

PART - A (PHYSICS)

1. In the diagram 100 kg block is moving up with constant velocity, then find out the tension at point P :



2. In a simple microscope of focus length 5 cm final image is formed at D, then its magnification will be :
(1) 6 (2) 5 (3) 2 (4) 1
3. Centre of mass of a ring will be at a position.
4. In a full wave rectifier in which input voltage is represented by $V = V_M \sin \omega t$, then peak inversion voltage of non conducting diode will be :
(1) $-V_M$ (2) $V_M/2$ (3) $2V_M$ (4) 0
5. A long cylindrical wire carrying current of 10 amp. has radius of 5 mm, then find its magnetic field induction at a point 2 mm from the centre of the wire
(1) $1.6 \times 10^{-4} \text{ T}$ (2) $2.4 \times 10^{-4} \text{ T}$ (3) $3.2 \times 10^{-4} \text{ T}$ (4) $0.8 \times 10^{-4} \text{ T}$

6. A parallel plate capacitor of $1\mu\text{F}$ capacity is discharging through a resistor. If its energy reduces to half in one second. The value of resistance will be

(1) $\frac{2}{\ln(2)}\text{M}\Omega$ (2) $\frac{4}{\ln(2)}\text{M}\Omega$ (3) $\frac{\theta}{\ln(2)}\text{M}\Omega$ (4) $\frac{16}{\ln(2)}\text{M}\Omega$

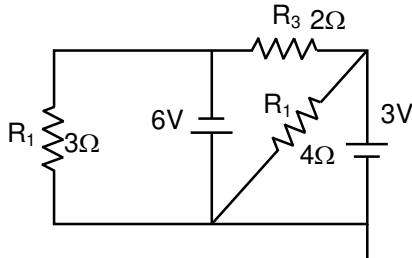
7. Water is flowing in a non viscous tube as shown in the diagram. The diameter at point A and point B are 0.5 m and 0.1 m respectively. The pressure difference between points A & B are $\Delta P = 0.8 \text{ m}$, then find out the rate of flow :



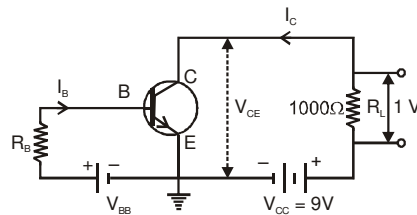
8. 'Biot Savart' law of magnetism is analogous to :

9. In a electro magnetic wave the expression for electric field is given by $E = 50 \sin (\omega t - kx)$ the permeability is given $\mu = 4\mu_0$ & permittivity $\epsilon_0 = \epsilon_r$, then find the average intensity delivered :
 (1) (2) (3) (4)

10. In the diagram find out the current through 2Ω (R_3) :



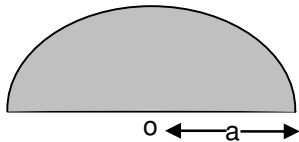
11. An N-P-N transistor is connected in common emitter configuration in which collector supply is 9V and the voltage drop across the load resistance of 1000Ω connected in the collector circuit is 1 V. If current amplification factor is $(25/26)$, If the internal resistance of the transistor is 200Ω , then which of the following options is **incorrect**.



12. In a hydrogen spectrum third line of Balmer's series having wavelength λ . Find the binding energy of the ground state.

13. A wire of some length is bent in the form of a ring of diameter $2a$ having self inductance L , then L will depend upon a as :

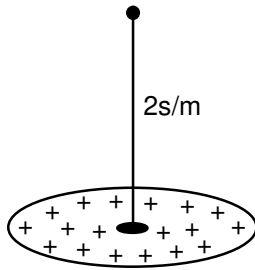
14. What will be the position of centre of mass of a half disc as shown :



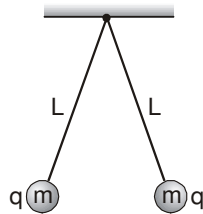
- (1) $\frac{2a}{\pi}$ (2) $\frac{4a}{3\pi}$ (3) $\frac{a}{\pi}$ (4) $\frac{2a}{3\pi}$

15. In a LCR series resonating circle circuit. Give the value of average power loss :
16. Find the minimum wavelength of X-rays tube emitted by X-ray tube, which is operating at 15 kv. Accelerating voltage.
17. A galvanometer gives full scale deflection of 1 volt when acting like a voltmeter when connected in series with $2 \text{ k } \Omega$ resistance. The same galvanometer gives 500 mA. Full scale deflection when acting like a ammeter when connected with shunt resistance of value $0.2 \text{ } \Omega$ in parallel. Find out the resistance of galvanometer.

18. A uniformly charged non conducting disc with surface charge density 10 nC/m^2 having radius $R = 3 \text{ cm}$. Then find the value of electric field intensity at a point on the perpendicular bisector at a distance of $r = 2 \text{ cm}$.

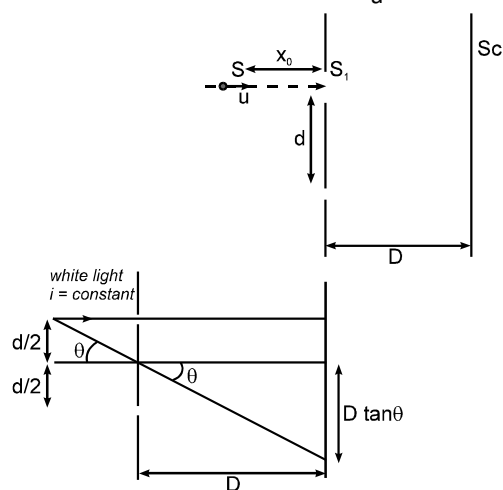


19. Two small balls, each having equal positive charge Q are suspended by two insulating strings of equal length L from a hook fixed to a stand. If mass of each ball $= m$ & total angle between the two strings is 60° , then find the charge on each ball.



