

AIIMS MBBS ENTRANCE TEST 2018
EXAMINATION PAPER WITH ANSWER & SOLUTIONS
(BASED ON MEMORY RETENTION)

Date : 27-05-2018 (Sunday) | Time : 3.00 pm - 6.30 pm | Evening Session

NOTE :-

1. Questions are collected from the appeared students.
2. The solutions are prepared by the expert faculty team of Resonance Pre-medical division, Kota.
3. Questions may not be in the order or sequence as asked in the actual examination paper.
4. The questions collected may not have all the options similar to the actual paper. Students are advised to see the question and answer / solutions.
5. Actual AIIMS Paper has 200 questions but we have included only those many questions which have been collected from the students as per following table :-

Subject	No. of Question in Actual AIIMS Paper	No. of Question in this Paper
Physics	60	23
Chemistry	60	34
Biology	60	42
G.K. & MAT	20	14
Total	200	113

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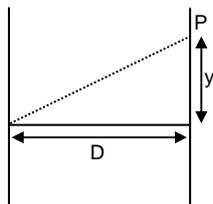
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PART - A (PHYSICS)

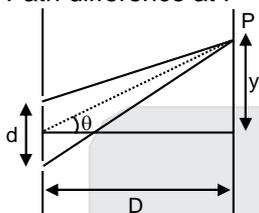
1. Which logic gate has only one input and one are put.

Ans. NOT GATE

2. In YDSE there is a point P on the screen. What is path difference at point P. Given $d = 1 \text{ mm}$, $y = 2 \text{ mm}$
 $D = 1 \text{ m}$:-



Sol. Path difference at P



$$\Delta x = d \sin \theta$$

If θ is small

$$\Delta x = d \tan \theta$$

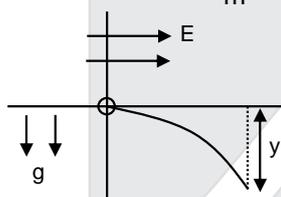
$$\Delta x = \frac{dy}{D}$$

Now $d = 1 \text{ mm}$; $y = 2 \text{ mm}$ and $D = 1 \text{ meter}$

$$\Delta x = \frac{10^{-6} \times 2 \times 10^{-6}}{1} = 2 \times 10^{-6} \text{ meter}$$

3. $\frac{Q}{m}$ = was given E is given what is horizontal displacement of charge particle when it descend a distance

of y meter. Given $\frac{Q}{m} = 9.6 \times 10^7 \text{ C/kg}$, $E = 5 \times 10^5 \text{ V/m}$, $y = 84 \text{ cm}$, $g = 10 \text{ m/s}^2$



Sol. Suppose particle falls down a distance y in t time

$$y = \frac{1}{2}gt^2; \quad t = \sqrt{\frac{2y}{g}}$$

Now for x axis

$$x = \frac{1}{2}a_x t^2 \quad \Rightarrow \quad x = \frac{1}{2} \cdot \frac{QE}{m} \cdot \frac{2y}{g}$$

Now $\frac{Q}{m} = 9.6 \times 10^7 \text{ C/kg}$ (given)

$$E = 5 \times 10^5 \text{ V/m}$$

$$Y = 84 \text{ cm}$$

$$g = 10 \text{ m/sec}$$

$$x = \frac{1}{2} \times \frac{9.6 \times 10^7 \times 5 \times 10^5 \times 2 \times 84 \times 10^{-2}}{10}$$

$$x = 403.2 \times 10^{10} \text{ meter}$$

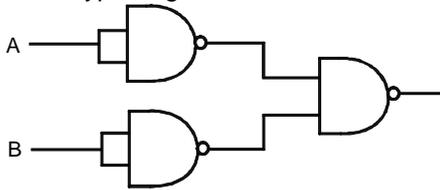
$$x = 4.03 \times 10^8 \text{ meter}$$

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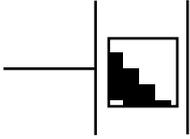
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4. What type of gate is this,



Sol. it is or gate.

5. Electric field inside the capacitor is E and dielectric constant of material is k . Find charge density σ on the plates. Given $E = 6 \times 10^5$ V/m, $k = 6$



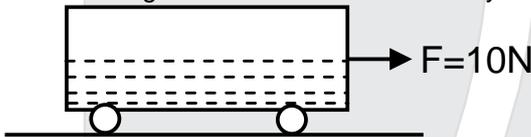
Sol. $E = \frac{\sigma}{\epsilon_0 \cdot K}$

$$6 \times 10^5 = \frac{\sigma}{8.85 \times 10^{-12} \times 6}$$

$$\sigma = 36 \times 8.85 \times 10^{-12} \text{ C/m}^2$$

$$\sigma = 3.18 \times 10^{-10} \text{ C/m}^2$$

6. A cart has mass 2 metric tone and sand of 1 metric tone is inside the cart. Now sand start to leak with rate of 0.5 kg/sec then what is the velocity of cart when total sand has come out from the cart.



Sol. $f_{\text{net}} = -V_{\text{rel}} \cdot \frac{dm}{dt} + F$

Now $V_{\text{rel}} = 0$

$F_{\text{net}} = F$

$Mq = F$

$$a = \frac{F}{m}$$

$m = m_0 - \mu t$

$$a = \frac{F}{m_0 - \mu t}$$

$$\frac{dV}{dt} = \frac{F}{m_0 - \mu t}$$

$$\int_0^V dV = F \int_0^t \frac{dt}{m_0 - \mu t}$$

$$V = \frac{F}{\mu} \ln \left(\frac{m_0}{m_0 - \mu t} \right)$$

Here $F = 10$ N ; $\mu = 0.5$ kg/sec

$m_0 = 2$ metric tone

$m_0 - \mu t = 1$ metric tone

$$V = \frac{10}{0.5} \ln(2) = 20 \times 0.693 = 13.86 \text{ m/sec}$$

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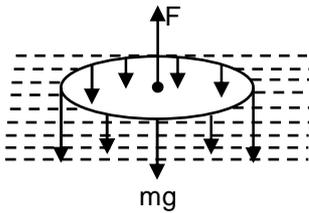
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7. A ring of radius R is kept on water surface. Surface tension of water is T and mass is m. What force required to lift the ring from water surface?



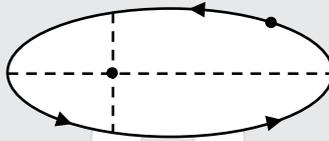
Sol.



$$F_{\text{ex}} = mg + 2.T(2\pi R)$$

$$F_{\text{ex}} = mg + 2T\pi R$$

8. The minimum and maximum distance of planet from sun is r_{min} and r_{max} . If velocity at r_{max} is V_0 find velocity at r_{min} .



