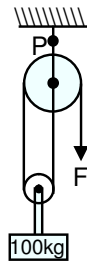
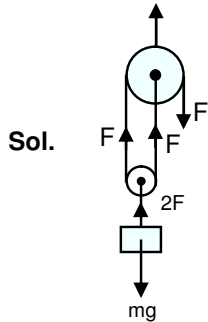


1. In the diagram 100 kg block is moving up with constant velocity, then find out the tension at point P :



Ans. 1470

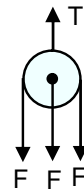


$$T = 3F$$

$$2F = mg$$

$$2F = 100 \times 9.8$$

$$F = 490 \text{ N}$$



So, $T = 3F$
 $T = 3 \times 490$
 $= 1470 \text{ N}$

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

Ans. (1)

Sol. $M = 1 + \frac{D}{f}$; $M = 1 + \frac{25}{5} = 6$

3. Centre of mass of a ring will be at a position.

Ans. $2R/\pi$

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

Ans. (3)

Sol. $PIN = 2V_m$

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) $0.8 \times 10^{-4} \text{ T}$

Ans. (1)

Sol. $B = \frac{\mu_0 I r}{2\pi R^2}$

$$B = \frac{4\pi \times 10^{-7} \times 10 \times 2 \times 10^{-3}}{2\pi \times (5 \times 10^{-3})^2} = \frac{40 \times 10^{-10}}{25 \times 10^{-6}} = 1.6 \times 10^{-4} \text{ T}$$

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) $\frac{16}{\ln(2)}\text{M}\Omega$

Ans. (1)

Sol. $\theta = \theta_0 e^{-t/\tau}$ when energy is 50%

$$\text{then } \theta = \frac{\theta_0}{\sqrt{2}}$$

$$\frac{\theta_0}{\sqrt{2}} = \theta_0 e^{-t/\tau}$$

$$e^{t/\tau} = \sqrt{2}$$

$$\frac{t}{\tau} = \ln(\sqrt{2}) \quad \tau = \frac{t}{\ln(\sqrt{2})}$$

$$R_C = \frac{1}{\ln(\sqrt{2})}$$

$$R = \frac{1}{C \ln(\sqrt{2})} = \frac{1}{10^{-6} \cdot \ln(\sqrt{2})} = \frac{10^6}{\ln(\sqrt{2})} = \frac{2}{\ln(2)} = \text{M}\Omega$$

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 :



Ans. $Q = A_1 A_2 \sqrt{\frac{2(P_1 - P_2)}{\rho(A_1^2 - A_2^2)}}$

Sol. $P_1 + \frac{1}{2}\rho V_1^2 = P_2 + \frac{1}{2}\rho V_2^2$

$$Q = A_1 V_1 = A_2 V_2$$

$$P_1 - P_2 = \frac{1}{2}\rho(V_2^2 - V_1^2)$$

$$P_1 - P_2 = \frac{1}{2}\rho \left[\frac{Q^2}{A_2^2} - \frac{Q^2}{A_1^2} \right]$$

$$2(P_1 - P_2) = \rho \left[\frac{A_1^2 - A_2^2}{A_1^2 A_2^2} \right] Q^2$$

$$Q = A_1 A_2 \sqrt{\frac{2(P_1 - P_2)}{\rho(A_1^2 - A_2^2)}}$$

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

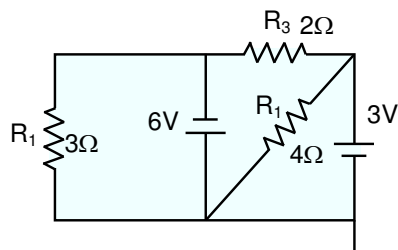
Ans. **Columbs Law's**

Sol. Bio savart law is analogous to coulomb's law but if it was not in option then Gauss's law is correct.

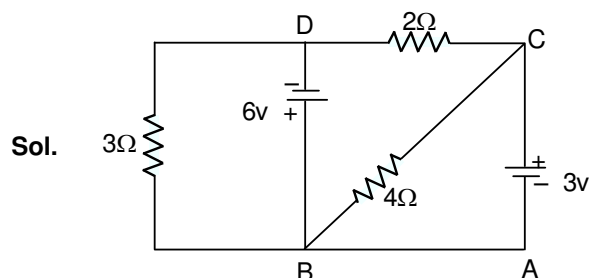
9. In a electro magnetic wave the expression for electric field is given by $E = 50 \sin (\omega t - kx)$ the permeability is given $\mu = 4\mu_0$ & permittivity $\epsilon_0 = \epsilon_r$, then find the average intensity delivered .
 (1) (2) (3) (4)

Sol. $\frac{E_0 B_0}{2\mu_0}$

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



Ans. $9/2$



Sol.

Let $V_A = 0$ so $V_B = 0$

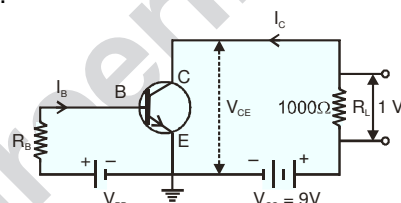
$V_C = 3\text{volt}$ $V_D = -6\text{volt}$

So, $V_C - V_D = IR$

$$9 = I \times 2$$

$$I = \frac{9}{2} \text{ Amp.}$$

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**.



Sol. The circuit arrangement is shown in figure. Collector current, $I_C = \frac{\text{Voltage drop across } R_L}{R_L}$

$$= \frac{1}{1000} = 10^{-3} \text{ amp}$$

Now $V_{CE} = 9 - 1 = 8 \text{ volt}$

$$\text{Current gain } \beta = \frac{I_C}{I_B}$$

$$\therefore I_B = 1.04 \times 10^{-3} \text{ amp}$$

$$\text{or } \frac{25}{26} = \frac{10^{-3}}{I_B}$$

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

Sol. $\frac{1}{\lambda} = R \cdot Z^2 \left(\frac{1}{(2)^2} - \frac{1}{(5)^2} \right)$

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 :

Sol. $\phi = NBA$

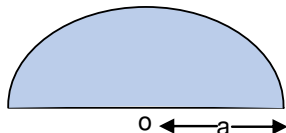
$$LI = N \cdot \frac{\mu_0 I}{2a} \times \pi a^2 \cdot N$$

$$\text{Now, } N \times 2\pi a = \ell$$

$$N = \frac{\ell}{2\pi a} \quad \text{So, } LI = \frac{\ell}{2\pi a} \times \frac{\mu_0 I}{2a} \times \pi a^2$$

$$L \propto a^{-1}$$

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) $\frac{2a}{3\pi}$

Sol. Fact that C.O.M. of half disk is at distance of $\frac{4a}{3\pi}$ from center.