20. A magnetic material is placed in a non-uniform magnetic field which is oriented along z-axis having gradient = $\frac{dH}{dz}$, then force experienced by the material will be equal to
21. A Rocket having initial mass 5×10^6 kg. Which include mass of fuel of mass 4×10^6 kg is ejecting gas with velocity 4000 m/s relative to Rocket, then what will be the velocity of the Rocket when entire fuel finishes.
22. In a single slit diffraction the distance between slit & screen is 1 m. The size of the slit is 0.7 mm & second maximum is formed at the distance of 2 mm from the centre of the screen, then find out the wavelength of light
23. In a solar cell current is generated due to bond breakage in which region.
(1) depletion region (2) n-region
(3) p-region (4) None of these
-

24. In a modulated signal the maximum amplitude is 15 Volt and minimum amplitude is 5 Volt, then amplitude of signal wave will be :
25. In a series LR circuit ($L = 3 \text{ H}$, $R = 1.5 \Omega$) and DC voltage = 1 V. Find current at $T = 2$ seconds.
26. If 1 cm^3 of water is vaporized (latent heat of vaporization = $540 \text{ cal/g}^\circ\text{C}$) at $P = 1 \text{ atm}$. If the volume of steam formed is 1671 cm^3 calculate increase internal energy.
27. In the figure shown S is the source of white light kept at a distance x_0 from the plane of the slits. The source moves with a constant speed u towards the slits on the line perpendicular to the plane of the slits and passing through the slit S_1 . Find the instantaneous velocity (magnitude and direction) of the central maxima at time t having range $0 \leq t < \frac{x_0 - d}{u}$. Assume that $D \gg d$.



28. Light is incident on a polarizer with intensity I_0 . A second prism called analyzer is kept at an angle of 15° , from the first polarizer then the intensity of final emergent light will be :
29. A satellite orbiting certain planet has apogee R_1 and perigee equal to R_2 , then find the minimum kinetic energy that should be given to the satellite to enable it to escape the planet.
30. **Assertion :** Rainy clouds appear dark from below.
Reason : There is not sufficient light which can be scattered by these clouds.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
31. **Assertion :** Magnetic field can not change K.E. moving charge.
Reason : Magnetic field can not change velocity vector.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.

32. **Assertion :** Net electric field inside conductor is zero
Reason : Total positive charge equals to total negative charge in a conductor
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
33. **Assertion :** All the charge in a conductor gets distributed on whole of its outer surface.
Reason : In a dynamic system, charges try to keep their potential energy minimum
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
34. **Assertion :** Water waves in a river are not polarized.
Reason : Water waves are longitudinal in nature.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
35. **Assertion :** In a string wave, during reflection from fixed boundary, the reflected wave is inverted.
Reason : The force on string by clamp is in downward direction while string is pulling the clamp in upward direction.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
36. **Assertion :** Surface tension decreases with increase in temperature.
Reason : On increasing temperature kinetic energy increases and intermolecular forces decrease.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
37. **Assertion :** Torque on a body can be zero even if there is a net force on it.
Reason : Torque and force on a body are always perpendicular.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
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PART - B (CHEMISTRY)

38. What is observe when ZnO is heated

- (1) yellow (2) Violet (3) Green (4) Blue

39. Which option is valid for zero order reaction.

- (1) $t_{1/2} = \frac{3}{2}t_{1/4}$ (2) $t_{1/2} = \frac{4}{3}t_{1/4}$ (3) $t_{1/2} = 2t_{1/4}$ (4) $t_{1/4} = (t_{1/2})^2$

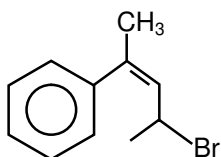
40. Violet colour appear in glass when we add—

- (1) Cr^{3+} (2) Mn^{4+} (3) I_2 (4) K^+

41. In which 'd' electrons are zero?

- (1) Th (2) Es (3) Lu (4) Am

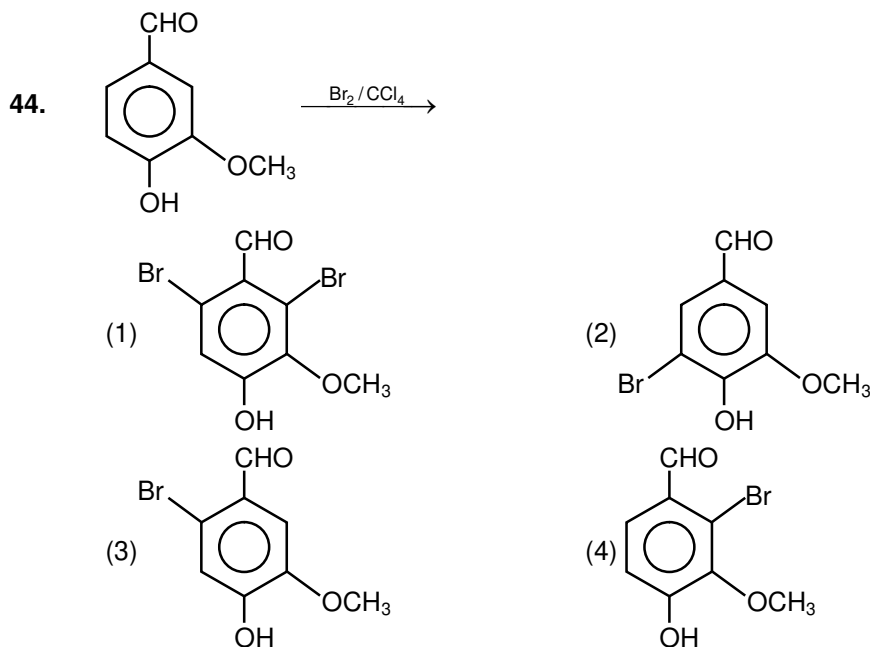
42. What is IUPAC name of following?