Sol. By angular momentum conservation

$$mV_0 r_{\text{max}} = mVr_{\text{min}}$$

$$V = \frac{V_0 r_{\text{max}}}{r_{\text{min}}}$$

9. If a gas changes its temperature from T_1 to T_2 its pressure is P. If C_p is given of the gas what is change in entropy.

Sol. $ds = \eta C_p dT$

$$\frac{ds}{T} = \eta C_p \frac{dT}{T}$$

$$ds = \eta C_p \frac{dT}{T}$$

$$\int_{C_1}^{C_2} ds = \eta C_p \int_{T_1}^{T_2} \frac{dT}{T}$$

$$\Delta S = \eta C_p \ln \left(\frac{T_2}{T_1} \right)$$

10. If coefficient of performance of A refrigerator is β and heat given to surrounding is Q_2 then what is heat absorbed.

Sol. $\beta = \frac{Q_2}{Q_2 - Q_1}$

$$\beta = \frac{Q_2}{Q_2 - Q_1}$$

$$\text{so } \beta Q_2 - \beta Q_1 = Q_2$$

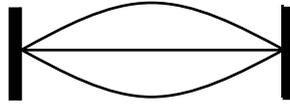
$$\frac{Q_2(\beta - 1)}{\beta} = Q_1$$

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11. Frequency of the wave is 50 Hz. Length is 1 meter and mass of string is 10 gm. What is tension in the string.



Sol.

$$n = \frac{1}{2\ell} \sqrt{\frac{T}{\mu}}$$

$$\mu = \frac{m}{\ell} = \frac{10 \times 10^{-2}}{1} = 10^{-2} \text{ kg/meter}$$

$$50 = \frac{1}{2 \times 1} \sqrt{\frac{T}{10^{-2}}}$$

$$2500 = \frac{1}{4} \cdot \frac{T}{10^{-2}}$$

T = 100 Newton.

12. What is lowest wavelength of paschen series.

Sol. lowest wavelength of paschen series.

$$\frac{1}{\lambda_{\min}} = R \cdot (1)^2 \left[\frac{1}{(3)^2} - \frac{1}{(\infty)^2} \right]$$

on solving

$$\lambda_{\min} = \frac{9}{R} = 8208 \text{ \AA}$$

13. In a solenoid A rod of relative permeability μ_r is kept. Total number of turn are N, Area of solenoid is A, length of solenoid is ℓ . What is self inductance of solenoid.

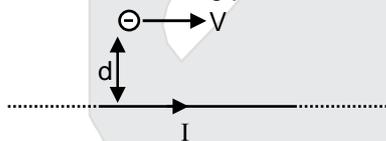
Sol. $L = \mu_0 \mu_r \cdot n^2 A \ell$

Now $n = \frac{N}{\ell}$

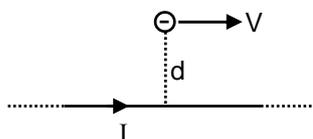
$$L = \mu_0 \mu_r \frac{N^2}{\ell^2} A \ell$$

$$L = \frac{\mu_0 \mu_r N^2 A}{\ell}$$

14. Electron is moving parallel to wire. What is force on electron.



Sol. $F = QVB \sin\theta$



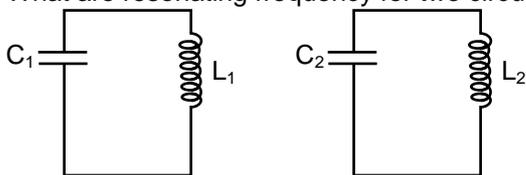
$$F = eV \left(\frac{\mu_0 I}{2\pi d} \right) \sin(\pi/2) = \frac{\mu_0 eVI}{2\pi d}$$

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15. What are resonating frequency for two circuits.



Sol. For Ist circuit

$$\omega_r = \frac{1}{\sqrt{L_1 C_1}}$$

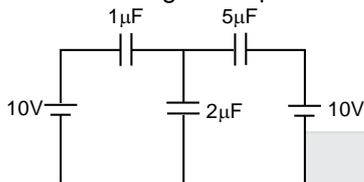
$$f_r = \frac{1}{2\pi\sqrt{L_1 C_1}}$$

For IInd circuit

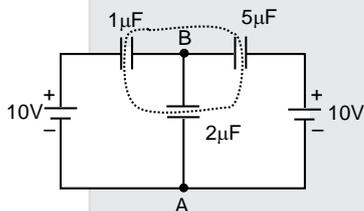
$$\omega_r = \frac{1}{\sqrt{L_2 C_2}}$$

$$f_r = \frac{1}{2\pi\sqrt{L_2 C_2}}$$

16. Find the charge on 2 μF .



Sol.



Let potential of A is zero and that of B is V. Applying charge conservation on given circuit.

$$1(V - 10) + 2(V - 0) + 5(V - 10) = 10$$

$$8V - 60 = 0$$

$$V = \frac{60}{8} = 7.5 \text{ volt}$$

So charge on 2 μF = $2 \times 7.5 = 15 \mu\text{C}$

17. In LCR circuit inductance is L, resistance is R and quality factor is Q then find capacitance

Sol.

$$Q = \frac{1}{R} \sqrt{\frac{L}{C}}$$

$$Q^2 = \frac{1}{R^2} \frac{L}{C}$$

$$C = \frac{1}{(RQ)^2}$$

18. In forced vibration $m = 10 \text{ gm}$, $f = 100 \text{ Hz}$ and driver force $F = 100 \cos(20\pi t)$ then what is amplitude of particle.

Sol.

$$A = \frac{F_0}{m(\omega^2 - \omega_D^2)}$$

$$A = \frac{100}{0.01[(200\pi)^2 - (20\pi)^2]}$$

$$A = \frac{10,000}{\pi^2 [40,000 - 400]} [\pi^2 = 10]$$

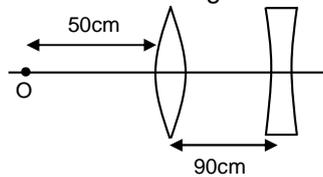
$$A = \frac{10}{396} = 0.025 \text{ meter}$$

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19. Focal length of convex lens = 100 cm and focal length of concave lens = - 8 cm. Find the magnification.



Sol. For first lens

$$V = \frac{4f}{4+f}$$

$$V = \frac{(-50) \times (100)}{-50 + 100} = -100 \text{ cm and } m_1 = \frac{V}{4} = 2$$

For second lens

$$V = \frac{4f}{4+f} \quad \text{now } u = -190 \text{ cm} \quad f = -8 \text{ cm}$$

$$m_2 = \frac{V}{4} = \frac{f}{4+f} = \frac{-8}{-8-190} = 0.04$$

$$\text{Total magnification} = m_1 m_2 = 0.08$$

20. The radius of two bohr radius of a hydrogen like atom are r_1 and r_2 . Find the wave length of photon when electron jumps from r_2 to r_1 .