15. In a LCR series resonating circle circuit. Give the value of average power loss :


Sol. Average power loss

$$\langle P \rangle = V_{\text{rms}} \cdot I_{\text{rms}} \cdot \cos \phi = V_{\text{rms}} \cdot I_{\text{rms}} \cdot \frac{R}{\sqrt{R^2 + (X_L - X_C)^2}}$$

16. Find the minimum wavelength of X-rays tube emitted by X-ray tube, which is operating at 15 kv. Accelerating voltage.

Sol. $\lambda_{\text{min}} = \frac{12400}{V_{\text{(in volt)}}} = \frac{12400}{15 \times 10^3} = 0.82 \text{ \AA}$

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 an ammeter when connected with shunt resistance of value 0.2Ω in parallel. Find out the resistance of galvanometer.

Sol. 

$$V = I_g (R + G)$$

$$I = I_g (2000 + G) \quad \dots\dots (1)$$

$$I = \left(\frac{0.1}{G + 0.2} \right) (2000 + G)$$

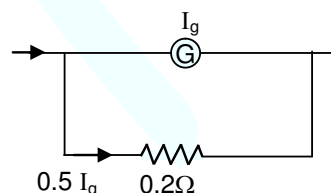
$$G + 0.2 = 200 + 0.1 G$$

$$0.9G = 199.8$$

$$G = 199.9$$

$$\dots\dots\dots = 222 \text{ W}$$

$$0.9$$



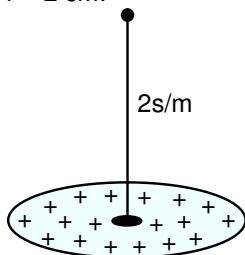
$$0.5 I_g \quad 0.2 \Omega$$

$$I_g G = (0.5 - I_g) \times 0.2$$

$$I_g \cdot G = 0.1 - 0.2 I_g$$

$$I_g (G + 0.2) = 0.1$$

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 $r = 2 \text{ cm}$.



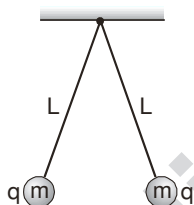
Sol. $E = k6.2\pi \left[1 - \frac{x}{\sqrt{R^2 + x^2}} \right]$

$$E = 9 \times 10^9 \times 10 \times 10^{-9} \times 6.28 \left[1 - \frac{x}{\sqrt{4+9}} \right]$$

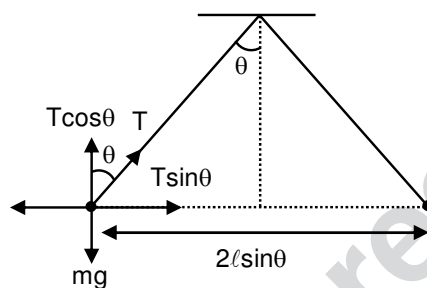
$$E = 90 \times 6.28 \left[1 - \frac{2}{\sqrt{13}} \right]$$

$$E = 251.2 \text{ N/C}$$

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.



Sol.



$$T \sin \theta = \frac{Kq^2}{4l^2 \sin^2 \theta}$$

$$T \cos \theta = mg$$

$$\tan \theta = \frac{Kq^2}{4l^2 \sin^2 \theta \cdot mg}$$

$$\theta = \sqrt{\frac{4l^2 \sin^2 \theta \cdot \tan \theta}{K}}$$

20. A magnetic material is placed in a non-uniform magnetic field which is oriented along z-axis having gradient $= \frac{dB}{dz}$, then force experienced by the material will be equal to

Sol. $F = \frac{M \cdot dB}{dz}$

Now $\frac{dB}{dz} = \frac{\mu_0 dx}{dz}$

So $F = m \cdot \mu_0 \cdot \frac{dB}{dz}$ (m = magnetic moment)

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.

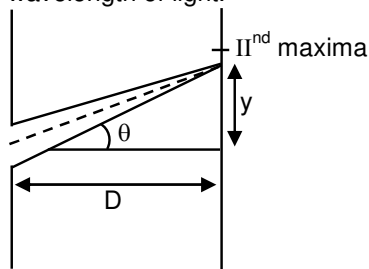
Sol. $V = u_{\text{rec}} \cdot \ln\left(\frac{m}{M}\right)$

$V = 4000 \cdot \ln\left(\frac{5 \times 10^6}{1 \times 10^6}\right)$

$V = 400 \ln(5)$

$V = 6437.75 \text{ m/s}$

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.



Sol.

Path difference

$a \sin \theta = \frac{5\lambda}{2}$

$a \tan \theta = \frac{5\lambda}{2}$

a. $\frac{y}{D} = \frac{5\lambda}{2}$

$\lambda = \frac{2ay}{5D} = \frac{2 \times 0.7 \times 10^{-3} \times 2 \times 10^{-3}}{5 \times 1}$

$= \frac{2.8}{5} \times 10^{-6} \text{ meter}$

$= \frac{28}{5} \times 10^{-7} = 5600 \text{ \AA}$

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

Sol. In solar cell bond breakage becomes at depletion region.

24. In a modulated signal the maximum amplitude is 15 Volt and minimum amplitude is 5 Volt, then amplitude of signal wave will be :

Sol. Maximum amplitude = $A_m + A_c = 15$
 minimum amplitude = $A_m - A_c = 5$
 so $2A_m = 20$
 $A_m = 10$

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.