- (1) 4-Bromo-2-phenylpent-2-ene (2) 2-Bromo-4-phenylpent-2-ene
(3) 4-Bromo-2-phenylpent-4-ene (4) 2-Bromo-4-phenylpent-3-ene

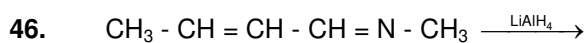
43. Trien is

- (1) Hexa dentate, Mono anionic (2) tetradentate, neutral
(3) tetradentate, dianion (4) Mono dentate, anion



45. Which is incorrect statement (Exact)
- (1) Amylopectin is insoluble in water
 (3) Cellulose is the polymer B-D-glucose

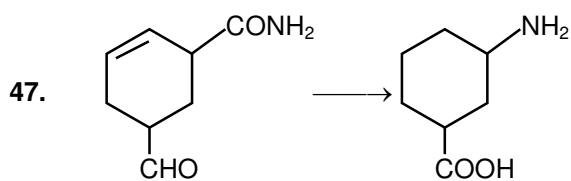
- (2) Fructose is reducing sugar
 (4) D-ribose sugar present in DNA



What is final product

- (1) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{NH} - \text{CH}_3$
 (3) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH} - \text{N} - \text{CH}_3$

- (2) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_2 - \text{NH} - \text{CH}_3$
 (4) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_2 - \text{OH}$



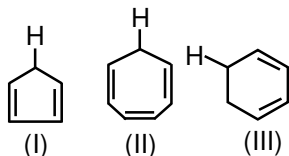
What is sequence of reagent use to convert following

- (1) H_2/Pd , $[\text{Ag}(\text{NH}_3)_2]^+$, Br_2/NaOH
 (3) Br_2/NaOH , $[\text{Ag}(\text{NH}_3)_2]^+$, H_2/Pd

- (2) $\text{Ag}[(\text{NH}_3)_2]^+$, H_2/Pd , Br_2/NaOH
 (4) H_2/Pd , Br_2/NaOH , $[\text{Ag}(\text{NH}_3)_2]^+$

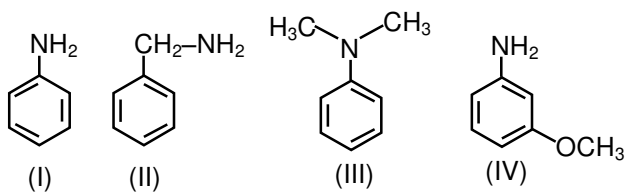
48. Match the following
- | | |
|------------------------------------|------------------------------------|
| (i) Biodegradable polymer | (p) 3-Hydroxybutanoic acid |
| (ii) Bakelite | (q) phenol |
| (iii) Neoprene | (r) 2-chlorobuta-1,3-diene |
| (iv) Glyptal | (s) phthalic acid |
| (1) i – p; ii – q; iii – r; iv – s | (2) i – q; ii – p; iii – r; iv – s |
| (3) i – p; ii – q; iii – s; iv – r | (4) i – s; ii – r; iii – p; iv – q |

49. Order of increasing acidic strength



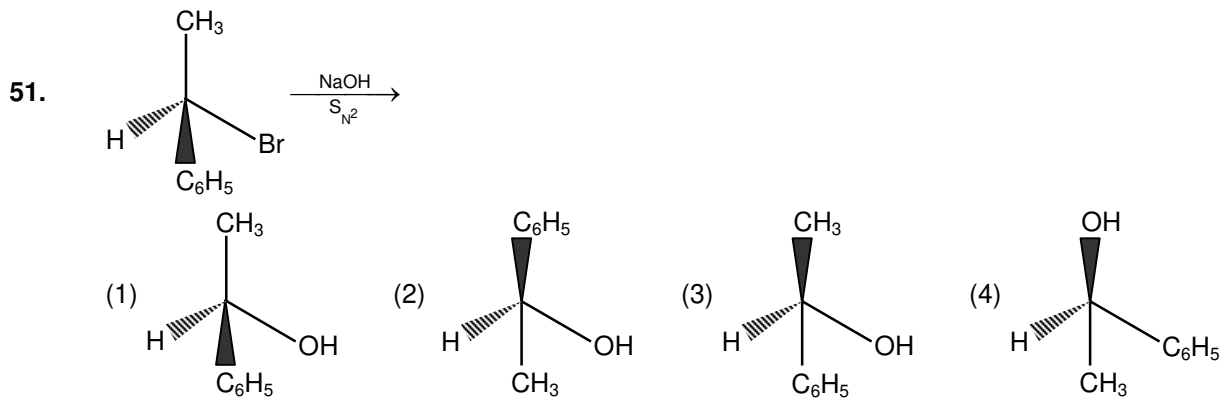
- (1) I > II > III (2) II > III > I (3) I > III > II (4) III > II > I

50.



Correct order of Basic strength

- (1) I > II > III > IV (2) II > III > I > IV (3) III > II > I > IV (4) IV > I > II > III



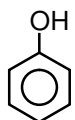
52. f-centre is
- (1) anion vacancy occupied by unpaired electron
 - (2) anion vacancy occupied by electron
 - (3) cation vacancy occupied by electron
 - (4) anion present in interstitial site

53. Wave length of particular transition for H atom is 400 nm. What can be wavelength of He^+ for same transition :
- (1) 400 nm
 - (2) 100 nm
 - (3) 1600 nm
 - (4) 200 nm

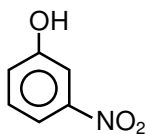
54. Which of the following contain at least one lone pair in all of its halide
- (1) Xe
 - (2) Se
 - (3) Cl
 - (4) N

