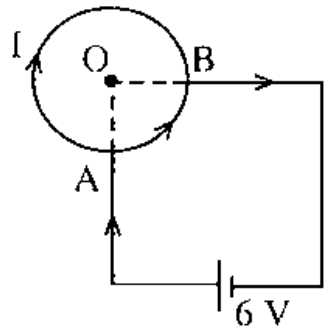
Physics

1. **Dimensional formula for electric field is _____**
   (a) $M^1 L^2 T^{-3} A^{-2}$ (b) $M^1 L^2 T^{-3} A^{-1}$
   (c) $M^1 L^1 T^{-3} A^{-5}$ (d) $M^0 L^0 T^0 A^0$
2. **A particle having mass m and charge q is at rest. On applying a uniform electric field E on it, it starts moving. What is the kinetic energy when it travels a distance x in the direction of force?**
   (a) qE^2x (b) q^2Ex
   (c) qEx^2 (d) qEx
3. **Two spheres having same radius and mass are suspended by two strings of equal length from the same point, in such a way that their surfaces touch each other. On depositing charge 4×10^{-6}C on them they repel each other in such a way that in equillibrium the angle between their strings becomes $60°$. If the distance from the point of suspension to the center of the sphere is 10 cm. Find the mass of each sphere. $(K = 9 \times 10^9$ SI and $g = 10\ ms^{-2}$.**
   (a) 0.3117 kg (b) 0.6235 kg
   (c) 0.1559 kg (d) 1.2468 kg
4. **Electric field produced due to an infinitely long straight uniformly charged wire at perpendicular distance of 2 cm is $3 \times 10^8 NC^{-1}$. Then linear charge density on the wire is _____ ($K = 9 \times 10°$SI unit)**

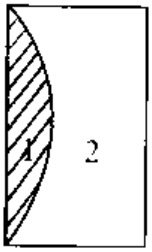
(a) $333\frac{\mu c}{m}$ (b) $3.33\frac{\mu c}{m}$
(c) $666\frac{\mu c}{m}$ (d) $6.66\frac{\mu c}{m}$

5. **Two identical thin rings each of radius R m are kept on the same axis at a distance of Rm apart. If the charges on them are 10 C and 5 C respectively, Calculate the work done in moving charge q C from the center of one ring to that of another.**
   (a) $\frac{5q}{4\pi\epsilon_0 R}\left[\frac{\sqrt{2}-1}{2}\right]$ J (b) $\frac{5q}{4\pi\epsilon_0 R}\left[1-\frac{1}{\sqrt{2}}\right]$ J
   (c) $\frac{15q}{4\pi\epsilon_0 R}\left[\frac{\sqrt{2}-1}{\sqrt{2}}\right]$ J (d) $\frac{10q}{4\pi\epsilon_0 R}\left[\frac{\sqrt{2}-1}{\sqrt{2}}\right]$ J
6. **Q amount of electric charge is present on the surface of a sphere having radius R. Then electrical potential energy of this system is ____ -**
   (a) $\frac{KQ^2}{R}$ (b) $\frac{KQ^2}{R^2}$
   (c) $\frac{1}{2}\frac{KQ^2}{R}$ (d) $\frac{1}{2}\frac{KQ^2}{R^2}$
7. **A wire is bent in the form of circle of radius 2 m. Resistance per unit length of wire is $1/\pi\Omega/m$. Battery of 6 V is connected between A& B. $\angle AOB = 90°$. Find the current through the battery.**



(a) 8 A (b) 4 A
(c) 3 A (d) 9 A

8. **The carbon resistor has three orange bands. The maximum value of resistance offered by the resistor will be____**
   (a) 49.6 KΩ (b) 39.6 KΩ
   (c) 33 KΩ (d) 26.4 KΩ
9. **Two wires of same material having lengths and radii in the ratio of $3:4$ and $3:2$ respectively are connected in parallel with a potential source of 6 V.**
   The ratio of currents flowing through them, $I_1:I_2 =$ ____
   (a) $1:3$ (b) $3:1$
   (c) $1:2$ (d) $2:1$
10. **For the galvanometer working as a voltmeter ____ is connected with the coil of the galvanometer.**
   (a) high resistance in parallel
   (b) high resistance in series
   (c) low resistance in parallel
   (d) low resistance in series
11. **The ratio of periods of $\propto$ - particle and proton moving on circular path in uniform magnetic field is ____ -.**
   (a) $2:1$ (b) $1:2$
   (c) $4:1$ (d) $1:4$
12. **Two concentric rings are kept in the same plane. Number of turns in each ring is 25 . Their radii are 50 cm and 200 cm and they carry electric currents of 0.1 A and 0.2 A respectively, in mutually opposite directions. The magnitude of the magnetic field produced at their centre is ____T**
   (a) $4\mu_0$ (b) $2\mu_0$
   (c) $\frac{10}{4}\mu_0$ (d) $\frac{5}{4}\mu_0$
13. **The magnetic susceptibility of a paramagnetic material is 1.0×10^{-5} at $27°C$ temperature. Then, at what temperature its magnetic susceptibility would be 1.5×10^{-5} ?**
   (a) $18°C$ (b) $200°C$
   (c) $-73°C$ (d) $-18°C$
14. **The Earth's magnetic field at some place on magnetic equator of Earth is 0.5×10^{-4} T. Consider the radius of Earth at that place as 6400 km. Then, magnetic dipole moment of the Earth is_____ Am^2 $(\mu_0 = 4\pi \times 10^{-7} TmA^{-1})$**
   (a) 1.05×10^{23} (b) 1.31×10^{237}
   (c) 1.15×10^{23} (d) 1.62×10^{23}
15. **Antistokes lines is Raman Scattering are the lines of __ frequency and __ wavelength.**
   (a) low, high (b) low, low
   (c) high, high (d) high, low
16. **The time taken by the sunlight to reach the bottom of a tank of depth 4.5 m filled completely with water is _____ ns. The refractive index of water is $4/3$.**
   (a) 2 (b) 20
   (c) 1.5 (d) 200
17. **A plano convex lens fits exactly into plano concave lens as shown in figure. Their plane surfaces are parallel to each other. If the lens are made of different materials of refractive indices 1.6&1.5 respectively. If R is the radius of curvature of curved surfaces of lenses. Then the focal length of the combination.**