Sol. $I = \frac{\varepsilon}{R} [1 - e^{-t/\tau}]$

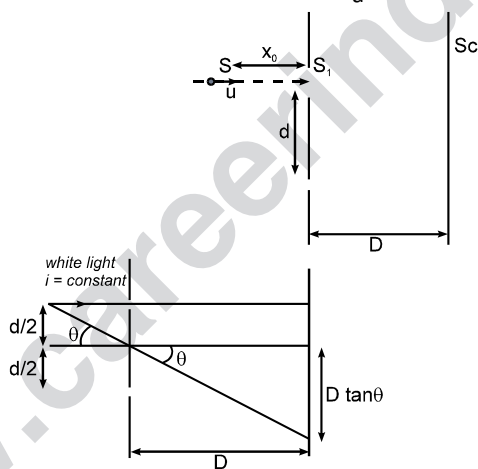
$$\tau = \frac{L}{R} \quad I = \frac{1}{1.5} \left[1 - e^{-\frac{2}{2}} \right]$$

$$\tau = \frac{3}{1.5} = 2 \quad I = \frac{2}{3} \left[1 - \frac{1}{e} \right] = 0.4 \text{ Amp}$$

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.

Sol. $\Delta Q = \Delta u + \Delta w$
 $m = 1 \text{ gm}$
 $L_v = 540 \text{ cal/gm}$
 $\Delta Q = 1 \times 540 = 540$
 $540 = \Delta u + P \Delta v$
 $540 = \Delta u + 10^5 \times (1671 - 1) \times 10^{-6}$
 $540 = \Delta u + 167$
 $\Delta u = 540 - 167$
 $= 373 \text{ cal}$

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 $D \gg d$.



Sol. $\tan \theta = \frac{d}{2x}$ and $y_0 = D \tan \theta = D \cdot \frac{d}{2x}$

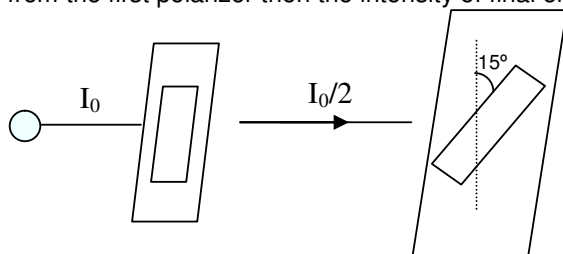
$$v_0 = \frac{dy_0}{dt} = -\frac{Dd}{2x^2} \cdot \frac{dx}{dt} \Rightarrow v_0 = \frac{Dd}{2x^2} \cdot u$$

$$v_0 = \frac{Ddu}{2(x_0 - ut)^2} \text{ (downwards)}$$

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 :



Sol.



$$I = \frac{I_0}{2} \cos^2 (15^\circ)$$

$$I = \frac{I_0}{4} \cdot 2 \cos^2 (15^\circ)$$

$$I = \frac{I_0}{4} [1 + \cos (30^\circ)]$$

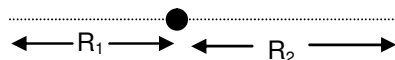
$$I = \frac{I_0}{4} \cdot \left[1 + \frac{\sqrt{3}}{2} \right]$$

$$I = \frac{I_0}{4} [2 + \sqrt{3}]$$

$$I = 0.46 I_0$$

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.

Sol.



$$2a = R_1 + R_2$$

$$a = \frac{R_1 + R_2}{2}$$

$$\tau.e. = - \frac{Gmm}{2a}$$

$$k.e. \text{ should be given} = |\tau.e.|$$

$$= \frac{Gmm}{2a}$$

$$= \frac{Gmm}{2(R_1 + R_2)}$$

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.

Ans. (1)

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.

Ans. (3)

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.

Ans. (3)

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.

Ans. (1)

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.

Ans. (1)

35. **Assertion :** In a string wave, during reflection from fix 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.

Ans. (1)

36. **Assertion :** Surface tension decreases with increase in temperature.

Reason : On increasing temperature kinetic energy increases and intermolecular forces 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.

Ans. (1)

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.

Ans. (2)

38. What is observe when ZnO is heated

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

Ans. (1)

Sol. Due to presence of F- centre

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) $t_{1/4} = (t_{1/2})^2$

Ans. (3)

Sol. For zero order

$$A = A_0 - kt$$

$$t_{\frac{1}{2}} = \frac{A_0}{2k}$$

$$t_{\frac{1}{4}} = \frac{A_0}{4k}$$

$$\frac{t_{\frac{1}{2}}}{t_{\frac{1}{4}}} = \frac{2}{1}$$

40. Violet colour appear in glass when we add—

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

Ans. (1)

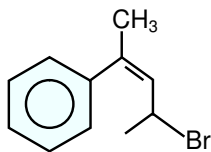
Sol. Cr^{3+} gives violet colour (according table in NCERT Class XII pg 222)

41. In which 'd' electrons are zero?

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

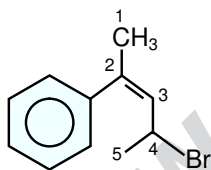
Ans. (4)

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

Ans. (1)



Sol.

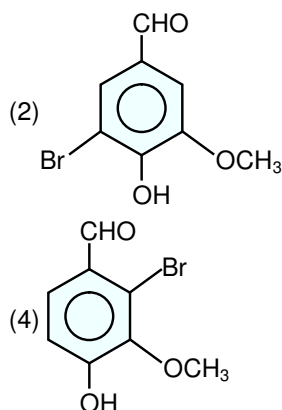
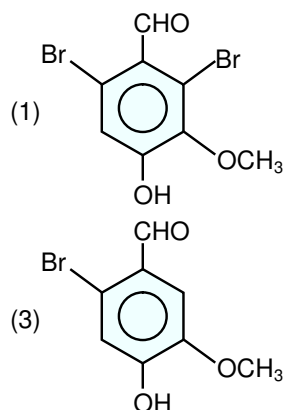
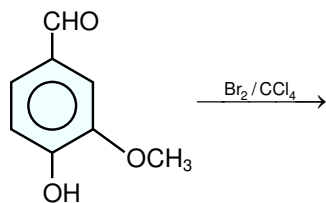
4-Bromo-2-phenylpent-2-ene

43. Trien is

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

Ans. (2)

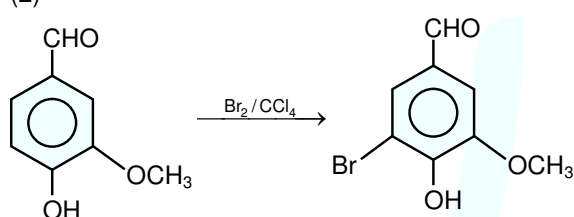
44.