55. One monoatomic gas is expanded adiabatically from 2L to 10 L at 1 atm external pressure find ΔU (in atm L) ?
- (1) -8
 - (2) 0
 - (3) -66.7
 - (4) 58.2

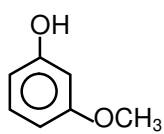
56. Correct order of acidic strength



(I)



(II)



(III)

(1) I > II > III

(2) II > III > I

(3) I > III > II

(4) II > II > I

57. Which of the following is true for N_2O_5

(1) Paramagnetic

(2) Anhydride of HNO_2

(3) Brown gas

(4) Exist in solid state in form of $[\text{NO}_2^+]$ $[\text{NO}_3^-]$

58. Which is least stable in aqueous medium

(1) Fe^{+2}

(2) Co^{+2}

(3) Ni^{+2}

(4) Mn^{+2}

59. When 45 gm solute is dissolved in 600 gm water freezing point lower by 2.2 K, calculate molar mass of solute ($K_f = 1.86 \text{ K kg mol}^{-1}$)

(1) 63.4

(2) 80 gm

(3) 90 gm

(4) 21 gm

60. Which of the following is diamagnetic complex

(1) $[\text{Co}(\text{Ox})_3]^{3-}$, $[\text{Fe}(\text{CN})_6]^{3-}$

(2) $[\text{Co}(\text{Ox})_3]^{3-}$, $[\text{FeF}_6]^{3-}$

(3) $[\text{Fe}(\text{Ox})_3]^{3-}$, $[\text{FeF}_6]^{3-}$

(4) $[\text{Fe}(\text{CN})_6]^{3-}$, $[\text{CoF}_6]^{3-}$

61. Which of the following can be reduced easily

(1) $\text{V}(\text{CO})_6$

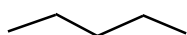
(2) $\text{Mo}(\text{CO})_6$

(3) $[\text{Co}(\text{CO})_4]^-$

(4) $\text{Fe}(\text{CO})_5$

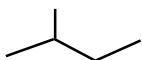
62. When NH_3 (0.1 M) 50 ml mix with HCl (0.1 M) 10 ml then what is pH of resultant solution ($\text{P}K_b = 4.75$)
 (1) 9.25 (2) 10 (3) 9.85 (4) 4.15

63. What is decreasing order of Boiling point



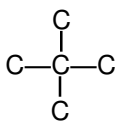
(a)

(1) $a > b > c$



(b)

(2) $b > c > a$



(c)

(3) $a > c > b$

(4) $c > b > a$

64. A gas (1g) at 4 bar pressure. If we add 2gm of gas B then the total pressure inside the container is 6 bar. Which of the following is true ?
 (1) $M_A = 2M_B$ (2) $M_B = 2M_A$ (3) $M_A = 4M_B$ (4) $M_B = 4M_A$

65. Cell equation : $A + 2B^+ \longrightarrow A^{2+} + 2B$
 $A^{2+} + 2e \longrightarrow A$ $E^\circ = +0.34 \text{ V}$
and $\log_{10} K = 15.6$ at 300 K for cell reactions
 Find E° for $B^+ + e \longrightarrow B$

Given $\left[\frac{2.303RT}{nF} = 0.059 \right]_{\text{at } 300\text{K}}$

(1) 0.80

(2) 1.26

(3) - 0.54

(4) + 0.94

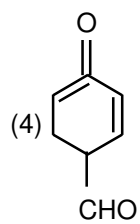
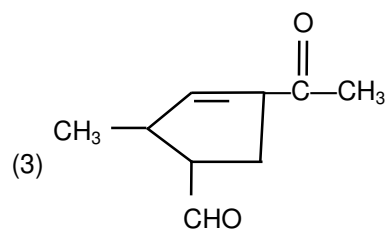
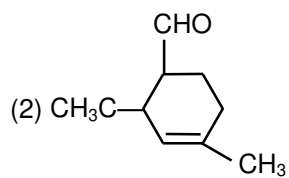
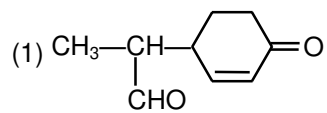
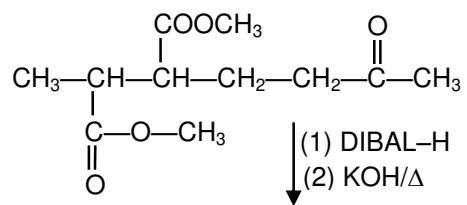
66. What happen at increasing pressure at constant temperature
 (1) Rate of Haber process decrease
 (2) Solubility of gas increase in liquid
 (3) Solubility of solid increases in liquid
 (4) $2C_{(s)} + CO_{2(g)} \longrightarrow 2CO_{(g)}$ reaction move forward
67. Which of the following is incorrect
 (1) Red P is toxic
 (2) White 'P' is highly soluble in CS_2
 (3) Black 'P' is thermodynamic is most stable.
 (4) White 'P' is soluble in NaOH evolves PH_3
68. Which of following statement is incorrect.
 (1) On prolonged dialysis colloid becomes stable
 (2) $AgNO_3$ in excess KI forms negative colloid
 (3) $AgNO_3$ in excess KI forms positive colloid
 (4) Medicines work best in colloidal form because of greater surface area
69. Which are extensive properties
 (1) V & E (2) V & T (3) V & Cp (4) P and T
70. Which is incorrect regarding S and P mixing (along Z –axis.)
 (1) Nodal plane(s) present in ABMO
 (2) Nodal plane is absent in BMO
 (3) MO formed may have higher energy than parent AO
 (4) MO formed are asymmetric
71. When $CH_3COOCH_3 + HCl$ is titrated with NaOH then at neutral point the colour of phenophthalein becomes colourless from pink due to :
 (1) due to formation of CH_3OH
 (2) due to formation of CH_3COOH which act as a weak acid.
 (3) Phenophthalein vaporizes.
 (4) due to presence of HCl