Sol.
$$E_2 = \frac{-Ke^2}{2r_2}$$

$$E_1 = \frac{-Ke^2}{2r_1}$$

$$DE = E_2 - E_1 = \frac{Ke^2}{2} \left[\frac{1}{r_1} - \frac{1}{r_2} \right] = \frac{Ke^2(r_2 - r_1)}{2 r_1 r_2} = \frac{hc}{\lambda}$$

$$\lambda = \frac{2ch r_1 r_2}{Ke^2(r_2 - r_1)}$$

21. **Assertion :** In adiabatic process change in internal energy is equal to work done on gas.

Reason : In adiabatic process no heat exchange with surrounding.

- (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)

22. **Assertion :** Gallium arsenide phosphide is used in red L.E.D.

Reason : Its work function lies b/w 1.65 ev.

- (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)

23. **Assertion :** Viscous force is measurement of resistance of liquid.

Reason : It converts kinetic energy into heat energy of liquid.

- (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.

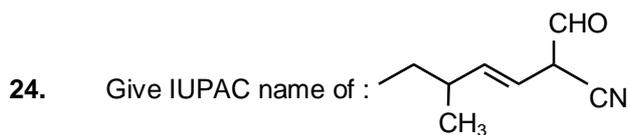
Ans. (1)

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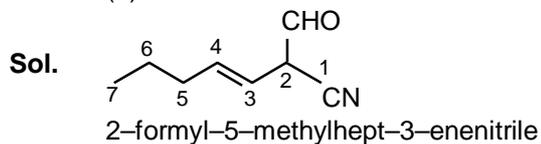
PART - B (CHEMISTRY)



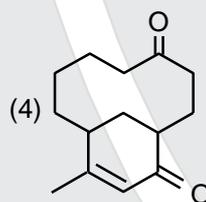
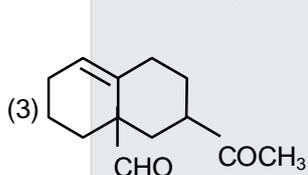
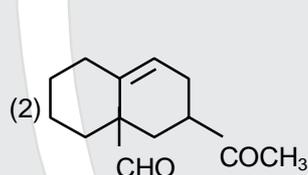
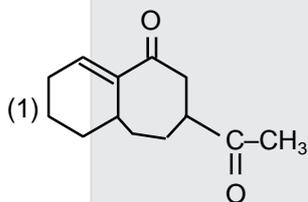
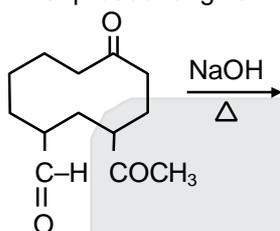
- (1) 2-cyano-5-methyl hept-3-enal
 (3) 2-oxo-5-methyl hept-3-ene-1-nitrile

- (2) 2-formyl-5-methyl hept-3-enenitrile
 (4) 1-cyano-1-formyl-4-methyl hex-2-ene

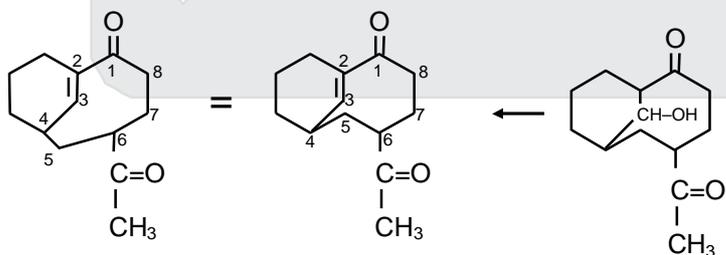
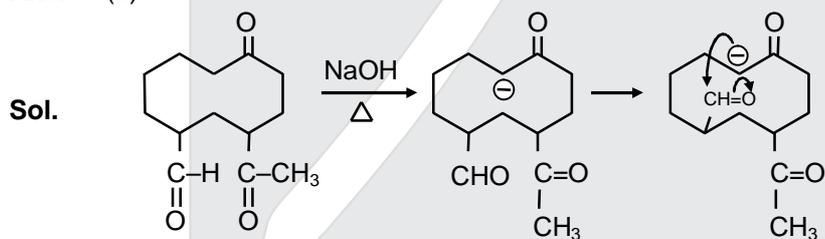
Ans. (2)



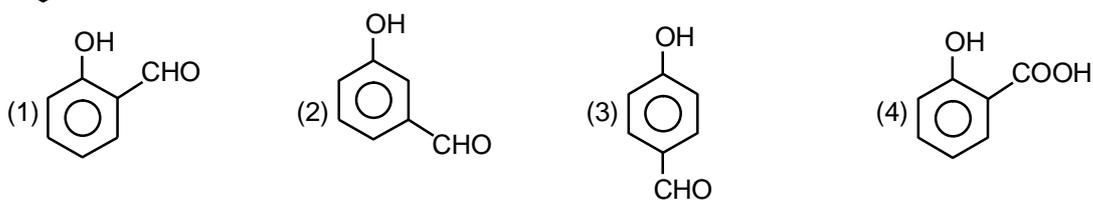
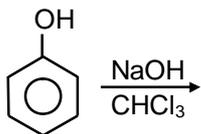
25. Final product of given Reaction :



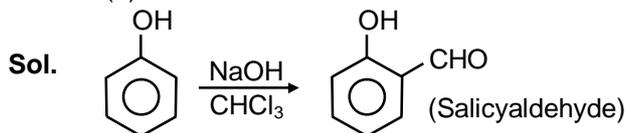
Ans. (1)



26. Final Product of given reaction :

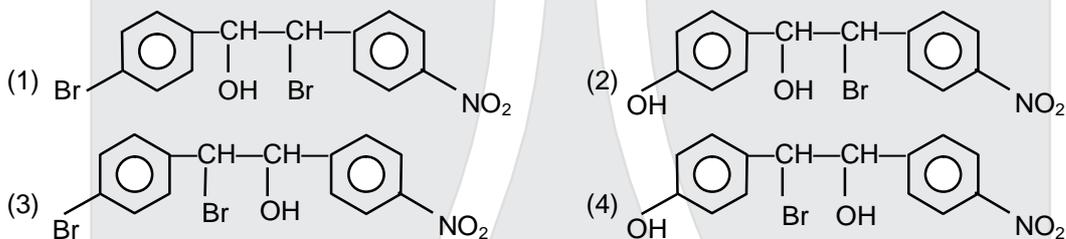
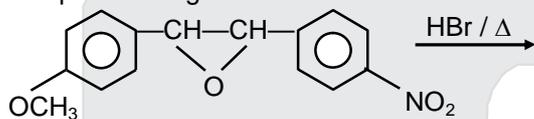