Ans.

(2)

Sol.



–OH group is more activating so attack of Br^+ (electrophile) occurs at ortho position of –OH group during ESR

45. Which is incorrect statement (Exact)

- (1) Amyepectin is insoluble in water (2) Fructose is reducing sugar
(3) Cellulose is the polymer B-D-glucose (4) D-ribose sugar present in DNA

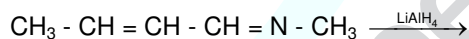
Ans.

(4)

Sol.

D-oxyribose sugar present in DNA is correct sugar.

46.



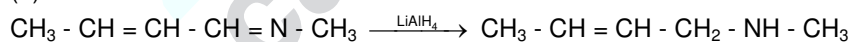
What is final product

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

Ans.

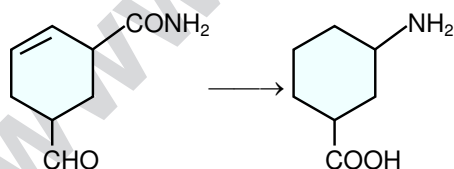
(2)

Sol.



LiAlH_4 reduces imine into Amine but does not reduces $\text{C}=\text{C}$ double bond

47.

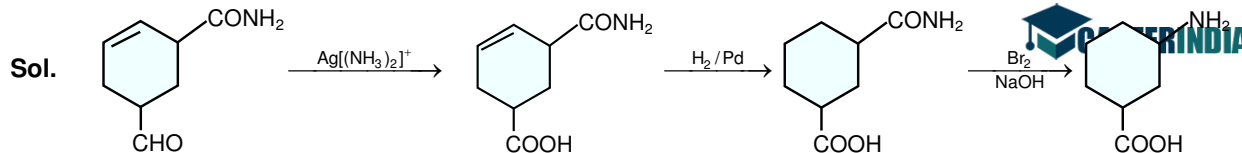


What is sequence of reagent use to convert following

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

Ans.

(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 |

Ans. (1)

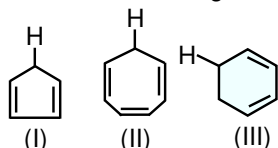
Sol. (i) Biodegradable polymer → PHBV (3-Hydroxybutanoic acid + 4-Hydroxypentanoic acid)

(ii) Bakelite → Phenol + Formaldehyde

(iii) Neoprene → 2-chlorobuta-1,3-diene

(iv) Glyptal → Phthalic acid + Ethylene glycol

49. Order of increasing acidic strength



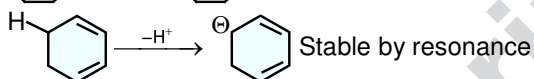
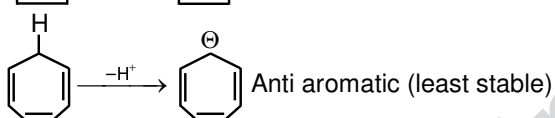
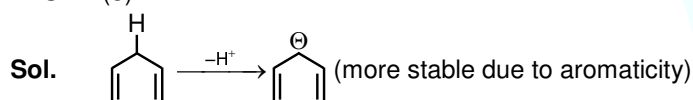
(1) I > II > III

(2) II > III > I

(3) I > III > II

(4) III > II > I

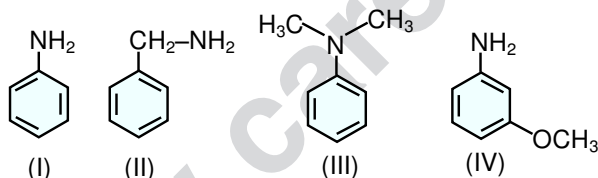
Ans. (3)



Acidic nature \propto stability of conjugate anion (base)

i > iii > ii

50.



Correct order of Basic strength

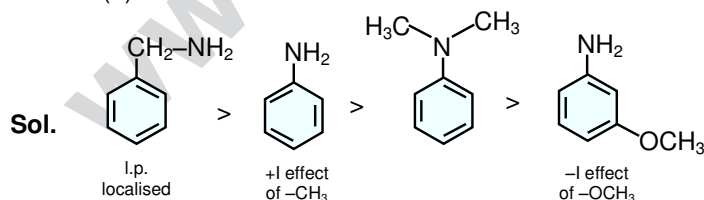
(1) I > II > III > IV

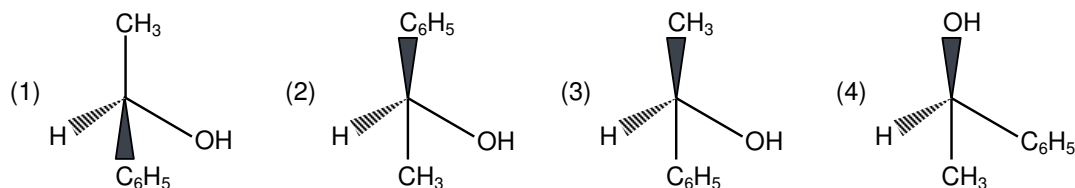
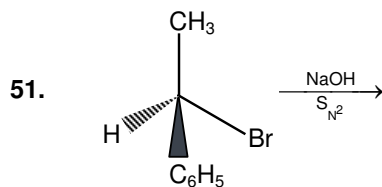
(2) II > III > I > IV

(3) III > II > I > IV

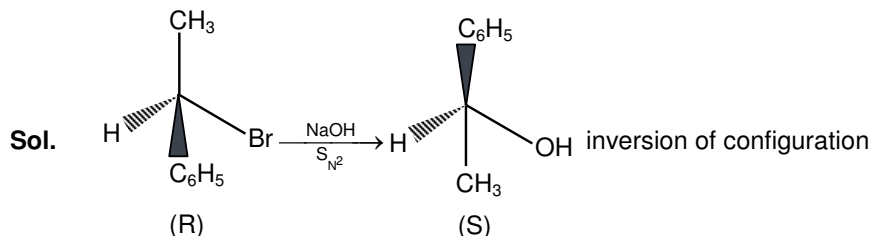
(4) IV > I > II > III

Ans. (2)





