Ist & IInd Floor, Skylark Building, Near Leela Cinema, Newal Kishore Road, Hazratganj, Lucknow. Call: 7080111582, 7080111595

SAMPLE PAPER - 18



(3)88N

Regn. No. 0920

01. A steel wire, of uniform area 2 mm², is heated up to 50°C 06. and is stretched by tying its ends rigidly. The change in tension, when the temperature falls from 50°C to 30°C is $(\text{Take } Y=2\times 10^{11} \text{N m}^{-2}, \alpha=1.1\times 10^{-5^{\circ}} \text{C}^{-1})$ (1) 1.5×10^{10} N (2) 5 N (4) 2.5×10^{10} N

Coaching Institute

- 02. An electric charge is placed at the centre of a cube of side a. The electric flux
 - (1) through one of its faces $\frac{q}{6 \in Q}$
 - (2) through one of its faces $\frac{q}{\epsilon_0}$
 - (3) through all of its faces $\frac{q}{3 \in 0}$
 - (4) through one of its faces $\frac{q}{2 \epsilon_0}$
- 03. A compass needle which is allowed to move in a horizontal plane is taken to a geomagnetic pole. It (1) Will stay in north-south direction only
 - (2) Will stay in east-west direction only
 - (3) Will become rigid showing no movement
 - (4) Will stay in any position
- Speeds of two identical cars are u and 4u, respectively, at 04. a specific instant. If the same retardation is applied to both the cars, the ratio of respective distances in which the two cars are stopped, from that instant, is (1)1:1(2)1:4
 - (3)1:8 (4)1:16
- 05. A certain amount of an ideal gas is contained in a closed vessel. The vessel is moving with a constant velocity v. The rise in the temperature of the gas, when the vessel is

suddenly stopped, is (M is the molecular mass) (
$$\gamma = \frac{C_P}{C_V}$$
)

+1)

(1)
$$\frac{\mathrm{Mv}^{2}(\gamma-1)}{2\mathrm{R}}$$
 (2)
$$\frac{\mathrm{Mv}^{2}(\gamma)}{2\mathrm{R}}$$

(3) $\frac{Mv^2}{2R\gamma}$

(4)
$$\frac{Mv^2}{2R(\gamma+1)}$$

Following circuit is equivalent to



07. A point object O is placed at a distance of 20 cm from a convex lens of focal length 16 cm as shown in figure. At what distance x from the lens should a convex mirror of focal length 30 cm, be placed so that final image coincides with the object?





$$(2) 40 \,\mathrm{cm}$$

$$(3) 20 \, \text{cm}$$

(4) final image can never coincide with the object in the given conditions

08. Two open organ pipes of length L_1 and L_2 ($L_2 > L_1$) produces x beats/second, then speed of sound in organ pipe is

(1)
$$2x \left(\frac{L_2 - L_1}{L_1 L_2} \right)$$
 (2) $2x \left(\frac{L_1 L_2}{L_1 + L_2} \right)$
(3) $2x \left(\frac{L_1 L_2}{L_2 - L_1} \right)$ (4) $x \left(\frac{L_1 L_2}{L_2 - L_1} \right)$

09. A current of 5 A passes through a copper conductor (resistivity = $1.7 \times 10^{-8} \Omega$ m) of radius of cross-section 5 mm. Find the mobility of the charges if their drift velocity is 1.1×10^{-3} m/s. $(1) 1.3 \text{ m}^2/\text{Vs}$ $(2) 1.5 \text{ m}^2/\text{Vs}$

(3)
$$1.8 \text{ m}^2/\text{Vs}$$
 (4) $1.0 \text{ m}^2/\text{Vs}$

SKD NEW STANDARD COACHING INSTITUTE

10. In a hydrogen like atom, electron makes transition from an energy level with quantum number n to another with quantum number (n-1). If n >> 1, the frequency of radiation emitted is (almost) proportional to