Ans. (1)

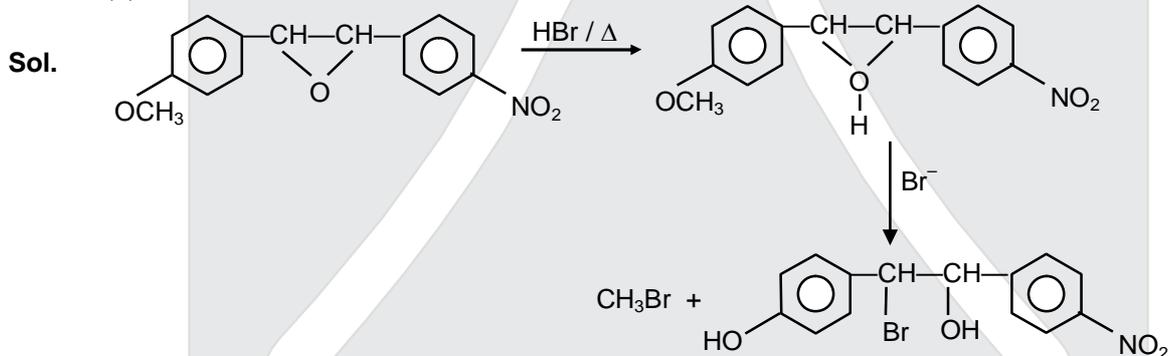


This is a Reimer-Tiemann Reaction of phenol.

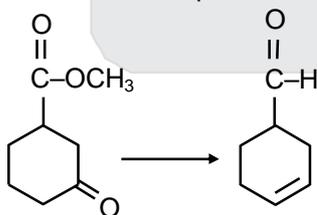
27. Find product of given reaction :



Ans. (3)



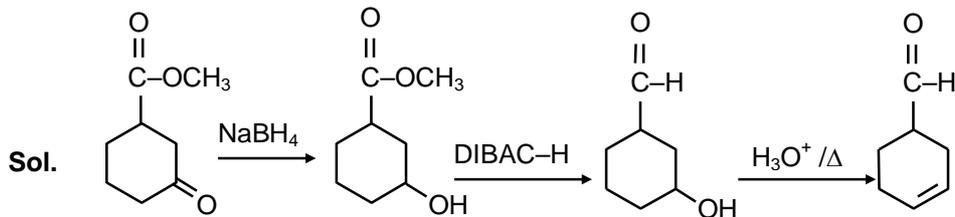
28. Give correct sequences of reaction for following conversion :



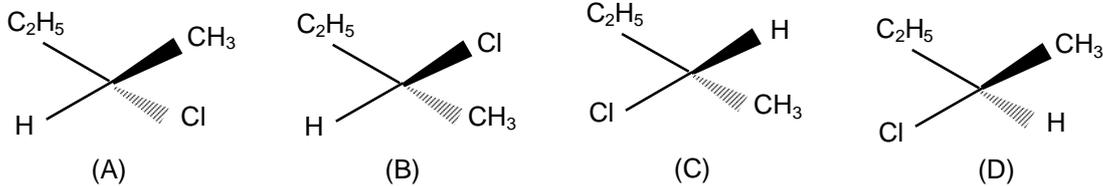
- (1) DIBAL-H, NaBH₄, H₃O⁺/Δ (2) H₃O⁺/Δ, NaBH₄, DIBAL-H
 (3) NaBH₄, DIBAL-H, H₃O⁺/Δ (4) DIBAL-H, H₃O⁺/Δ, NaBH₄

Ans. (3)

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29. Which of the following are not enantiomer pair.



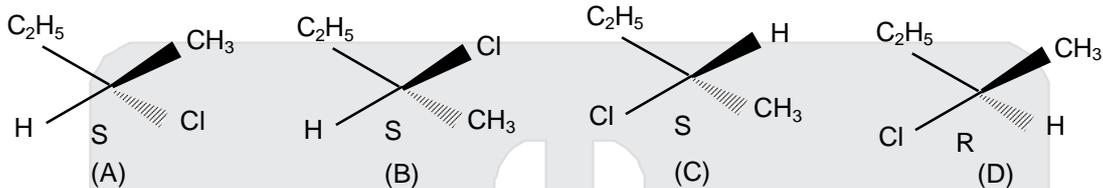
(1) A & B

(2) A & D

(3) B & D

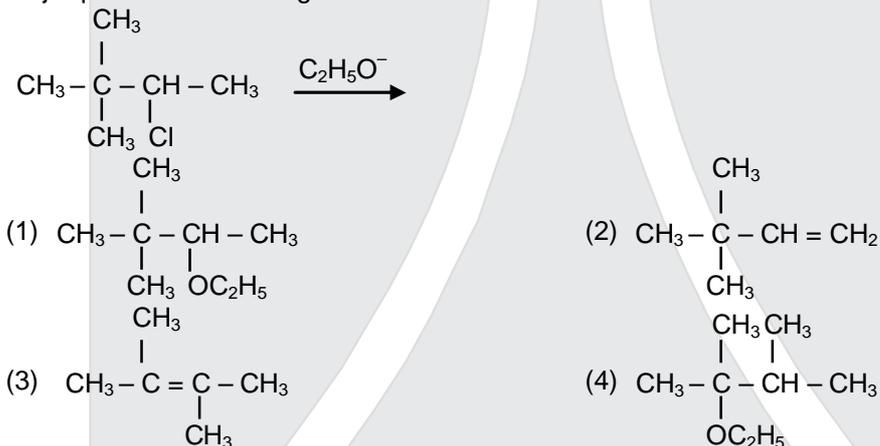
(4) C & D

Ans.



Sol.

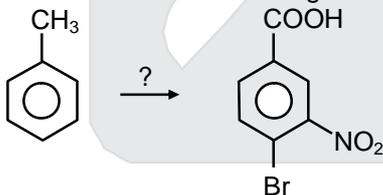
30. Major product of following reaction:



Ans. (1)

Sol.