Ans. (2)



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

Ans. (1)

Sol. F-center is unpaired e^-

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

Ans. (2)

Sol. $\frac{1}{\lambda} = R \left(\frac{1}{m^2} - \frac{1}{n^2} \right) \times Z^2$

for $\lambda_{\text{He}^+} = \frac{400}{2^2} = \frac{400}{4} = 100 \text{ nm}$

54. Which of the following contain at least one lone pair in all of its halide

- (1) Xe (2) Se (3) Cl (4) N

Ans. (1)

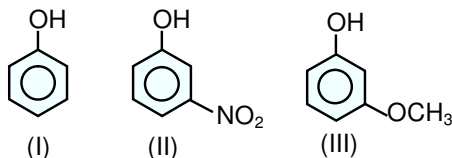
55. One monoatomic gas is expanded adiabatically from 2L to 10 L at 1 atm external pressure find ΔU (in atm L) ?

- (1) -8 (2) 0 (3) -66.7 (4) 58.2

Ans. (1)

Sol. Process is adiabatic $\therefore Q = 0$
 $\therefore \Delta U = W = -P_{\text{ext}} \Delta V$
 $= -1 (10 - 2) \text{ atm L}$
 $= -8 \text{ atm L}$

56. Correct order of acidic strength



(1) I > II > III

(2) II > III > I

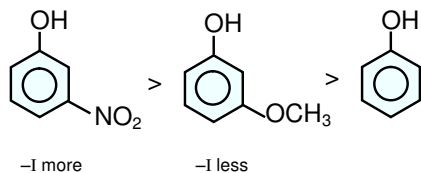
(3) I > III > II

(4) II > I > III

Ans.

(2)

Sol.



Acidic nature \propto –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 $[NO_2^+]$ $[NO_3^-]$

Ans.

(4)

Sol. N_2O_5 in solid form exists as NO_3^- & NO_2^+

58. Which is least stable in aqueous medium

(1) Fe^{+2}

(2) Co^{+2}

(3) Ni^{+2}

(4) Mn^{+2}

Ans.

(1)

Sol. Fe^{2+} quickly oxidizes to Fe^{3+} in aqueous medium.

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

Ans.

(1)

Sol.

$m_1 = 600 \text{ g}$

$\Delta T_f = 2.2 \text{ K}$

$M_2 = 45 \text{ g}$

$K_f = 1.86 \text{ K kg mol}^{-1}$

$$M = \frac{k_f \times m_2}{\Delta T_f \times m_1} = \frac{1.86 \times 45}{2.2 \times 0.6} = 63.4 \text{ g mol}^{-1}$$

60. Which of the following is diamagnetic complex

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

(2) $[Co(Ox)_3]^{3-}$, $[FeF_6]^{3-}$

(3) $[Fe(Ox)_3]^{3-}$, $[FeF_6]^{3-}$

(4) $[Fe(CN)_6]^{3-}$, $[CoF_6]^{3-}$

Ans.

(1)

Sol.

Diamagnetic complex is are



61. Which of the following can be reduced easily

(1) $V(CO)_6$

(2) $Mo(CO)_6$

(3) $[Co(CO)_4]^-$

(4) $Fe(CO)_5$

Ans.

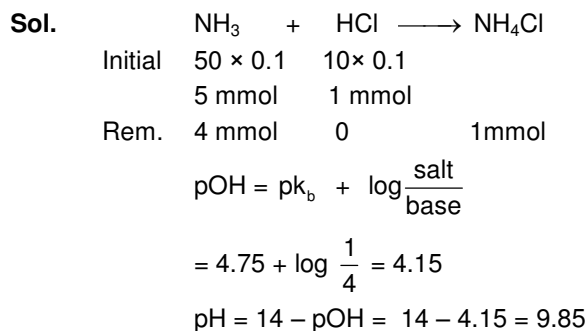
(1)

Sol.

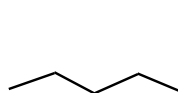
$V(CO)_6$ easily reduces to $[V(CO)_6]^-$

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

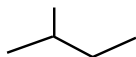
Ans. (3)



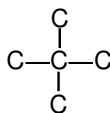
63. What is decreasing order of Boiling point



(a)



(b)



(c)

(1) $a > b > c$

(2) $b > c > a$

(3) $a > c > b$

(4) $c > b > a$

Ans. (1)

Sol. Boiling point of alkane \propto (1) Molecular mass

(2) $\frac{1}{\text{Branching}}$

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) $M_B = 4M_A$

Ans. (4)

Sol. $\frac{n_1}{p_1} = \frac{n_2}{p_2}$

$$\frac{1}{M_A} = \frac{1}{M_A} + \frac{2}{M_B}$$

$$\frac{3}{M_A} = \frac{2}{M_A} + \frac{4}{M_B}$$

$$\frac{1}{M_A} = \frac{4}{M_B}$$

$$M_B = 4M_A$$

65. Cell equation : $\text{A} + 2\text{B}^+ \longrightarrow \text{A}^{2+} + 2\text{B}$



and $\log_{10} K = 15.6$ at 300 K for cell reactions

Find E° for $\text{B}^+ + \text{e}^- \longrightarrow \text{B}$

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

Ans. (1)

Sol. $E_{\text{cell}}^0 = \frac{0.059}{2} \log k$

$$E_{\text{B}^+/\text{B}}^0 - E_{\text{A}^{2+}/\text{A}}^0 = \frac{0.059}{2} \log$$

$$E_{\text{B}^+/\text{B}}^0 - 0.34 = \frac{0.059}{2} \times 15.6$$

$$E_{\text{B}^+/\text{B}}^0 = 0.80$$

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) $2\text{C}_{(\text{s})} + \text{CO}_{2(\text{g})} \longrightarrow 2\text{CO}_{(\text{g})}$ reaction move forward

Ans. (2)

Sol. Solubility of gas increases on increasing pressure according to Henry's Law

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

Ans. (1)

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

Ans. (3)

Sol. Mixing AgNO_3 in excess KI forms negatively charged colloid

69. Which are extensive properties

- (1) V & E
- (2) V & T
- (3) V & Cp
- (4) P and T

Ans. (1)

Sol. Extensive quantities depend upon quantity of substance.