(a) $\frac{R}{6.2}$ (b) $\frac{R}{0.2}$
(c) $\frac{R}{3.1}$ (d) $\frac{R}{0.1}$

18. A body of mass 100 g moves at the speed of 36 km/hr. The de Broglie wave length related to it is of the order ____ m$(h = 6.626 \times 10^{-34} Js)$

(a) 10^{-14} (b) 10^{-34}
(c) 10^{-4} (d) 10^{-4}

19. If the kinetic energy of free electron is made double, the new de Broglie wave length will be _____ times that of initial wave length.

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

20. Threshold wave length for lithium metal is 6250Å. For photo emission, the wave length of the incident light must be _____

(a) More than 6250Å
(b) Exactly equal to 6250Å
(c) Equal to or more than 6250Å
(d) Equal to or less than 6250Å

21. The dimensional formula of magnetic flux is ____

(a) $M^1 L^2 T^{-3} A^{-1}$ (b) $M^1 L^2 I^{-2} A^{-1}$
(c) $M^{-1} L^{-2} T^2 A^1$ (d) $M^1 L^3 T^{-2} \Lambda^{-1}$

22. A conducting Coil having 500 turns has cross - sectional area $0.15\ m^2$. A magnetic field of strength 0.2 T linked perpendicular to this area changes to 1.0 T in 0.4 sec. The induced emf produced in the coil will be ____ volt.

(a) 10.0 (b) 15.0
(c) 75.0 (d) 150.0

23. The output power in step-up transformer used in practice is ___

(a) Greater than the input power
(b) Equal to the input power
(c) Less than the input power
(d) None of these

24. A lamp consumes only 50% of maximum power applied in an A.C. circuit. What will be the phase difference between applied voltage and circuit current?

(a) π/6rad (b) π/3rad
(c) π/4rad (d) π/2rad

25. An electric current has both D.C. and A.C. Components D.C. Component of 8 A and A.C. Component is given as I = 6 sinwt A. So I_{mms} value of resultant current is ___

(a) 8.05 A (b) 9.05 A
(c) 11.58 A (d) 13.58 A

26. The wave length of the short radio waves, micro waves, ultraviolet waves are λ_1, λ_2 and λ_3 respectively. Arrange them in decreasing order.

(a) $\lambda_1, \lambda_3, \lambda_2$ (b) $\lambda_1, \lambda_2, \lambda_3$

(c) $\lambda_3, \lambda_2, \lambda_1$. (d) $\lambda_2, \lambda_1, \lambda_3$

27. The unit of permeability of Vacuum (μ_0) is _____

(a) $\frac{N}{A}$ (b) $\frac{N}{A^2}$

(c) NA (d) J/A^2

28. In young's double slit experiment, if the width of 4^{th} bright fringe is 2×10^{-2} cm, then the width of 6^{th} bright fringe will be _____ cm .

(a) 10^{-2} (b) 3×10^{-2}

(c) 2×10^{-2} (d) 1.5×10^{-2}

29. Unpolarized light falls first on polarizer (P) and then on analyzer (A). If the intensity of the transmitted light from the analyzer is $1/8$ th of the incident unpolarized light. What will be the angle between optic axes of P& A ?

(a) 30° (b) 45°

(c) 0° (d) 60°

30. The diameter of the pupil of human eye is 2.5 mm. Assuming the wave length of light used is 5000Å. What must be the minimum distance between two point like objects to be seen clearly if they are at a distance of 5 m from the cye?

(a) 1.34×10^{-3} m (b) 1.22×10^{-3} m

(c) 1.5×10^{-3} m (d) 1.6×10^{-3} m

31. If λ_1 and λ_2 are the wave length of the first numbers of the Lyman and Paschen series respectively. Then $\lambda_1 : \lambda_2$

(a) 1:3 (b) 1:30

(c) 7:50 (d) 7:108

32. The wave length of X -rays is in the range.

(a) 0.001 nm to 1 nm (b) 0.001Å to 1Å

(c) 0.001μm to 1μm (d) 0.001 cm to 1 cm

33. In the radio- active transformation

$$_{Z}X^{A} \longrightarrow {}_{Z+1}X_1^{\ A} \longrightarrow {}_{Z-1}X_2^{\ A-4} \longrightarrow {}_{Z-3}X_3^{\ A-8}$$

Which are successively emitted radioactive radiations?