31. What are the suitable reagent for following conversion



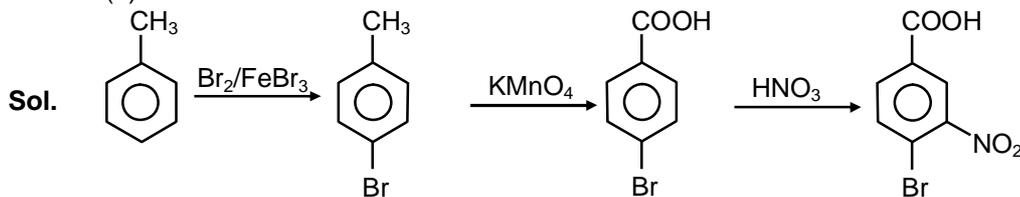
(1) $\text{Br}_2/\text{FeBr}_3, \text{KMnO}_4, \text{HNO}_3 / \text{H}_2\text{SO}_4$

(2) $\text{KMnO}_4, \text{Br}_2/\text{FeBr}_3, \text{HNO}_3$

(3) $\text{HNO}_3, \text{Br}_2/\text{FeBr}_3, \text{KMnO}_4$

(4) $\text{HNO}_3, \text{KMnO}_4, \text{Br}_2 / \text{FeBr}_3$

Ans. (1)



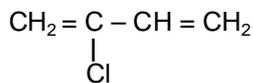
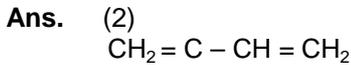
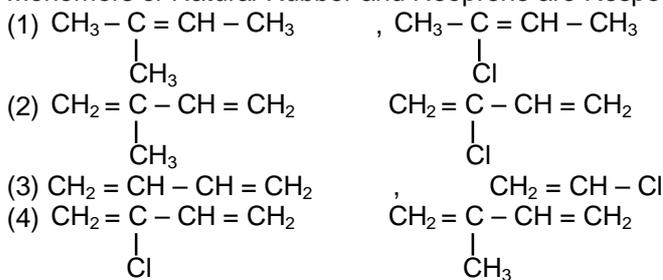
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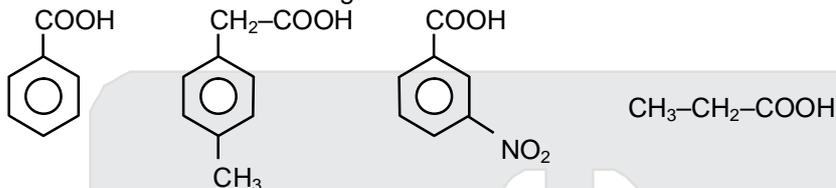
32. Monomers of Natural Rubber and Neoprene are Respectively :



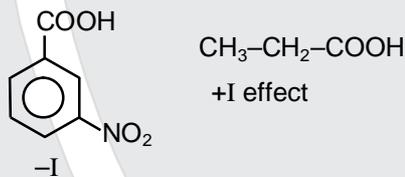
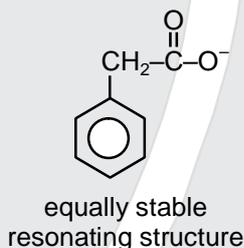
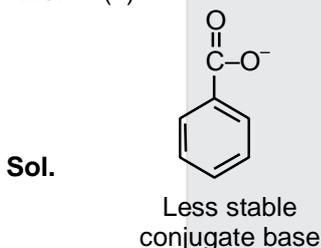
Sol. Monomer of natural rubber

Monomer of neoprene

33. Correct order of Acidic strength :



Ans. (1) iii > ii > i > iv (2) I > iii > ii > iv (3) iv > i > ii > iii (4) iii > iv > i > iii



34. Blue colour disappears in which solution by passing SO_2

(1) CrO_4^{2-} , H_2SO_4 (2) I_2 + Starch (3) CuSO_4 (4) I_2

Ans. (2)



35. In HCP of A, $\frac{1}{3}$ of tetrahedral are occupied by B. What is the formula for compound:

(1) A_2B_3 (2) A_3B_2 (3) AB_3 (4) A_2B

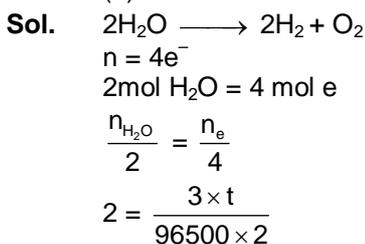
Ans. (2)

Sol. No. of atoms (A) = 6 (hcp); no. of B atoms = $\frac{1}{3} \times 12 = 4$
 A_6B_4 or A_3B_2

36. Time taken to completely (in hr) decompose 36 g water by passing 3A current is :

(1) 35.8 hrs (2) 40 hr (3) 51.8 hr (4) 22.5 hr

Ans. (1)



$= t = \frac{96500 \times 4}{3 \times 3600} = 35.8 \text{ hr}$

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37. In which of the following shape is same but hybridization is different:
 (1) ICl_2^- , XeF_2 (2) SO_2 , NO_2^+ (3) SO_2 , NH_2^- (4) CO_2 , SO_2

Ans. (3)

Sol. Geometry for SO_2 & NH_2^- is bent, but hybridization are sp^2 and sp^3 .

38. $\text{CaCO}_3(\text{s}) \longrightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$ at const Temp, the pressure will increase if :
 (1) Vol. of container increase (2) Temperature increases
 (3) Concentration of CaO increases. (4) Concentration of CaCO_3 increases.

Ans. (2)

Sol. $K_P = P_{\text{CO}_2}$.

Pressure will increase only by increasing temperature as it will change K_P value.

39. At constant temperature Gases A & B, density of (A) is twice that of B and molar mass of A is half of B.

Ratio of their pressures is $\frac{P_A}{P_B}$ is :

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

Ans. (2)

Sol.

40. Correct order of bond angle is :
 (1) $\text{SO}_2 < \text{H}_2\text{S}$ (2) $\text{SO}_2 < \text{H}_2\text{O}$ (3) $\text{NH}_3 < \text{H}_2\text{O}$ (4) $\text{NH}_3 < \text{SO}_2$

Ans. (4)

Sol. Bond angle in SO_2 \square 120° . but in NH_3 its 107° .

41. Time taken for 12.8 g of a radioactive substance to decay to 0.4 g, is (half life is 138s)

- (1) 720 s (2) 690 s (3) 345 s (4) 69 s

Ans. (2)

Sol. $\frac{0.4}{12.8} = \left(\frac{1}{2}\right)^n = n = 5$

$$\therefore t = 5 t_{\frac{1}{2}} = 5 \times 138 \text{ s} = 690 \text{ s.}$$

42. % s-character of N–H bond is maximum in :

- (1) N_2H_2 (2) N_2H_4 (3) NH_3 (4) NH_4^+

Ans. (1)

Sol. in N_2H_2 , N is sp^2 hybrid, in all others N is sp^3

43. $\text{MnO}_2 + \text{NaCl} \xrightarrow[\text{H}_2\text{SO}_4]{\text{H}^+}$ choose incorrect statement for above reaction.