(1)
$$\frac{1}{n^3}$$
 (2) $\frac{1}{n}$
(3) $\frac{1}{n^2}$ (4) $\frac{1}{n^4}$



A real gas has critical temperature and critical pressure 11. as 40°C and 10 atm respectively, then liquefaction of gas is possible at (1) 50°C and 8 atm (2) 45°C and 8 atm

(3) 25°C and 12 atm	(4) 45°C and 12 atm

Which of the following are intramolecular redox reactions? 12. I. $PCl_5 \longrightarrow PCl_3 + Cl_2$ II. $2KClO_3 \longrightarrow 2KCl + 3O_2$

 $\begin{array}{c} \text{CHO} & \text{COO}^-\\ \text{III.} & | & + \text{OH}^- \longrightarrow & | \\ \text{CHO} & \text{CH}_2\text{OH} \end{array}$ IV. $NH_4NO_2 \rightarrow N_2 + 2H_2O$ (1) All except I (2) All except II (3) All except III (4) All except IV

13. Which of the following reaction is not of first order? (1) $2H_2O_2 \longrightarrow 2H_2O + O_2$

$$(2) \bigcirc -N_2 Cl \longrightarrow \bigcirc -Cl + N_2$$

 $(3) CH_3COOC_2H_5 + H_2O \longrightarrow CH_3COOH + C_2H_5OH$ (4) $CH_3COOC_2H_5 + NaOH \longrightarrow CH_3COONa + C_2H_5OH$

Match the species in Column–I with the type of hybrid 14. orbitals in Column-II.

	Column-I		Column-II	
(i)	SF_4	(A)	sp ³ d ²	
(ii)	IF ₅	(B)	d ² sp ³	
(iii)	NO_2^+	(C)	sp ³ d	
(iv)	NH4 ⁺	(D)	sp ³	
		(E)	sp	
$(1) (i) \rightarrow C; (ii) \rightarrow A; (iii) \rightarrow E; (iv) \rightarrow D$				
$(2) (i) \rightarrow A; (ii) \rightarrow B; (iii) \rightarrow C; (iv) \rightarrow D$				
$(3)(i) \rightarrow C; (ii) \rightarrow A; (iii) \rightarrow D; (iv) \rightarrow E$				
$(4) (i) \rightarrow A; (ii) \rightarrow C; (iii) \rightarrow D; (iv) \rightarrow D$				

15. Ionic mobility of which of the following alkali metal ions is lowest when aqueous solution of their salts is put under an elec-tric field?

(1) K (2) Rb (3) Li (4) Na

16. The compound A on treatment with Na gives B, and with PCl₅ gives C. B and C react together to give diethyl ether. A, B and C are in the order (1) C₂H₅OH, C₂H₅ONa, C₂H₅Cl

 $(2) C_{2}H_{5}Cl, C_{2}H_{6}, C_{2}H_{5}OH$ (3) C₂H₅OH, C₂H₅Cl, C₂H₅ONa (4) C₂H₅OH, C₂H₆, C₂H₅Cl

- Which one given below is a non-reducing sugar? (1) Lactose (2) Glucose (3) Sucrose (4) Maltose
- Some chemists at ISRO wished to prepare a saturated 18. solution of a silver compound and they wanted it to have the highest concentration of silver ion possible. Which of the following compounds would they use? $K_{sp}(AgCl) = 1.8 \times 10^{-10}, K_{sp}(AgBr) = 5.0 \times 10^{-13}$ $K_{sp}(Ag_2CrO_4) = 2.4 \times 10^{-12}$

19. In the following compounds, the decreasing order of basic strength are:

$$I. \bigvee_{N} II. \bigvee_{N} III. \bigvee_{N} III. \bigvee_{N} III. \bigvee_{N} IV. \bigvee_{N} IV$$

20. Aniline in a set of reactions yielded a product D.

$$\underbrace{\text{NH}}_2 \xrightarrow{\text{NaNO}_2} \text{A} \xrightarrow{\text{CuCN}} \text{B} \xrightarrow{\text{H}_2} \text{C} \xrightarrow{\text{HNO}_2} \text{D}$$