(a) $\alpha, \beta-, \beta^-$ (b) $\beta-, \alpha, \beta-$

(c) $\beta-, \alpha, \alpha$ (d) $\alpha, \beta-, \alpha$

34. The binding energy per nuclean of $_8O^{16}$ is 7.97 MeV and that of $_8O^{17}$ is 7.75 MeV. The energy required to remove one ncutron from $_8O^{17}$ is ___ MeV.

(a) 3.52 (b) 3.62

(c) 4.23 (d) 7.86

35. The half -life of a radio -active substance is 20 days. If $2/3$ part of the substance has decayed in time t_2 and $1/3$ part of it has decayed in time t_1 then the time interval between t_2 and t_1 is $(t_2 - t_1) =$

(a) 5 days (b) 10 days

(c) 20 days (d) 40 days

36. The frequency of the output signal becomes ___ times by doubling the value of the capacitance in the LC oscillator circuit.

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

(c) ½ (d) 2

37. In a zener diode, the reverse bias voltage is 3 V and the width of the depletion region is 300 A°, the electric field intensity will be____ V/cm.

(a) 10^4 (b) 10^6

(c) 10^8 (d) 10^{-2}

38. The collector supply voltage in CE transistor amplifier is 10 V. The base current is 10μA in the absence of the signal voltage and the voltage between the collector and the emitter is 4 V. The current gain (β) of a transistor is 200, then the value of the load resistance R_L_____

(a) 1 KΩ (b) 2 KΩ

(c)3 KΩ (d) 4 KΩ

39. The range of frequency of audio signal is____

(a) 0 to 2 KHz (b) 20 Hz to 20 MHz

(c) 20 Hz to 20 KHz (d) 20 KHz to 200 KHz

40. For an amplitude modulated wave, the maximum amplitude is found to be 12 V and minimum amplitude is found to be 4 V. The modulation index of this wave is ___ %.

(a) 25 (b) 50

(c) 75 (d) 20

Chemistry

41. The atoms of element ' Y ' form hexagonal close packing and the atoms of element X occupies 2/3 portion of the number of tetrahedral voids. Write the formula of the compound formed by X and Y.

(a) X_2Y_3 (b) X_2Y

(c) X_3Y_4 (d) X_4Y_3

42. What is the difference between the number of atoms per unit cell in face centred cube and the number of atoms per unit cell in body centred cube?

(a) 2 (b) 1

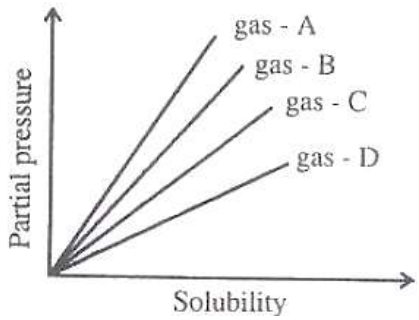
(c) 4 (d) 6

43. What will be the value of molality for an aqueous solution of 10%w/w NaOH. (Na = 28, O = 16, H = 1)

(a) 2.778 (b) 5

(c) 10 (d) 2.5

44. From the given graph at constant temperature, which gas has the least solubility?



(a) gas – D (b) gas - B

(c) gas – A (d) gas - C

45. If 10 ml of 0.1 M aqueous solution of NaCl is divided in to 1000 drops of equal volume, what will be the concentration of one drop?

(a) 0.01 M (b) 0.10 M

(c) 0.001 M (d) 0.0001 M

46. Which of the following will give $H_{2(g)}$ at-cathode and $O_{2(g)}$ at anode on electrolysis using platinum electrodes?

(a) molten NaCl
(b) concentrated aq. solution of NaCl
(c) dilute aq. solution of NaCl
(d) solid NaCl

47. Which of the following statement is incorrect with respect to metallic or electronic conductivity?
(a) metallic conductivity depends on the structure of metal and its characteristics
(b) metallic conductivity depends on the number of electrons in the valence shell of atom of metal
(c) The electrical conductivity of metal increases with increase in temperature
(d) There is no change in the structure of metal during electrical conduction

48. Which of the following is concentration cell?
(a) $Cu_{(s)}/Cu^{2+}_{(aq,Im)}//Cu^{2+}_{(aq,1\ m)}/Cu_{(s)}$
(b) $Cu_{(s)}/Cu^{2+}_{(aq,0.5\ m)}//Cu^{2+}_{(aq,0.5\ m)}/Cu_{(s)}$
(c) $Zn_{(s)}\ /Zn^{2+}_{(aq,\ 0.5\ m)}//Cu^{2+}_{(aq,0.1\ m)}/Cu_{(s)}$
(d) $\ominus Pt/H_{2_{(8.\ 1ban}}\ /HCl_{(aq,0.002M)}//HCl_{(aq,\ 0.005M)}/H_{2_{(c.l.\ bax)}}\ /PL \oplus$