72. $2\text{ICl} \longrightarrow \text{I}_2 + \text{Cl}_2$ $K_C = 0.14$
Initial concentration of ICl is 0.6 M
then equilibrium concentration of I_2 is :
(1) 0.37M (2) 0.128 M (3) 0.224 M (4) 0.748 M

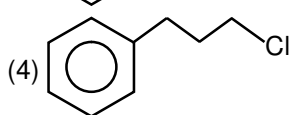
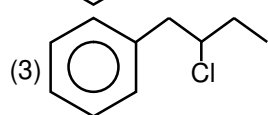
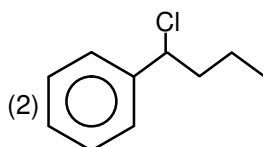
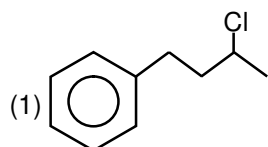
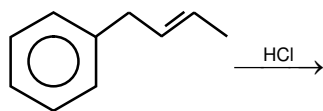
73. If reaction A and B are given with Same temperature and same concentration but rate of A is double than B. Pre exponential factor is same for both the reaction then difference in activation energy $E_A - E_B$ is ?
(1) $-RT \ln 2$ (2) $RT \ln 2$ (3) $2RT$ (4) $\frac{RT}{2}$

74. Which of the following have maximum pH?
(1) Black coffee (2) blood (3) Gastric juice (4) Saliva

75.




76.



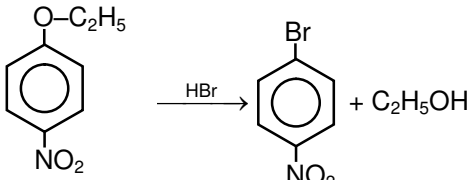
80. **Assertion :** O_3 has higher boiling point than O_2 .
Reason : O_3 is allotrope of oxygen
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.

81. **Assertion :** Tyrosine behave as a acidic at pH = 7
Reason : pK_a of phenol is mole than 7.
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.

82. **Assertion :** $Fe(OH)_3$ and As_2S_3 colloidal sol on mixing precipitates
Reason : $Fe(OH)_3$ and As_2S_3 combine and form new composition precipitate.
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.

83. **Assertion :**  + $CH_3-CH_2-CH_2-Cl \xrightarrow{AlCl_3}$ Product is isopropyl benzene

Reason : Due to rearrangement of primary carbocation into secondary carbocation
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.

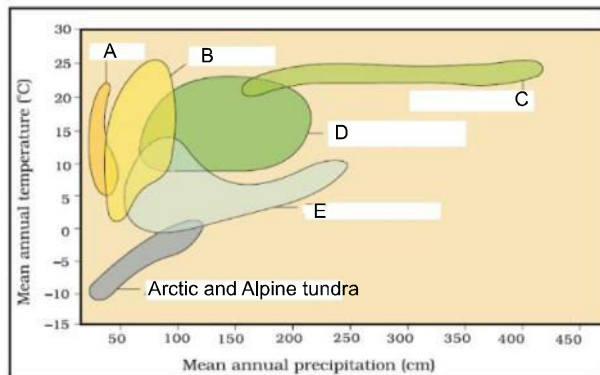
84. **Assertion :** 
 p-nitroethyl
 phenyl ether

Reason : due to formation of highly stable carbocation.
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.

85. **Assertion :** In zieses salt coordination no. of Pt is five
Reason : ethene is bidentate ligand
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
86. **Assertion :** When one solvent mixed with other solvent, vapour pressure of one increases and other decreases
Reason : When any solute added into solvent, vapour pressure of solvent decreases
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
87. **Assertion :** The surface tension of water is more than other liquid.
Reason : Water molecules have strong inter molecular H-bonding as attractive force.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.
88. **Assertion :** Anti histamine does not effect secretion of acid in stomach :
Reason : Anti Histamine and antacids work on different receptors.
(1) If both assertion and reason are true and reason is the correct explanation of assertion.
(2) If both assertion and reason are true but reason is not the correct explanation of assertion.
(3) If assertion is true but reason is false.
(4) If both assertion and reason are false.

PART - C (BIOLOGY)

89.



Select the correct labelling of above diagram

- (1) A– Desert , B–Grassland, C– Tropical rain forest, D- Temperate forest, E–Coniferous Forest
- (2) A– Grassland, B– Desert, C– Tropical rain forest, D- Coniferous Forest, E– Temperate forest
- (3) A– Coniferous Forest, B– Grassland, C– Tropical rain forest, D- Temperate forest, E– Desert
- (4) A– Tropical rain forest, B– Grassland, C– Desert, D- Coniferous Forest, E– Temperate forest

90. Select the wrong pair

- (1) RNA polymerase I – Sn RNA 5S rRNA, r-RNA
- (2) RNA polymerase I – r-RNA
- (3) RNA polymerase II – hnRNA
- (4) RNA polymerase III – tRNA

91. Citrus canker is caused by

- (1) Virus
- (2) Fungi
- (3) Bacteria
- (4) None

92. Match the column

- | | |
|--------------|------------------|
| (a) Virus | (i) Schwann |
| (b) Viroid | (ii) T.O. diener |
| (c) Cell | (iii) Pasteur |
| (d) Ribosome | (iv) Palade |