- (1) Mn goes from +4 to +2 (2) Cl^- is oxidized
 (3) Cl_2 yellow gas is released. (4) SO_4^{2-} reduces to SO_2

Ans. (4)

Sol. $\text{MnO}_2 + \text{NaCl} \xrightarrow{\text{H}_2\text{SO}_4} \text{MnCl}_2 + \text{Cl}_2$

44. Ethylene glycol is used as antifreeze to reduce freezing point of water to -2.4°C .

What mass of antifreeze is required for 2L water? (K_f water = $1.86 \frac{\text{K kg}}{\text{mole}}$)

- (1) 16 kg (2) 160 g (3) 1.60 kg (4) 16 g

Ans. (2)

Sol. $m_{\text{solute}} = \frac{\Delta T_f \times m_{\text{water}} \times M_{\text{solute}}}{K_g} = \frac{2.4 \times 2 \times 62}{1.86}$

$$= 160 \text{ g.}$$

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45. What is entropy change in 2 mol N_2 , when its temperature is taken from 400 K to 800 K, adiabatically.

- (1) $30 \frac{J}{K}$ (2) $60 \frac{J}{K}$ (3) $40 \frac{J}{K}$ (4) $20 \frac{J}{K}$

Ans. (3)

Sol. $\Delta S = nC_p \ln \frac{T_2}{T_1} = 2 \times \frac{7}{2} R \times \ln \frac{800}{400} = 40 \text{ J/K.}$

46. Calculate ionisation constant for pyridinium chloride,
Given that H^+ ion concentration is $3.6 \times 10^{-4} \text{ M}$ and its concentration is 0.02 M.

- (1) 6.48×10^{-2} (2) 6×10^{-6} (3) 6×10^{-8} (4) 12×10^{-8}

Ans. (2)

Sol. $K_a = \frac{[H^+]^2}{C} = \frac{(3.6 \times 10^{-4})^2}{0.02} = 6.48 \times 10^{-6}$

47. **Assertion :** Benzylamine is less basic than Ethylamine

Reason : Benzene Show +I Effect

- (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)

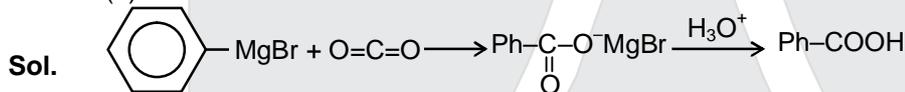
Sol. $Ph-CH_2-NH_2$ (Benzylamine) have -I effect of Phenyl group while $CH_3-CH_2-NH_2$ have +I effect.

48. **Assertion :** C_6H_5-MgBr Reacts with CO_2 and forms benzoic acid.

Reason : CO_2 is electrophile.

- (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)



49. **Assertion :** Boiling point of α -D-glucose is less than β -D-glucose.

Reason : β -D-glucose is more stable than α -D-glucose

- (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. β -D-glucose more stable than α -glucose so B.P. and M.P. more for β -D-glucose

50. **Assertion :** Cimetidine is an antacid.

Reason : Antacid increases secretion of HCl from gastric cells.

- (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. Cimetidine is an antacid which suppress secretion of HCl.

51. **Assertion :** In Free expansion, $\Delta U = 0$

Reason : No work is done in free expansion.

- (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 are true but unrelated.

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- 52. Assertion :** $\text{NaCl}_{(\text{aq})}$ electrolysis produces Na metal.
Reason : Na^+ is obtained at cathode.
 (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. Electrolysis of brine produces NaOH , H_2 and Cl_2
- 53. Assertion :** O_2F_2 converts Pu to PuF_6 .
Reason : O_2F_2 is used to remove unreacted Pu from nuclear reaction.
 (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. $\text{Pu} + 3\text{O}_2\text{F}_2 \longrightarrow \text{PuF}_6 + 3\text{O}_2$; unreacted Pu is separated by fluorination.
- 54. Assertion :** Solubility of gases increases with increase in pressure.
Reason : Dissolution of gas in liquid is exothermic.
 (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. Difference in pressure is independent of thermodynamics of the process.
- 55. Assertion :** SO_2 is more covalent than SeO_2
Reason : Covalent radius of Se is more than S
 (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. Covalent nature is judged by Fajan's rule.
- 56. Assertion :** In O/W emulsion, soap is mixed
Reason : Soap reduces surface tension
 (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. For emulsification soap is added in O/W emulsion as it reduces surface tension and forms better colloid.
- 57. Assertion :** $[\text{Co}(\text{NH}_3)_6]^{3+} \rightarrow [\text{Co}(\text{NH}_3)_5 \text{H}_2\text{O}]^{3+}$ colour continuously changes.
Reason : Larger wavelength will be absorbed
 (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. H_2O is weaker ligand than NH_3 so λ_{absorb} will be higher.

PART - C (BIOLOGY)

58. Which is incorrect about E.coli
- (1) It is diploid
 - (2) It is found in human intestine
 - (3) Transformation, Transduction, Conjugation can show
 - (4) Can be used in Recombinant DNA technology

Ans. (1)

59. Codons of alanine
- | | |
|-------------------|-------------------|
| (1) CUC, CUA, CUG | (2) GGG, GGU, GGA |
| (3) GUG, GUC, GUA | (4) GCU, GCC, GCG |

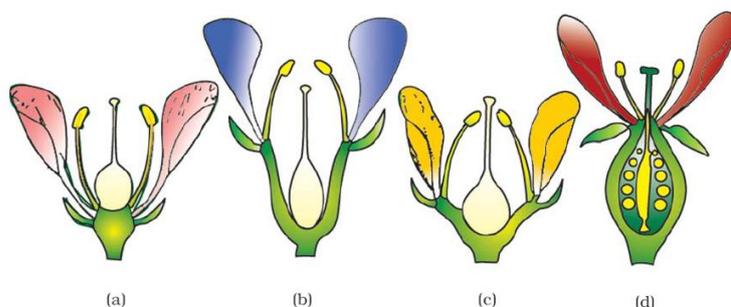
Ans. (4)

60. Which of the following can synthesize all types of RNA

- | | |
|-----------|-----------|
| (1) r-RNA | (2) t-RNA |
| (3) m-RNA | (4) DNA |

Ans. (4)

61. Diagram of hypogynous, perigynous, Epigynous are given respectively



Find out the correct option for the above diagrams a,b,c,d that has correct examples

- | | |
|--|--|
| (1) a-Mustard, b- Rose, c- Plum, d- Guava | (2) a-Cucumber, b- Plum, c- Rose, d- Brinjal |
| (3) a-China rose, b- Guava, c- Rose, d-Mustard | (4) a-Mustard, b- Rose, c- Plum, d- Brinjal |