49. Which of the following metal is purified by Mond Carbonyl method?
(a) Zr (b) Ti
(c) Ge (d) NI

50. Which oxide is colourless and neutral?
(a) N_2O (b) N_2O_3
(c) N_2O_4 (d) N_2O_5

51. What is the geometrical shape of XeO_3 ?
(a) Planar triangular (b) Trigonal pyramidal
(c) Square planar (d) Tetrahydral

52. Aqueous solution of which of the following acid cannot be kept in glass bottle?
(a) HF (b) HI
(c) HCl (d) HBr

53. Which Of the following is the correct order for strength of C – X bond.
(a) $CH_3\ F > CH_3Cl > CH_3Br > CH_3I$
(b) $CH_3\ F < CH_3Cl < CH_3Br < CH_3I$
(c) $CH_3I > CH_3\ F > CH_3Cl > CH_3Br$
(d) $CH_3Cl > CH_3Br > CH_3\ F > CH_3I$

54. Which one is the Swartz reaction from the following?

(a) $CH_3Cl + NaI \xrightarrow{\text{acetone}} CH_3I + NaCl$

(b) $CH_3Br + NaI \xrightarrow{\text{acetone}} CH_3I + NaBr$

(c) $CH_3Br + AgF \longrightarrow CH_3F + AgBr$

(d) $2\,CH_3Cl + 2\,Na \xrightarrow{\text{Dry ether}} CH_3{\cdot}\,CH_3 + 2\,NaCl$

55. Which of the following statement is incorrect for bimolecular nucleophylic substitution reaction (SN^2) ?
(a) It is a second order reaction
(b) In SN^2 reaction the substrate does not undergo heterolytic fission
(c) The rate of SN^2 reaction does not depends on concentrations of both substrate and nucleophilic reagent
(d) SN^2 reaction occurs in single step without forming intermediate

56. Which of the following alcohol has highest solubility in water?
(a) Secondary butyl alcohol
(b) Tertiary butyl alcohol
(c) Ethelene glycol
(d) Glycerol

57. In which of the following reactions of alcohol there is no cleavage of C − O bond?
(a) Oxidation reaction of alcohol
(b) Dehydration reaction of alcohol
(c) Reduction reaction of alcohol
(d) Reaction of alcohol with phosphorous tribromide

58. Which one of the following compounds do not give a primary alcohol on reduction?
(a) Propanoic acid (b) Propanal
(c) Methyl propanoate (d) Propan-2-one

59. The half-life period for a first order reaction is _____
(a) Proportional to concentration
(b) Independent of concentration
(c) Inversely proportional to concentration
(d) Inversely proportional to the square of the concentration

60. According to Arrhenius equation, the slope of $\log k \rightarrow \frac{1}{T}$ plot is ___
(a) $\frac{-Ea}{2.303}$ (b) $\frac{-Ea}{2.303R}$
(c) $\frac{-Ea}{2.303RT}$ (d) $\frac{Ea}{2.303RT}$

61. The value of rate constant for a first order reaction is $2.303 \times 10^{-2} sec^{-1}$. What will be the time required to reduce the concentration to $\frac{1}{10}$ th of its initial concentration?
(a) 10 second (b) 100 second
(c) 2303 second (d) 230.3 second

62. Which of the following statement is incorrect for physical adsorption?
(a) Monomolecular layer forms on the adsorbent
(b) It is instantaneous
(c) Less activation energy is required for it
(d) Generally it results at low temperature and adsorption decreases with increase in temperature

63. Name the catalyst [X] for the reaction, $CO_{(g)} + H_{2(g)} \xrightarrow{[X]} HCHO_{(g)}$
(a) Ni (b) Cu
(c) Cu/ZnO (d) Cu/Cr_2O_3

64. Which of the following is a transition element as per the ground state electronic configuration?
(a) Au (b) Hg
(c) Cd (d) Zn

65. Which of the following option is the correct order for the basic strength of metallic hydroxides?
(a) $Al(OH)_3 < Lu(OH)_3 < Ce(OH)_3 < Ca(OH)_2$
(b) $Ca(OH)_2 < Al(OH)_3 < Lu(OH)_3 < Ce(OH)_3$
(c) $Lu(OH)_3 < Ce(OH)_3 < Al(OH)_3 < Ca(OH)_2$
(d) $Lu(OH)_3 < Ce(OH)_3 < Ca(OH)_2 < Al(OH)_3$

66. Which of the following compound is used in gas lighter.
(a) CeO_2 (b) Pyrophoric Misch metal
(c) Nichrome (d) Nitinol

67. Which of the following complex does not show optical isomerism?
(a) $[Cr(C_2O_4)_3]^{3-}$ (b) $Cis[Pt(Br)_2(en)_2]^{2+}$
(c) $[CrCl_2(NH_3)_2en]^+$ (d) $[Cr(NH_3)_4SO_4]^+$

68. Which of the following complex ion has least stability?
(a) $[Co(CN)_6]^{3-}$ (b) $[Co(NH_3)_6]^{2+}$
(c) $[Co(NH_3)_6]^{3+}$ (d) $[Co(CO)_6]^{3+}$