(1) a–iii, b–ii, c–i, d–iv

(2) a–ii, b–i, c–iv, d–iii

(3) a–i, b–ii, c–iii, d–iv

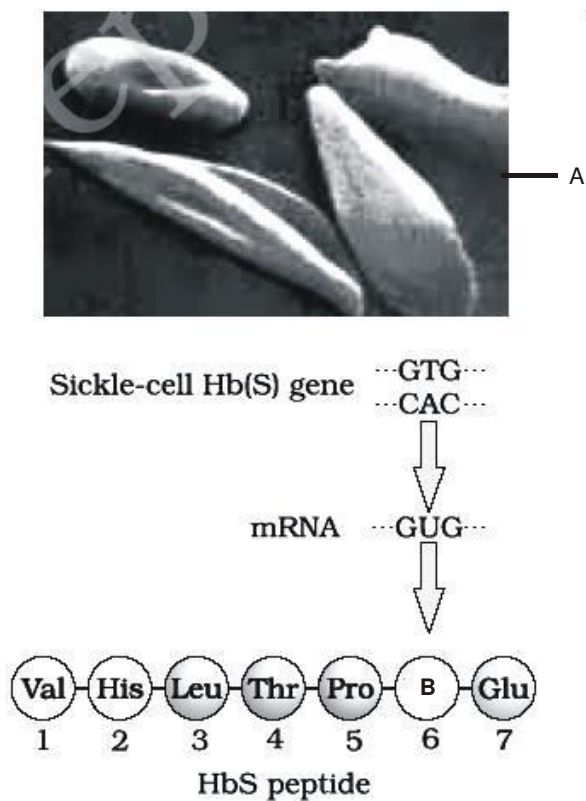
(4) a–iv, b–iii, c–i, d–ii

93. Cytokinin involves
- | | |
|-----------------------------------|------------------------------------|
| (1) Kinetin, zeatin, BAP | (2) GA ₃ , IBA, Kinetin |
| (3) Zeatin, GA ₃ , BAP | (4) IAA, Zeatin, kinetin |

94. Auxin was first isolated from
- | | |
|------------------|------------|
| (1) Human urine | (2) Callus |
| (3) Coconut milk | (4) None |

95. Which of the following group does not represent monocot
Apricot mango, guava, apple, coconut, strawberry
- | |
|--------------------------------|
| (1) Apricot, mango, Guava |
| (2) Apple, strawberry, coconut |
| (3) Coconut, apple, cashewnut |
| (4) Coconut, strawberry, mango |

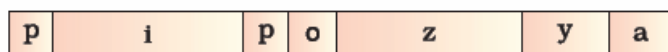
96. Which of the following is true for given diagram



- | | |
|----------------------------|----------------------------------|
| (1) A → Autosomal dominant | (2) B → Glutamic acid |
| (3) B → Valine | (4) It is caused due to bacteria |

97. Glycolysis is
 (1) Anaerobic (2) Aerobic
 (3) Anaerobic and Aerobic both (4) None
98. Interphase divides into
 (1) G₁, S, G₂
 (2) Mitosis
 (3) Prophase, metaphase, Anaphase, Telophase
 (4) Cytokinesis
99. Turner syndrome is due to
 (1) Loss of X chromosome – 44 + XO (2) Loss of any chromosome
 (3) It is due to trisomy in 21st pair (4) None

100. In the Diagram given figure of Lac operon



- (1) i – Repressor, z – β -galactosidase, y– Permease, a– Transacetylase
 (2) i – Inhibitor, z – Repressor, y– Transacetylase, a– Permease
 (3) i – Inducer, z – β -galactosidase, y– Permease, a– Repressor
 (4) i – β -galactosidase, z – Repressor, y– Permease, a– Transacetylase
101. Match the column
- | | a | b | c |
|-------|---|---|------------------|
| (i) | + | + | (1) Commensalism |
| (ii) | + | – | (2) Competition |
| (iii) | – | – | (3) Parasitism |
| (iv) | + | 0 | (4) Mutualism |
- (1) (i) 1, (ii) 2, (iii) 3, (iv) 4
 (2) (i) 2, (ii) 3, (iii) 1, (iv) 4
 (3) (i) 4, (ii) 3, (iii) 2, (iv) 1
 (4) (i) 3, (ii) 2, (iii) 1, (iv) 4

102. Match the Column-I & Column-II

Column-I

(i) MoO_2^{+2}

(ii) Mg^{+2}

(iii) Zn^{+2}

(iv) Fe^{+3}

(1) (i)–B, (ii)–D, (iii)–C, (iv)–A

(3) (i)–D, (ii)–B, (iii)–A, (iv)–C

Column-II

(A) Alcoholic dehydrogenase

(B) Nitrogenase

(C) Catalase

(D) PEP carboxylase

(2) (i)–B, (ii)–A, (iii)–D, (iv)–C

(4) (i)–B, (ii)–D, (iii)–A, (iv)–C

103. Which of the following is not related with electrostatic precipitator and scrubber

(1) 99 % particulate matter is removed by it

(2) SO_2

(3) Vapours containing mercury

(4) Oxides of nitrogen

104. Which of the following is codons codes for proline.

(1) CCC, CCU, CCG

(2) UCC, UGU, CCU

(3) CUG, CUU, CUA

(4) CGC, CGG, CCA

105. Ploidy level of Nucellus, endosperm, polar nuclei, Megaspore mother cell, female gametophyte respectively are

(1) $2n$, $3n$, n , $2n$, n

(2) $2n$, $3n$, $2n$, n , n

(3) n , $2n$, n , $2n$, n

(4) $2n$, $3n$, $2n$, $2n$, n

106. Which of the following statement is wrong about Absciscic acid :

(1) It helps in general plant metabolism

(2) It is antagonistic to GA_3

(3) It helps in seed maturation & dormancy

(4) Morphogenesis

107. Which of the following is nitrogen fixing algae

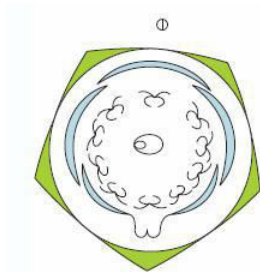
(1) Nostoc, Anabaena, Oscillatoria

(2) Azolla, Anabaena, Azotobacter

(3) Oscillatoria, Anabaena, Azolla

(4) Azolla, Nostoc, Oscillatoria

108.