Ans. (1)

62. Which of the following are synthetic phytohormone

- | | |
|----------------------|---------------------|
| (1) IBA, IAA, BAP | (2) 2,4-D, NAA, BAP |
| (3) Zeatin, IBA, IAA | (4) NAA, IAA, 2,4-D |

Ans. (2)

63. Which of the following is correct

- (1) Cyanobacteria makes mycorrhiza Which absorbs phosphate from soil
- (2) Azotobacter is symbiotic nitrogen fixing bacteria
- (3) In paddy field, cyanobacteria is used to decrease soil microbes
- (4) Methanobacterium feed cellulose in anaerobic condition

Ans. (4)

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64. The genetic material of $\phi\times 174$ is
 (1) SSDNA (2) SSRNA (3) DSDNA (4) DSRNA

Ans. (1)

65. Heterozygous tall is crossed with recessive parent .What will the percentage of homozygous recessive
 (1) 75 % (2) 25 % (3) 100 % (4) 50 %

Ans. (4)

66. In *Mirabilis jalapa*, red flowered plant is crossed with white flowered plant. What will the phenotypic ratio in F_2 generation.

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

Ans. (2)

67. Which of the following is correct about somaclone plants
 (1) Somatic hybrid (2) Same genetic constitution
 (3) Different genetic constitution (4) None

Ans. (2)

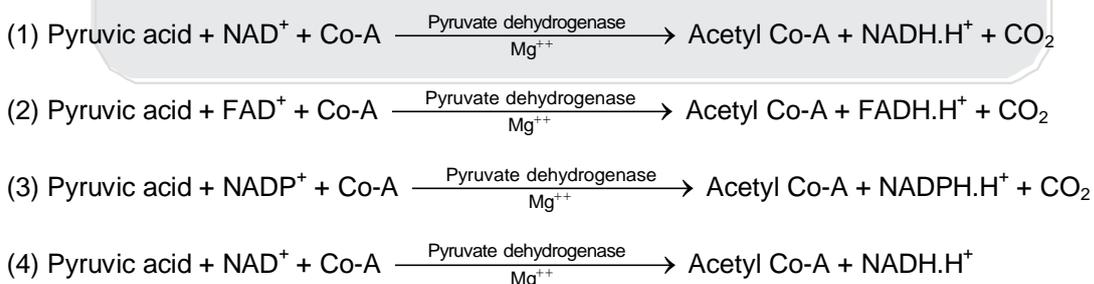
68. Fishes in eutrophic lake is died due to
 (1) Oxygen (2) Nutrient enrichment
 (3) CO_2 (4) None

Ans. (1)

69. Which is required in glycolysis
 (1) ATP, ADP, NAD^+ , Glucose, cytoplasmic enzymes
 (2) FAD^+ , ADP, ATP, Glucose, cytoplasmic enzymes
 (3) $NADP^+$, ATP, GTP, Glucose, cytoplasmic enzymes
 (4) NAD^+ , $NADP^+$, ATP, Glucose, cytoplasmic enzymes

Ans. (1)

70. Which is correct link reaction



Ans. (1)

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71. Match the Column-I & Column-II

- | | |
|-------------------|--|
| (i) Auxin | (A) Ripening of fruit |
| (ii) ABA | (B) Bolting |
| (iii) Gibberellin | (C) Sensitivity against adverse conditions |
| (iv) Ethephon | (D) parthenocarpy in tomato |

(1) i-C, ii-D, iii-B, iv-A

(2) i-D, ii-C, iii-A, iv-B

(3) i-D, ii-C, iii-B, iv-A

(4) i-A, ii-C, iii-B, iv-D

Ans. (3)

72. Select the incorrect statement

- (1) Microelements involve N, P, Mn, Cu, Mo.
(2) The concentration of microelements is 10 m mole/kg.
(3) If the concentration is more than 10 m mole/kg, they become toxic
(4) The deficiency of microelements causes symptoms of disease

Ans. (1)

73. All the digestive enzymes like carbohydrase, protease, lipase, DNase, RNase are found in :

- (1) Lysosome (2) peroxisome (3) Glyoxysome (4) Vacuole

Ans. (1)

74. RNA is found in :

- | | |
|-------------------------------|------------------------------|
| (1) Chloroplast, mitochondria | (2) Golgibody, Chloroplast |
| (3) Lysosome, Mitochondria | (4) Centrioles, Mitochondria |

Ans. (1)

75. The value of 2,4-D is 25 ppm. How many amount of 2,4-D should require for making its 5 litres, 15 litres and 25 litres solutions respectively

- | | |
|-----------------------------|----------------------------|
| (1) 25 gm, 50 gm, 75 gm | (2) 50 gm, 175 gm, 525 gm |
| (3) 250 gm, 750 gm, 1250 gm | (4) 125 gm, 375 gm, 625 gm |

Ans. (4)

76. **Assertion** : C_3 cycle is found in all plant

Reason : Kranz anatomy is found in C_3 plant

- (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)

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77. What was the reason of mass extinction during Mesozoic era?
 (1) Due to meteorite falling on earth (2) Due to continental drift
 (3) Glaciation (4) Volcanic eruption

Ans. (1)

78. Which hormone helps in detection of pregnancy?
 (1) hCG (2) hPL
 (3) Prolactin (4) Progesterone

Ans. (1)

79. Match the following and select the correct option –

A.	LSD	i.	CNS depressant
B.	Morphine	ii.	Hallucinogen
C.	Cocaine	iii.	Effects cardiovascular system
D.	Nicotine	iv.	Interferes with dopamine

Options:

- (1) A-ii, B-i, C-iv, D-iii (2) A-iii, B-1, C-iv, D-ii
 (3) A-i, B-iv, C-ii, D-iii (4) A-iv, B-i, C-iii, D-ii

Ans. (1)

80. Which among the following alcoholic beverage will be formed by distillation?
 (1) Brandy (2) Wine
 (3) Beer (4) All

Ans. (1)

81. Optimum pH for activation of pepsinogen is–
 (1) 1.5 - 2 (2) 6
 (3) 8 (4) 10

Ans. (1)

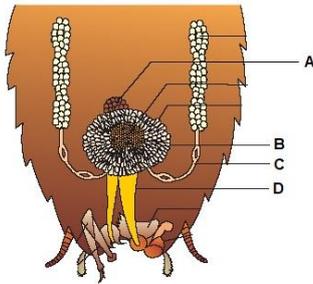
82. Which of the following is correct?