69. Which of the following ligand possess only one co-ordination site?
(a) O^{2-} (b) CO_3^{2-}
(c) SO_4^{2-} (d) $[OX]^{2-}$

70. Which of following is the correct order of acidic strength?
(a) $CH_3COOH > ClCH_2COOH > Cl_2CHCOOH > Cl_3$. C. COOH
(b) $Cl_3 \cdot C \cdot COOH > Cl_2CH \cdot COOH > Cl \cdot CH_2COOH > CH_3COOH$
(c) $CH_3COOH > Cl_3 \cdot C \cdot COOH > Cl_2CH \cdot COOH > Cl_2 \cdot CH_2COOH$
(d) $CH_3COOH > ClCH_2COOH > Cl_2 \cdot CH \cdot COOH > Cl_3 \cdot C \cdot COOH$

71. The solution of Fehling B contains ___
(a) Alkaline sodium potassium citrate
(b) Acidified Rochelle salt
(c) Alkaline sodium potassium tartarate
(d) Acidified sodium potassium citrate

72. Which of the following compound does not react with concentrated alkali to give corresponding alcohol and salt of carboxylic acid?
(a) Benzaldehyde
(b) Trimethyl acétaldehyde
(c) Dimethyl acetaldehyde
(d) Formaldehyde

73. Which of the following reaction does not occur?
(a) Tri propyl amine + benzene sulphonyl chloride
(b) Di propyl amine + benzene sulphonyl chloride
(c) Propyl amine + benzene sulphonyl chloride
(d) Propyl amine + p-toluene sulphonyl chloride

74. Presently which reagent is used for separation of 1°, 2° and 3° amines?
(a) p-toluene sulphonyl chloride
(b) Benzene sulphonyl chloride
(c) p-Amino benzene sulphonyl chloride
(d) m - toluene sulphonyl chloride

75. Which vitamin is not obtained from plants?
(a) Thiamine (b) Cyanocobalamine
(c) Pyridoxine (d) α-Tocopherol

76. When sucrose is heated to 483 K temperature, it loses water and forms a brown amorphous substance called____
(a) Aspartame (b) Caramel
(c) Alitame (d) Sucrolose

77. Which of the following amino acid is neutral?
(a) Glycine (b) Aspartic acid
(c) Lysine (d) Arginine

78. Which of the following polymer form net like structure?
(a) Polythene (b) Butyl rubber
(c) Polystyrene (d) Melamine polymer

79. Which of the following pair of monomers are used in preparation of PHBV?
(a) β-Hydroxy butyric acid, β-hydroxy valeric acid
(b) β - Hydroxy valeric acid, Amino caproic acid

(c) β - Hydroxy butyric acid, Adipic acid
(d) Lactic acid, Adipic acid

80. Which of the following is useful as a food preservative?
(a) Salts of sorbic acid (b) Sucrolose
(c) Ascorbic acid (d) Citric acid

Biology

81. Flaccid cell means_____
(a) Plasmolysed cell
(b) Cell with turgidity
(c) The cell in which water flows in and out of cell are in equilibrium
(d) The cell kept in hypotonic solution

82. Which of the option is correct for photorespiration?
(a) In Chloroplast, glycerate forms glycine
(b) In Peroxisome, glycerate forms phosphoglycolate
(c) In Mitochondrion, glycine forms serine
(d) In Bundle sheath, serine forms glycine

83. If bundle sheath cells of the C_4 plants are infected by an organism, which utilize CO_2 efficiently then which process will be affected very first?
(a) PGAL → RUBP (b) PGAL + PGA → Glucose
(c) PGA → PGAL (d) RUBP→ PGA

84. Which option is correct for the region produced from the apical octant (a) and basal octant (b), in capsella type of embryonic development
(a) a = Central region of radicle
b = Cotyledon
(b) a = Cotyledon
b = Central region of radicle
(c) a = Hypocotyl
b = Plumule of embryo
(d) a = Plumule of embryo
b = Hypocotyl

85. Which option shows incorrectly matched group?
(a) Pseudopodiospores - Plasmodium - Sporulation
(b) Gemmules - Spongilla - Budding
(c) Zoospores -Aspergillus - Sporulation
(d) Conidia - Penicilliun - Asexual reproduction

86. Which option is correct for the disease caused by protozoans:
(a) Herpes simplex - itching in the genital or and area
(b) Treponema pallidium - white patches on the tongue or roof of the buccal cavity
(c) Neisseria gonorrhoeae - pain during passing urine
(d) Trichomonas vaginalis - pain during passing urine

87. Which of the following option is correct for the statement ' X ' and ' Y '?

Statement ' X ': Immediately after repolarization, ionic imbalance is created on both the sides of nerve fibre.

Statement ' Y ': During repolarization K^+ion channel open up and K ' ion moves on innerside of plasma membrane.

(a) Statements ' X ' and ' Y ' are correct and ' Y ' is correct for ' X '.
(b) Statements ' X ' and ' Y ' are correct and ' Y ' is not correct for ' X '.
(c) Statement ' X ' is correct and statement ' Y ' is wrong.
(d) Statement ' X ' is wrong and statement ' Y ' is correct.