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

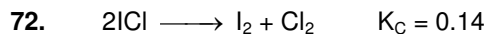
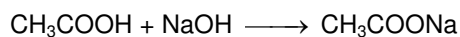
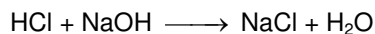
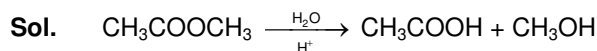
Ans. (2)

Sol. In Bonding N.O. existing modal plane of Pz orbital is maintained

71. When $\text{CH}_3\text{COOCH}_3 + \text{HCl}$ is titrated with NaOH then at neutral point the colour of phenolphthalein 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) Phenophalein vaporizes.
- (4) due to presence of HCl

Ans. (2)



Initial concentration of ICl is 0.6 M

then equilibrium concentration of I_2 is :

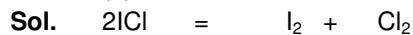
(1) 0.37M

(2) 0.128 M

(3) 0.224 M

(4) 0.748 M

Ans. (2)



0.6

$0.6 - 2x$

x

x

$$K_C = 0.14 = \frac{x^2}{(0.6 - 2x)^2}$$

$$0.37 = \frac{x}{0.6 - 2x}$$

$$0.224 - 0.748x = x$$

$$= x$$

$$1.748x = 0.224$$

$$x = 0.128$$

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) $\frac{RT}{2}$

Ans. (1)

Sol. $\frac{r_A}{r_B} = \frac{A_1 e^{-E_A/RT}}{A_2 e^{-E_B/RT}}$

$$\frac{2}{1} = \frac{e^{-E_A/RT}}{e^{-E_B/RT}}$$

$$\ln 2 = E_B - E_A / RT$$

$$E_B - E_A = RT \ln 2$$

$$E_A - E_B = -RT \ln 2$$

74. Which of the following have maximum pH?

(1) Black coffee

(2) blood

(3) Gastric juice

(4) Saliva

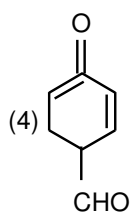
Ans. (2)

Sol. Black coffee \rightarrow 5.0

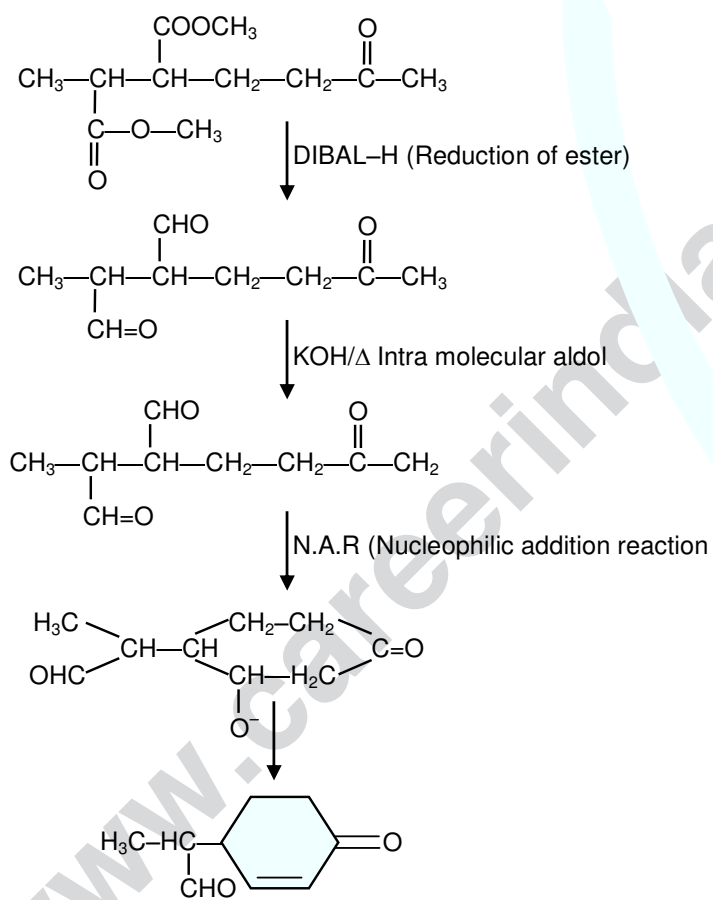
Blood \rightarrow 7.4

Gastric juice \rightarrow 1.8 – 2.0

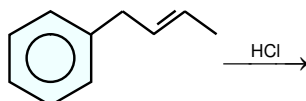
Saliva \rightarrow 6.8



(1)



76.

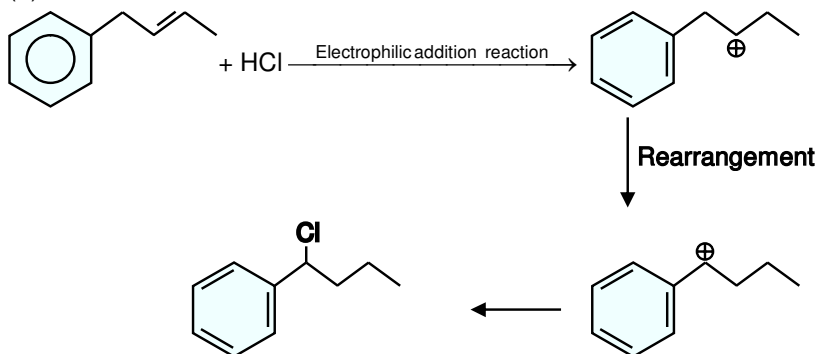


- (1)
- (2)
- (3)
- (4)

Ans.

(2)

Sol.



77.

Assertion : HCOOH formic acid react with H₂SO₄ form CO.

Reason : H₂SO₄ is mild (moderate) oxidizing agent

- (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.

Ans.

(2)

Sol.



H₂SO₄ behaves like dehydrating agent.

78.

Assertion : Fe⁺³ is not valid for Brown Ring Test.

Reason : Because NO₃⁻ first convert into NO₂⁻

- (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.

Ans.

(3)

Sol.

In Brown ring test, Fe²⁺ oxidizes to Fe³⁺, and NO₃⁻ reduces to NO.