Column-I		Column-II	
(1)	Blood & lymph	(a)	Connective tissue
(2)	Bones and muscles	(b)	Skeletal tissue
(3)	Skin epidermis	(c)	Nervous tissue
(4)	Cartilage and muscles	(d)	Connective tissue

Ans. (1)

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83. Select the option having correct matching for different parts of male reproductive system of cockroach –



- (1) A - Phallic gland, B- Seminal vesicle, C- Vas deferens, D - Ejaculatory duct
- (2) A - Phallic gland, B- Seminal vesicle, C- Ejaculatory duct, D - Vas deferens
- (3) A - Seminal vesicle, B- Phallic gland, C- Vas deferens, D - Ejaculatory duct
- (4) A - Phallic gland, B- Vas deferens, C- Seminal vesicle, D - Ejaculatory duct

Ans. (1)

84. Select the option with correct matching of animal group and its examples –

- (1) Mammalian - *Platypus, Rattus, Camelus, Pavo*
- (2) Aves - *Neophron, Struthio, Sphenodon, Passer*
- (3) Reptilia - *Calotes, Heloderma, Uromastix, Draco*
- (4) Amphibia - *Bufo, Hyla, Rhacophorus, Ophiosaurus*

Ans. (3)

85. Select the correct matching–

- (1) Cuboidal epithelium - Alveolar wall
- (2) Columnar epithelium - Stomach
- (3) Ciliated epithelium - Intestine
- (4) Squamous epithelium - Germinal epithelium

Ans. (2)

86. Cross bridges between actin and myosin is broken up by –

- (1) Hydrolysis of ATP
- (2) Binding of ATP to the myosin head
- (3) Binding of calcium to the subunit of troponin
- (4) Exposure of tropomyosin

Ans. (2)

87. Only erythropoiesis occurs in –

- (1) Erythroblast
- (2) Proerythroblast
- (3) Myeloid tissue
- (4) Haemocytoblast

Ans. (2)

88. Which among the following hormone initiate development of secondary sexual characters in female?

- (1) GnRH
- (2) Estradiol
- (3) Estriol
- (4) Progesterone

Ans. (1)

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89. Which of the following are about 90% absorbed in the nephron?

- (1) Glucose and amino acids – Active process
- (2) Glucose and amino acids – Passive process
- (3) Cl^- , NH_3 , K^+ – Passive process
- (4) Cl^- , NH_3 , K^+ – Active process

Ans. (1)

90. Infective stages of malarial parasite is found in -

- (1) Salivary glands of mosquito
- (2) Intestine of mosquito
- (3) Haemolymph of mosquito
- (4) Stomach wall of mosquito

Ans. (1)

91. Full form of GEAC is –

- (1) Genetic engineering approval committee
- (2) Genetic engineering advisory council
- (3) Genetic export approval committee
- (4) Global environmental advisory committee

Ans. (1)

92. **Assertion** : Eli Lilly prepared two DNA sequences corresponding to A and B chain of human insulin and introduced them in the plasmid of *E.coli* to produce polypeptide chains of insulin.

Reason : Chains A and B were produced separately, extracted and combined by creating disulphide bonds to form human insulin.

- (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)

93. **Assertion** : We can develop nematode resistant plants by RNA interference technology.

Reason : Secondary metabolites can be produced by genetic engineering in plants.

- (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)

94. **Assertion** : GM plants are more useful than normal plants.

Reason : Golden rice is rich in β -carotene

- (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)

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95. **Assertion** : Secondary metabolites of plants can be useful for human.

Reason : Abrin and ricin are toxins.

- (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)

96. **Assertion** : The endosperm in gymnosperm is formed after fertilization.

Reason : The endosperm of gymnosperm is formed by triple fusion.

- (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)

97. **Assertion** : A & B are antigens present on RBCs

Reason : The blood group is AB blood group only.

- (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)

98. **Assertion** : BOD (Biological oxygen demand) is a device that is used to measure quality of water

Reason : High BOD is observed in highly polluted water

- (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)

99. **Assertion** : Deforestation sequesters CO₂ from atmosphere.

Reason : Global warming is beneficial for plants and human health.

- (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)

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PART - D (G.K & MENTAL ABILITY)

100. What is colour of Milestones used at state highways?

- (1) Yellow (2) Blue (3) Green (4) Red

Ans. (3)

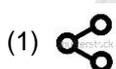
101. Who is the chairman of Rajyasabha

Ans. Vankaiya Naidu

102. What is the full form of GSM

Ans. Global system for Mobile communication

103. Find the odd one out

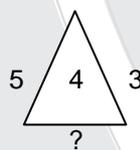
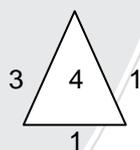
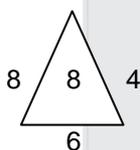


Ans. (4)

104. Who is the natural host of Nipah virus?

Ans. BAT

105. Find the missing term.



(1) 2
Ans. (2)

(2) 3

(3) 4

(4) 5

106. What is the required run rate if 50 runs is needed to win a T-20 match?

Statement-1 : $\frac{3}{5}$ of the total allotted overs have been completed.

Statement-2 : Each bowler has bowled 3 overs.

- (1) Statement-1 is required (2) Statement-2 is required
(3) Both 1 & 2 are required (4) Neither 1 nor 2 is required

Ans. (1)

107. Social media is a popular medium of spreading information?

Statement-1 : Normally people believe in the information of social media.

Statement-2 : Social media information is authentic.

- (1) Statement-1 is required (2) Statement-2 is required
(3) Both 1 & 2 are required (4) Neither 1 nor 2 is required

Ans. (1)

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108. Establish the relation



Google ?

Ans. Facebook

109. 2, 3, 5, 8, 7 by using these five digits how many 3 digits numbers can be formed which are divisible by 2

- (1) 24 (2) 30 (3) 6 (4) 50

Ans. (4)

110. He decided to wear his best suit for the presentation.

Statement-1 : It is mandatory to wear suit for the presentation.

Statement-2 : he does not possess any other good clothes to wear.

- (1) Statement-1 is required (2) Statement-2 is required
(3) Both 1 & 2 are required (4) Neither 1 nor 2 is required

Ans. (4)

111. A man purchased computer at Rs. 10,000. He further got it repaired in Rs. 1000. He sold it with 10% profit. What is the selling price?

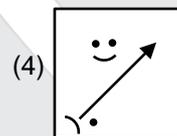
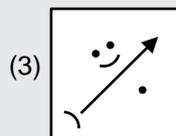
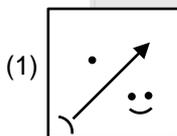
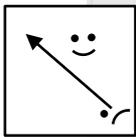
Ans. 12100

112. Three friends in college election got 300, 800 and 900 votes respectively. What % of the total votes the winner candidate got?

- (1) 40% (2) 45% (3) 50% (4) 55%

Ans. (2)

113. Find the mirror image.



Ans. (4)

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