88. Which 'enzyme' initiates the digestion of proteins:-

(a) Pepsin (b) Trypsin
(c) Aminopeptidase (d) Carboxypeptidase

89. Volume of air inspired and expired with each normal breath is known as ___

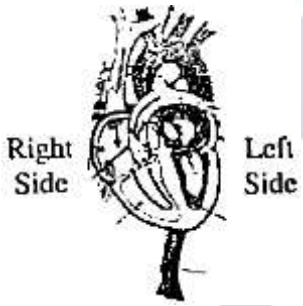
(a) Total lung capacity
(b) Residual Volume (R.V.)
(c) Yital Capacity (V.C.)
(d) Tidal Volume (T.V.)

90. Which option is correct for the formation of 'Intrinsic factor - X Activator complex for blood coagulation?

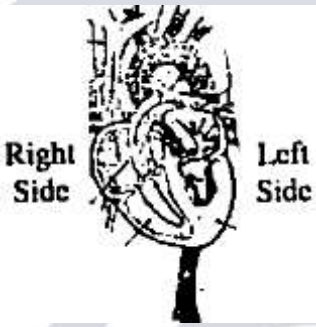
(a) Inactivated Christmas factor $+AHG +$ phospholipid $+Ca^{2}$
(b) Activated Christmas factor $+AHG +$ phospholipid $+Ca^{+2}$
(c) Convertin $+AHG + Ca^{+2} +$ FSF
(d) Phospholipid - protein complex + Proconvertin

91. Which diagram is correct for the circulation of blood through human heart?

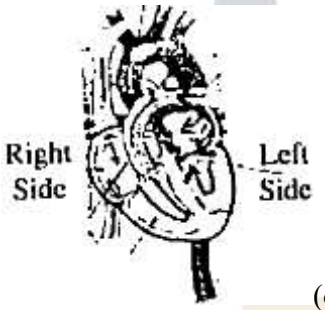
(a)



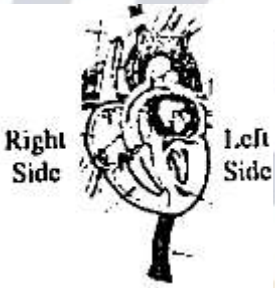
(b)



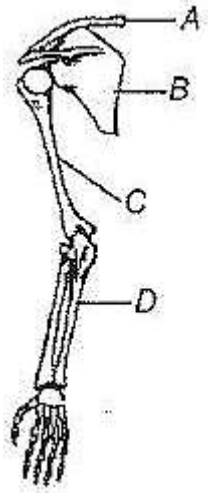
(c)



(d)



92. Which option is correct for the region labelled as a, b, c and d in the given diagram?



(a) a - Clavicle, b - Scapula,
c - Humerus, d - Radius
(b) a - Scapula, b - Clavicle,
c - Humerus, d - Ulna
(c) a - Clavicle, b - Ulna,
c - Radius, d - Humerus
(d) a - Clavicle, b - Glenoid cavity
c - Radius, d - Ulna

93. For the given statement ' X ' and ' Y ', which option is the correct option.
Statement ' X ': Red muscle are also called acrobic muscle.
Statement ' Y ' : Red muscle possesses large amount of mitochondria which can utilize large amount of oxygen stored in them for ATP production.

(a) Statement ' X ' and ' Y ' are correct and statement ' Y ' is incorrect explanation for ' X '
(b) Statement ' X ' is correct and ' Y ' is incorrect
(c) Statement ' X ' is incorrect and ' Y ' is correct
(d) Statement ' X ' and ' Y ' are correct and statement ' Y ' is correct explanation for ' X '

94. From the following options, which is the correct one:

(a) Glucose $\xrightarrow[\beta\text{-cells}]{\text{Glucagon}}$ Glycogen

(b) Glucose $\xrightarrow[\alpha\text{-cells}]{\text{insulin}}$ Glycogen

(c) Glycogen $\xrightarrow[\alpha\text{-cells}]{\text{Glucagon}}$ Glucose

(d) Glucose $\xrightarrow[\alpha\text{-cells}]{\text{Glucagon}}$ Glycogen

95. While working in a lab, a student forgot to add colchicine while karyotyping through blood culture technique. Then what will happen:
(a) Mitosis will be arrested at metaphase
(b) Chromosomal division will continue and each chromosome will have four arms
(c) Chromosomal division will continue
(d) Mitosis will be arrested at telophase

96. In Lac-Operon it mutation occurs in the middle gene of the 'structural gene' then:
(a) Permease will not be synthesized
(b) β - Galactosidase will not be synthesized
(c) Transacetylase will not be synthesized
(d) Lactose digestion will be rapid

97. Some genomic representation of skin colour are given below:
(i) AA bb CC **(ii) AA bb cc**
(iii) AA BB CC **(iv) aa bb cc**

Which of option is correct for showing the darkness of colour of the skin in decreasing order:
(a) i → iv → ii → iii (b) iii → ii → i → iv
(c) iii → i → ii → iv (d) i → iii → ii → iv