79

Assertion : H₃PO₄ and H₃PO₃ both are present in fertilizers.

Reason : H₃PO₃ increases the solubility of fertilizers.

- (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.

Ans.

(3)

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.

Ans. (2)

Sol. Both statements are true but are not related.

81. **Assertion :** Tyrosine behave as a acidic at $pH = 7$

Reason : pK_a of phenol is more 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.

Ans. (1)


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.

Ans. (3)

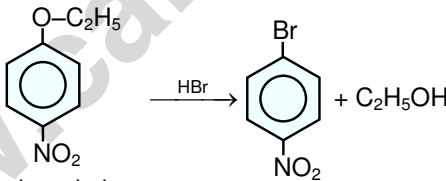
Sol. $Fe(OH)_3$ and As_2S_3 are positive and negative colloids. On mixing mutual coagulation causes precipitation

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.

Ans. (1)

84. **Assertion :**  + C_2H_5OH
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.

Ans. (4)

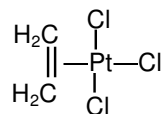
85. **Assertion :** In zieses salt coordination no. of Pt is five

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.

Ans. (4)

Sol. Zieses salt :



Co-ordination no. is 4

Ethane is monodentate

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.

Ans. (2)

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.

Ans. (1)

Sol. Strong hydrogen bonding intermolecular forces results in greater surface tension of water.

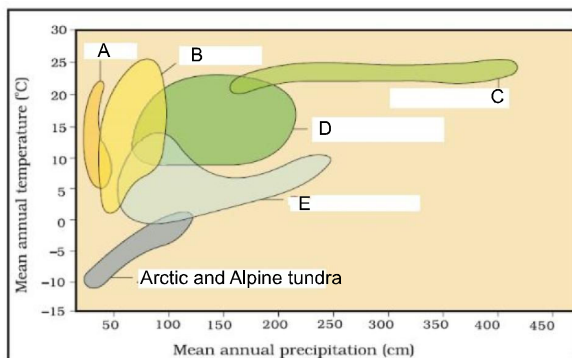
88. **Assertion :** Anti histamine does not effect secretion of acid in stomach :

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.

Ans. (1)

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

Ans. (1)

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

Ans. (1)

91. Citrus canker is caused by

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

Ans. (3)

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
- (3) a–i, b–ii, c–iii, d–iv

- (2) a–ii, b–i, c–iv, d–iii
- (4) a–iv, b–iii, c–i, d–ii

Ans. (1)

93. Cytokinin involves
 (1) Kinetin, zeatin, BAP (2) GA₃, IBA, Kinetin
 (3) Zeatin, GA₃, BAP (4) IAA, Zeatin, kinetin

Ans. (1)

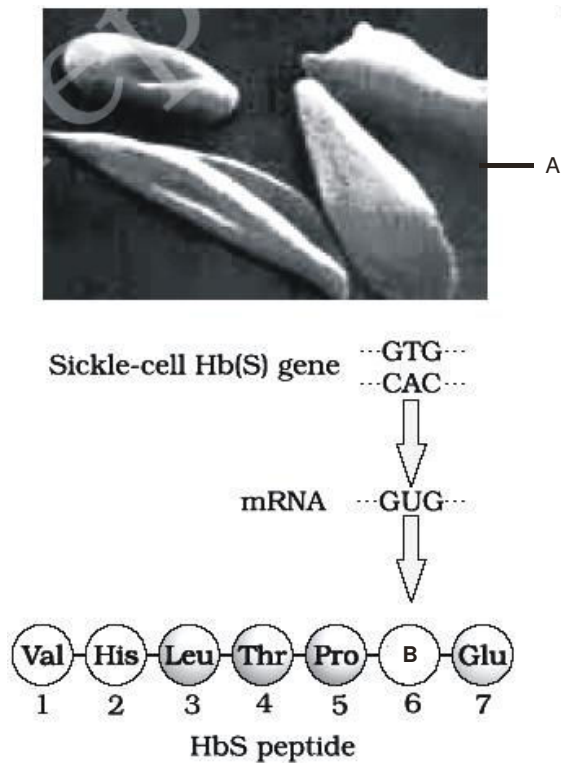
94. Auxin was first isolated from
 (1) Human urine (2) Callus
 (3) Coconut milk (4) None

Ans. (1)

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

Ans. (1)

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

Ans. (3)

97. Glycolysis is
 (1) Anaerobic (2) Aerobic
 (3) Anaerobic and Aerobic both (4) None

Ans. (1)

98. Interphase divides into
 (1) G_1 , S, G_2
 (2) Mitosis
 (3) Prophase, metaphase, Anaphase, Telophase
 (4) Cytokinesis

Ans. (1)

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

Ans. (1)

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

Ans. (1)

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

Ans. (3)

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

Ans. (4)

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

Ans. (3)

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

Ans. (1)

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

Ans. (1)

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

Ans. (1)

107. Which of the following is nitrogen fixing algae

(1) Nostoc, Anabaena, Oscillatoria

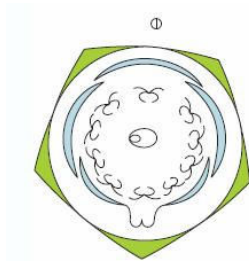
(2) Azolla, Anabaena, Azotobacter

(3) Oscillatoria, Anabaena, Azolla

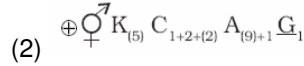
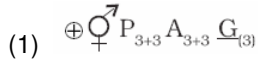
(4) Azolla, Nostoc, Oscillatoria

Ans. (1)

108.



The above floral diagram shows the floral formula



Ans. (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

Ans (1)

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

Ans (3)

111. Adrenocorticoids are released from –

(1) Adrenal cortex

(2) Thyroid gland

(3) Adrenal medulla

(4) Gonads

Ans (1)

112. Which of the following has highest pH?

(1) Human saliva

(2) Human blood

(3) Gastric juice

(4) Urine

Ans (2)

Sol. Human Saliva - 6.8

Human blood - 7.4

Gastric Juice - 1.8

Urine - 6

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

(1) Vit K

(2) Vit A

(3) Vit B

(4) Vit C

Ans (1)

Sol. Vit B & C are water soluble

Vit K is fat soluble required for formation of many clotting factor like prothrombin.