The above floral diagram shows the floral formula

(1) $\oplus \overline{\text{P}}_{3+3} \text{A}_{3+3} \underline{\text{G}}_{(3)}$

(2) $\oplus \overline{\text{K}}_{(5)} \text{C}_{1+2+(2)} \text{A}_{(9)+1} \underline{\text{G}}_1$

(3) $\oplus \overline{\text{K}}_{2+2} \text{C}_4 \text{A}_{2+4} \underline{\text{G}}_{(2)}$

(4) $\oplus \overline{\text{K}}_{(5)} \text{C}_{(5)} \text{A}_5 \underline{\text{G}}_{(2)}$

109. How many polypeptide chains are there in 1 Hb molecule?

(1) 2 α & 2 β

(2) 4 α

(3) 4 β

(4) 1 α & 3 β

110. Which of the following is incorrect?

(1) Fructose is reducing sugar

(2) Cellulose has β -D Glucose units

(3) DNA has D-ribose

(4) Amylopectin is insoluble in water

111. Adrenocorticoids are released from –

(1) Adrenal cortex

(2) Thyroid gland

(3) Adrenal medulla

(4) Gonads

112. Which of the following has highest pH?

(1) Human saliva

(2) Human blood

(3) Gastric juice

(4) Urine

113. Which fat soluble vitamin helps in synthesis of prothrombin?

(1) Vit K

(2) Vit A

(3) Vit B

(4) Vit C

114. Which exocrine glands are present in skin?

- (1) Sweat gland, eccrine
- (2) Sweat gland, merocrine
- (3) Sweat gland, apocrine
- (4) Sweat gland, sebaceous gland

115. O₂ dissociation curve is plotted between pO₂ and

- (1) % Hb saturation.
- (2) pCO₂
- (3) Hb concentration
- (4) RBC/mm³ of blood

116. Select the correct matching–

	Phylum	Character	Example
(1)	Hemichordata	Notochord	<i>Balanoglossus</i>
(2)	Mollusca	Radula	<i>Dentalium</i>
(3)	Platyhelminthes	Coelomate	<i>Dugesia</i>
(4)	Coelenterata	All marine	<i>Hydra</i>

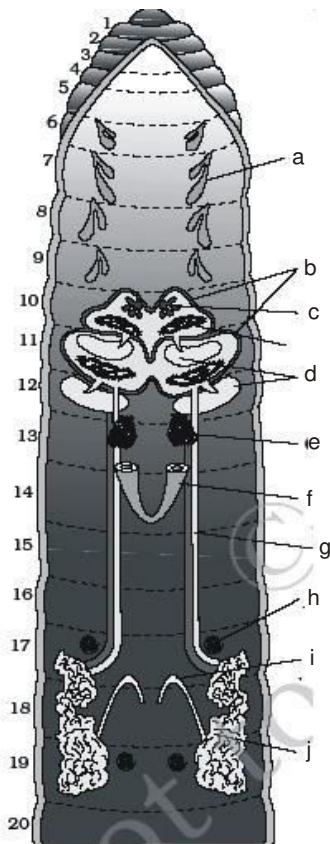
117. Which all belong to the same phylum?

(1)	Mammalia	<i>Balaenoptera, Delphinus, Rattus, Felis</i>
(2)	Porifera	<i>Euspongia, Scypha, Pennatula</i>
(3)	Arthropoda	<i>Crab, Limulus, Aplysia, Cockroach</i>
(4)	Coelenterata	<i>Hydra, Gorgonia, Obelia, Sycon</i>

118. Find out the correct option about Coelenterata –
 (1) Cnidoblast and bilateral symmetry
 (2) Cnidoblast and radial symmetry
 (3) Choanocytes and water canal system
 (4) All marine and only sexual reproduction
119. Which of the following are true about Mollusca?
 (1) Triploblastic and radial symmetry
 (2) Bilateral symmetry and calcareous shell
 (3) Radula and diploblastic
 (4) Calcareous shell and radial symmetry
120. Growth hormone and thyroxin increase the length of –
 (1) Bone (2) Muscle (3) RBC (4) Nerve cell
121. Radioactive C-dating and living fossils are used for –
 (1) Biological age (2) Geological age
 (3) Age of Rock (4) Geographical distribution
122. Fibroid (leiomyoma) uterus is a –
 (1) Benign tumor of uterus (2) Cancer of hypothalamus
 (3) Tumor of cervix epithelium (4) Cancer of vaginal epithelium
123. Match **Column-I** (microbes) to the **Column-II** (biological products) and select the option having correct matching.
- | Column-I | Column-II |
|----------------------------------|-------------------|
| (A) <i>Acetobacter aceti</i> | (i) Citric acid |
| (B) <i>Clostridium butylicum</i> | (ii) Lactic acid |
| (C) <i>Aspergillus niger</i> | (iii) Acetic acid |
| (D) <i>Lactobacillus</i> | (iv) Butyric acid |
- Options**
- | | |
|------------------------------------|------------------------------------|
| (1) A–(ii), B–(i), C–(iii), D–(iv) | (2) A–(iii), B–(ii), C–(i), D–(iv) |
| (3) A–(iii), B–(iv), C–(i), D–(ii) | (4) A–(iv), B–(iii), C–(ii), D–(i) |

124. Spermatozoa receive nutrition from –
 (1) Nurse glands (2) Interstitial cells (3) Epididymis (4) Germ cells

125. Choose the correct option from the following based on the diagram



- (1*) (a) Spermathecae (e) ovary (f) ovarian funnel (j) prostate gland
 (2) (a) testis sac (h) accessory glands (g) ovarian funnel, (i) prostate gland
 (3) (h) Spermathecae (a) ovary (j) ovarian funnel (c) accessory glands
 (4) (h) testis sac (a) accessory glands (i) ovarian funnel, (g) prostate gland