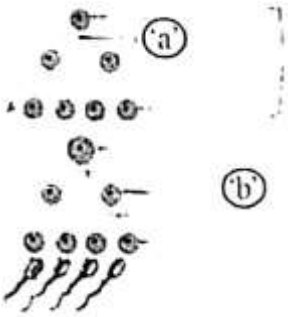
98. Select the correct option for the given statements ' X ', ' Y ' and ' Z '.
' X ' - A transgenic cow, Rosie produced human protein-enriched milk, which was nutritionally more balanced product for human babies than natural cow milk.
' Y ' - Milk produced by transgenic cow, Rosie contain 2.4 gm . protein/li.
' Z ' - In the above mentioned milk in ' Y ' statement, alpha lactalbumin is present.
(a) Statement X . Y, Z are true and statement Z gives correct explanation for X
(b) Statement X, Y, Z are true and statement Z does not give correct explanation of X
(c) Statement X&Y are correct. Statement Z is wrong
(d) Statement X & Y are wrong. Statement Z is correct

99. Which of the option shows following examples in ascending order in terms of BOD?
(i) Distilled water
(ii) Tap water
(iii) Sewage wastes drained in river
(a) i – ii – iii (b) ii –i – iii
(c) iii –i – ii (d) iii –ii – i

100. Choose the correct option for the toxic protein produced by B. Thuringiensis:
(a) it acts in acidic medium and binds to epithelial cells of foregut.
(b) it acts in neutral medium and binds to epithelial cells of hindgut.
(c) it acts in alkaline medium and binds to epithelial cells of foregut.
(d) it acts in alkaline medium and binds to epithelial cells of midgut.

101. Non-symbiotic nitrogen fixation takes place by:
(a) Nostoc, Azotobacter, Clostridium
(b) Anabena, Nostoc, Rhizobium
(c) Azotobacter, Nitrosomonas, Rhizobium
(d) Anabena, Nitrosomonas, Pseudomonas

102. Which option is correct for the region labelled as "a" and "b" in the given diagram?



Multiplication phase

Growth phase

Maturation phase

(a) a = Mitosis b = Primary Spermatocytc
(b) a = Meiosis b = Secondary Spermatocyte
(c) a = Mitosis b = Secondary Spermatocyte
(d) a = Meiosis b = Primary Spermatocyte

103. Which option is completely correct for the given statements: Statements:

Statement 1 : The nerve impulse ordered by respiratory centre passes through nerve to the diaphragm and the intercostal muscles and regulates respiration.

Statement 2 : Respiratory centres scatterly located in brain stem gives of rythmic stimuli to diaphragm and respiratory muscle and regulate respiration.
(a) First statement is correct and second statement is wrong
(b) First statement is wrong and second statement is correct
(c) 13oth of the statements are wrong
(d) Both of the statements are correct

104. Which segment of renal tubule is permeable to water but nearly impermeable to salts?
(a) Proximal conkulated tubule
(b) Descending limb of Henle's loop
(c) Ascending limb of Henle's loop
(d) Distal conkulated tubule

105. Which option is correct for the correctly matched groups for the Column I. Column II and Column III.

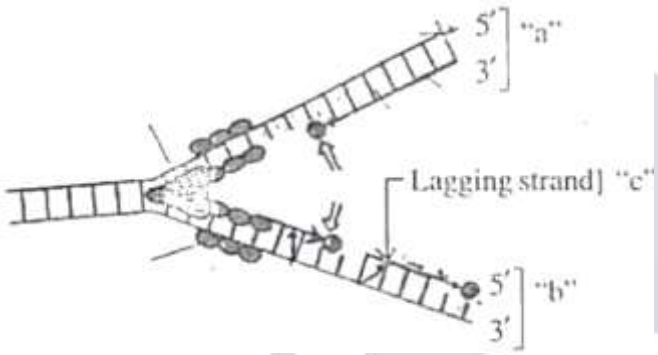
Column I		Column II		Column III
(a) Resting membrane potential	i)	Na^+channel get open	c)	$Na^+$and K′ pumps are responsible for it
(b) Action potential	ii)	Na^+ channel is closed	i)	Last for very short time
(c) Depolarization	iii)	Na^+ ' ions are more on outer side of membrane	g)	K^* ions move on outerside

(d) Repolarization	iv)	Na^+ions are more on inner side of membrane	h)	Positive charge on inner side of membrane

(a) (a - ii - h) (b-i - g) (c - iii - e) (d- iv - f)
(b) (a-iii - e) (b-iv - f) (c-i-h) (d - ii - g)
(c) (a - iv - f) (b - iii - c) (c - i - c) (d - i - h)
(d) $(a-iv-e)(b-iii-f)(c-ii-g)(d-i-g)$

106. Which option is correct for the aminoacid and the total number of their genetic code?
(a) $Arg = 6, His = 6$ (b) $Val = 6, Pro = 6$
(c) $Pro = 4, Thr = 4$ (d) $Thr = 4, Arg = 4$

107. Which option shows correctly labelled region in the given diagram of DNA replication?



(a) only c (b) a, c
(c) a,b (d) b,c

108. In population ' X ' proportion of gene " M " is 60% and gene " m " is 40% then which of the following options is correct for the Heterozygous genotype in the off spring (According to Hardy - Weinberg Law)?
(a) 36% (b) 48%
(c) 16% (d) 20%