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

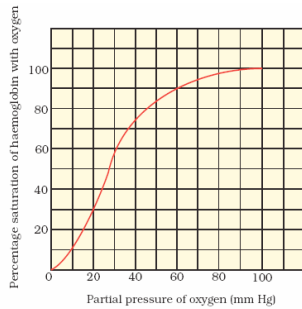
Ans (4)

115. O_2 dissociation curve is plotted between pO_2 and

- (1) % Hb saturation.
- (2) pCO_2
- (3) Hb concentration
- (4) RBC/ mm^3 of blood

Ans (1)

Sol.



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>

Ans (2)

Sol. Hemichordata does not have Notochord

Platyhelminthes are acoelomate

Coelenterata all are aquatic mostly marine some fresh water.

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>

Ans (1)

Sol. In the (2) Option Pennatula is coelenterata

(3) Option Aplysia is Mollusca

(4) Option Sycon is Porifera

Balaenoptera is blue whale, Delphinus is Dolphin, Rattus is rat and Felis is cat all are mammals.

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

Ans (2)

Sol. Cnidoblast is the unique character coelenterata and coelenterates have radial symmetry.

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

Ans (2)

Sol. Mollusca have bilateral symmetry and they have CaCO_3 (calcareous) shell.

120. Growth hormone and thyroxin increase the length of –

- (1) Bone
- (2) Muscle
- (3) RBC
- (4) Nerve cell

Ans (1)

121. Radioactive C-dating and living fossils are used for –

- (1) Biological age
- (2) Geological age
- (3) Age of Rock
- (4) Geographical distribution

Ans (1)

Sol. Geological age and Age of rock is generally done by K - Ar method or U - Pb method
Carbon dating method is used to estimate the biological age

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

Ans (1)

123. Match **Column-I** (microbes) to the **Column-II** (biological products) and select the option having correct matching.

Column-I

- (A) *Acetobacter aceti*
- (B) *Clostridium butylicum*
- (C) *Aspergillus niger*
- (D) *Lactobacillus*

Column-II

- (i) Citric acid
- (ii) Lactic acid
- (iii) Acetic acid
- (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)

Ans (3)

124. Spermatozoa receive nutrition from –

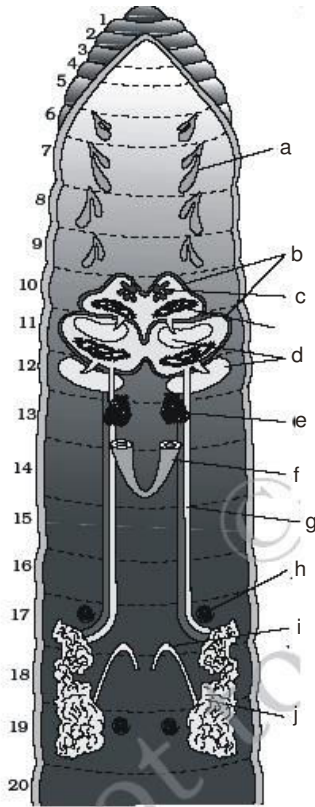
- (1) Nurse glands (2) Interstitial cells (3) Epididymis (4) Germ cells

Ans. (3)

Sol. Spermatozoa receive nutrition from nurse cell and epididymis.

In the (1) option it is nurse glands not nurse cell

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

Ans. (1)

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

Ans. (2)

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

Ans. (2)

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

Ans. (1)

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

Ans. (4)

130. **Assertion :** Psilotum is living fossil

Reason: Equisetum is 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

Ans. (3)

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

Ans. (1)

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

Ans (2)

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

Ans (4)

134. **Assertion :** O_2 easily diffuses from alveoli to tissues and CO_2 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

Ans (3)

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

Ans (1)

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

Ans (3)

137. **Assertion :** α - interferon are used in treatment of cancer.

Reason : α - 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

Ans (1)

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

Ans (1)

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

Ans (1)

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

Ans (1)

141. The Meeting of World Economic Forum this year was held at

Ans. Davos, Switzerland

142. What is the full form of JNNURM ?

Ans. Jawaharlal Nehru National Urban Renewal Mission

143. Who is the present Loksabha Speaker?

Ans. Sumitra Mahajan

144. Which is the New Exam conducting body for the Major entrance exams from the next year ?

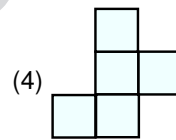
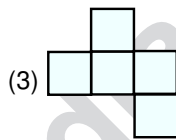
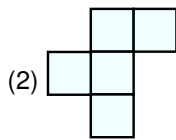
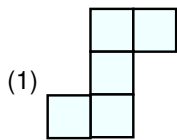
Ans. National Testing Agency (NTA)

145. What is the full form of IMEI ?

Ans. International Mobile Equipment Identity

PART - E (MENTAL ABILITY)

146. Find the odd one out.



Ans. (1)

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 other then what is the probability that there is no green ball in these 2.

(1) $5/12$

(2) $7/12$

(3) $9/12$

(4) $3/12$

Ans. (1)

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

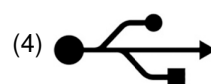
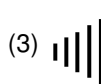
(2) 30

(3) 50

(4) 60

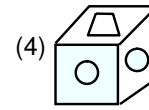
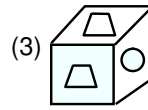
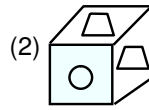
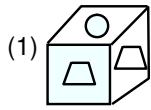
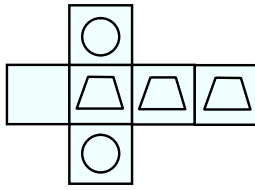
Ans. (3)

149. Find the odd one out.



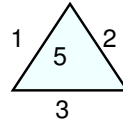
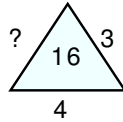
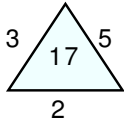
Ans. (4)

150. Find the odd one out :



Ans. (4)

151. Find the missing (?) figure :



(1) 1
(4)

(2) 2

(3) 3

(4) 4

Ans.

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

Ans.

(4)

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

(1) Trees

(2) Mountain

(3) River

(4) Animal

Ans.

(1)

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

Ans.

(4)