126. **Assertion :** Hybrid is formed by cross between two organisms that are different in one, or more than one traits

Reason : Mendel crossed two plants differing in one trait to obtain F_1 plants which is monohybrid cross

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

127. **Assertion :** Transpiration occurs through stomata
Reason : Guttation is due to root pressure
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not correct explanation of A
(3) A is true but R is false
(4) A and R are false
128. **Assertion :** In cycas, nitrogen fixation is found
Reason : In coralloid roots of cycas, cyanobacteria present
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not correct explanation of A
(3) A is true but R is false
(4) A and R are false
129. **Assertion :** Photorespiration is found in all plants
Reason : In C_4 plants, first CO_2 fixation product is formed in bundle sheath cells
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not correct explanation of A
(3) A is true but R is false
(4) A and R are false
130. **Assertion :** Psilotum is living fossil
Reason: Equisetum in heterosporous pteridophyte
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not correct explanation of A
(3) A is true but R is false
(4) A and R are false
131. **Assertion :** Fermentation is incomplete oxidation of glucose
Reason : Pyruvic acid decarboxylase, Alcoholic dehydrogenase catalyze the reaction
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not correct explanation of A
(3) A is true but R is false
(4) A and R are false
-

132. **Assertion :** *Lumbricus* and *Nereis* both belong to Annelida.
Reason : They have nephridia.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
133. **Assertion :** Chymotrypsinogen and trypsinogen are released from gastric glands.
Reason : They help in the digestion of fats.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
134. **Assertion :** O₂ easily diffuses from alveoli to tissues and CO₂ from tissue to alveoli.
Reason : Alveoli is 2-celled thick and capillaries are thin walled.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
135. **Assertion :** Myometrium is important component of uterus.
Reason : Myometrium produces strong contractions during parturition.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
136. **Assertion :** Plants having gene from *Bacillus thuringiensis* are resistant to insects .
Reason : These transgenic plants have receptors which convert protoxin into active toxin.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
-

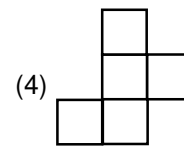
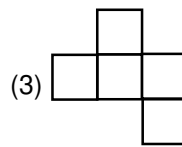
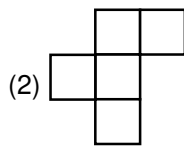
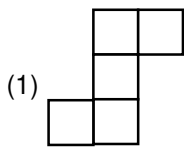
137. **Assertion :** ● - interferon are used in treatment of cancer.
Reason : ● - interferon provokes immune system to identify tumor cells.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
138. **Assertion :** Dust particles when come in contact with respiratory tract lead to sneezing, running nose, redness of eyes etc.
Reason : Allergic disorders are caused due to release of histamine.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
139. **Assertion :** *Papaver somniferum* is cultivated to obtain drugs.
Reason : Morphine is obtained from its latex.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false
140. **Assertion :** Needles should not be used without sterilization.
Reason : AIDS and hepatitis-B spread through body fluid.
- (1) Both A and R are true and R is the correct explanation of A.
 - (2) Both A and R are true but R is not correct explanation of A
 - (3) A is true but R is false
 - (4) A and R are false

PART - D (GENERAL KNOWLEDGE)

141. The Meeting of World Economic Forum this year was held at
142. What is the full form of JNNURM ?
143. Who is the present Loksabha Speaker?
144. Which is the New Exam conducting body for the Major entrance exams from the next year ?
145. What is the full form of IMEI ?

PART - E (MENTAL ABILITY)

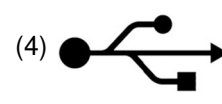
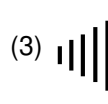
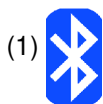
146. Find the odd one out.



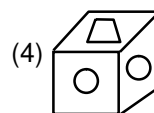
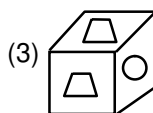
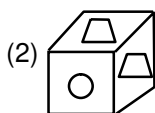
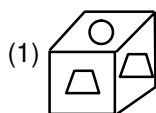
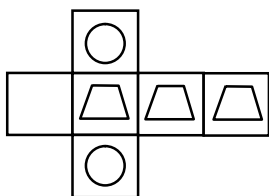
147. There are 4 red, 3 green & 2 blue balls in a box. If 2 balls are taken out from the box one after the another then what is the probability that there is no green ball in these 2.
- (1) $5/12$ (2) $7/12$ (3) $9/12$ (4) $3/12$

148. There are 2 boxes A and B. If we take out 10 apples from A box & put these apples in B box then the number of apples in B box will be 4 times of A box. If we take out 5 apples from B box & put these apples into A box then the number of apples in both A & B boxes will be same in numbers. Find out the total apples in both the boxes :
- (1) 20 (2) 30 (3) 50 (4) 60

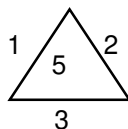
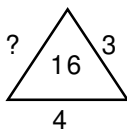
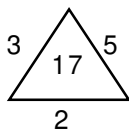
149. Find the odd one out.



150. Find the odd one out :



151. Find the missing (?) figure :



(1) 1

(2) 2

(3) 3

(4) 4

152. You asked for an early appointment from the doctor. He gave you 9 AM appointment :

(a) Doctor starts to see the patients at 9 AM

(b) You are the first patient doctor will see

(1) Only I follows

(2) Only II follows

(3) Both I & II follows

(4) Neither follows

153. Which of the following is important component of forest?

(1) Trees

(2) Mountain

(3) River

(4) Animal

154. Mobile and computer games decreases academic performance.

I. By not playing mobile games academic performance increases.

II. Parents spend less time with children.

(1) I follows

(2) only II follows

(3) I & II follows

(4) Neither follows