109. Breeding ground for migratory flemingo is _____
(a) area between Khadir and Paccham islands in great Rann of Kachch
(b) area of Gulf of Kachch (Kutch)
(c) area of great Rann of Kachch (Kutch) and little Rann of Kachch (Kutch)
(d) area of Nal Sarovar Bird Sanctuary

110. "Embryo are not differentiated into different tissues at the time of fruit ripening". Select option related to this statement?
(a) Exogenous dormancy, physiological dormancy
(b) Endogenous dormancy, morphological dormancy
(c) Exogenous dormancy, morphological dormancy
(d) Endogenous dormancy, mechanical dormancy

111. In muscles from three molecules of glucose, two are completely oxidized and one is incompletely oxidized (anacrobic) then, what will be the number of total NAD' molecules utilized?
(a) 10 (b) 20
(c) 14 (d) 08

112. Which option is correct for the region labelled as "a" and " b " in the given diagram of transverse section of gut?

(a) a = Nerve
b = Circular muscle
(b) a = Sub - mucosal plexus of vessels
b = Mucosal gland
(c) a = Villi
b = Mucosal gland
(d) a = Longitudinal muscle
b = Muscularis mucosa

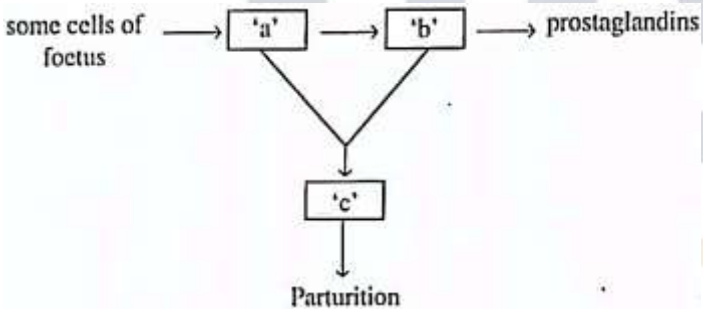
113. Which of the following statement is correct.

(a) In honey - bee, functional male does not undergo meiosis during gamate formation
(b) In flagellaria, male is heterogametic
(c) In Bonellia, a hormone - like substance secreted by the proboscis is responsible for femaleness
(d) Duc to the addition of one extra ' X ' chromosome in Drosophila in uninucleated state gynandromorph is observed.

114. Which of the following option is correct for recombinant DNA technology?

(a) Exo nuclease enzyme removes nucleotides from site within DNA
(b) Endo nuclease enzyme removes nucleotides from the ends of DNA
(c) Endo nuclease enzyme cut long polandric DNA strand
(d) Exo nuclease enzyme removes nucleotides from ends of DNA

115. What does ' a ', ' b ' and ' c ' represents in the following flow chart:



(a) a = progesterone
b = oxytocin
c = slow contraction of uterus
(b) a = oxytocin
b = uterus
c = slow contraction of uterus
(c) a = placenta
b = oxytocin
c = vigorous contraction of uterus
(d) a = oxytocin
b = placenta
c = vigorous contraction in uterus

116. In a healthy individual, GFR is about. _____ / min, the volume of the filtrate per day is____ li. and amount of micturition per day is_____ li.

(a) 100ml.,150 lit., 1.8 lit.
(b) 125ml.,180 lit., 1.5 lit.
(c) 135ml.,180 lit., 1.8 lit.
(d) 140 ml., 150 lit., 1.8 lit.

117. Pituitary gland is located in ′a′ , which is a 'b' of 'c' bone?

(a)
a = Sella turcica
b = Raised surface
c = Ethmoid

(b)
a = Reketh's pauch
b = Depression
c = Nasal

(c) a = Sella turcica
b = Depression
c = Sphenoid

(d)
a = Reketh's pauch
b = Depression
c = Sphenoid

118. At a given time in a forest 900 deers are found, 100 more decrs can be accommodated, then 1000 is ____

(a) Population carrying capacity of or deer
(b) Mortality of deer
(c) Maximum natality
(d) Realised natality

119. Which of the following is one of the direct causes of cancer?

(a) Obesity (b) Inadequate O_2 supply
(c) Atherosclerosis (d) Hypertension

120. Which of the following option is correct for the given statements, ' X ', ' Y ' and ' Z '?

Statements:
Statement ' X ': R.Q. of fat containing palmatic acid is less than onc, whereas RQ of glucose is 1 .

Statement ' Y ': Fat containing palmatic acid need less O_2 for respiration and glucose need more oxygen for respiration.

Statement ' Z : Fat containing palmatic acid has much less oxygen in its constitution as compared to glucose.

(a) Statement X '. Y ' and ' Z ' are correct. Statements ' Y ' & ' Z ' are correct explanation for ' X '
(b) Statement ' X ' and ' Y ' are correct and statement ' Z ' is incorrect Statement ' Y ' is correct explanation for ' X '.
(c) Statement ' X ' and ' Z ' are correct and statement ' Y ' is incorrect Statement ′% ' is correct explanation for ' X '.
(d) Statement ' X ' and ' Z ' are incorrect and statement ' Y ' is correct