The structure of the product D would be (1) C₆H₅NHCH₂CH₃ $(2) C_6 H_5 C H_2 N H_2$ $(3) C_6 H_5 C H_2 O H$ (4) C₆H₅NHOH



21. Match the following and select the correct option.

	Column-I		Column-II
a.	Pteris	(i)	Gymnosperm
b.	Cycas	(ïi)	Bryophyte
с.	Sphagnum	(iii)	Algae
d.	Sargassum	(iv)	Pteridophyta

(1) a-iv; b-ii; c-i; d-iii (2) a-iv; b-i; c-ii; d-iii (3) a-ii; b-iii; c-iv; d-i (4) a-i; b-iv; c-iii; d-ii

22. Which of the following is/are pre-requisite(s) for imbibition?

(a) Presence of mucilage in the adsorbent

(b) The affinity between the adsorbent and the liquid

(c) Water potential gradient between the adsorbent and the liquid

(d) Presence of cuticle on the surface of the adsorbent (1) (b) and (c) (2) Only (b)

(3)(a), (b) and (c)(4) (a) and (d)

- 23. Which of the metabolites is common to respiration mediated breakdown of fats, carbohydrates and proteins?
 - (1) Fructose 1, 6-bisphosphate
 - (2) Pyruvic acid
 - (3) Acetyl CoA
 - (4) Glucose-6-phosphate
- 24. Which of the following factor is required for the protein synthesis?I. Initiation codon II. GTP and ATPII. Dustidel temperature IV (DNA)

III. Peptidyl transferase IV. tRNA V. mRNA VI. Amino acid activating enzyme VII. rRNA Choose the correct combination. (1) I, II and III (2) III, IV and V (3) V, VI and VII (4) All of these

- 25. EcoSAN toilets are working in many areas of (1) Assam and West Bengal
 (2) Kerala and Sri Lanka
 (3) Maharashtra and Andhra Pradesh
 - (4) Karnataka and Sri Lanka
- 26.Ecological pyramids are of types
(1) Two
(3) Four(2) Three
(4) Five
- 27. Flavour of cheese is enhanced by
 - (1) Penicillium roqueforti
 - (2) Gibberella fujikuroi
 - (3) Aspergillus niger
 - (4) Ashby gossypii
- 28. Which one of the following statements is wrong?(1) Water potential is the chemical potential of the water
 - (2) Solute potential is always negative
 - (3) Pressure potential is zero in a flaccid cell
 - (4) Water potential equals solute potentials in a fully turgid cell
- 29. Fusion between a larger non-motile female gamete and smaller motile male gamete is called
 - (1) Isogamy(3) Oogamy
- (2) Anisogamy(4) None of the above
- 30.Floridean starch is very similar to
(1) Amylopectin
(3) Glycogen(2) Cellulose
(4) Both (1) and (3)
 - ZOOLOGY
- 31. Which of the following is correct for epithelial tissue?(1) It is present only as inner lining.
 - (2) It is present only as outer lining.
 - (3) Contains very less intercellular matrix.
 - (4) All of these

- 32. The following features belong to which syndrome?
 (A) Furrowed tongue
 (B) Palm is broad with characteristic palm crease
 (C) Physical, psychomotor and mental retardation
 (D) Short statured with small round head
 (1) Down's syndrome
 (2) AIDS
 (3) Turner's syndrome
 - (4) Klinefelter's syndrome

33. Identify A, B, C and E in the following diagram.



(1) A–Central nervous system (CNS), B–Peripheral nervous system (PNS), C–Spinal cord, D–Sympathetic neural system, E–Parasympathetic neural system.

(2) A-Peripheral nervous system (PNS), B-Parasympathetic neural system, C-Central nervous system (CNS), D-Sympathetic neural system, E-Spinal cord.

(3) A–Parasympathetic neural system, B–Spinal cord, C– Central nervous system (CNS), D–Sympathetic neural system, E–Peripheral nervous system (PNS).

(4) A–Central nervous system (CNS), B–Spinal cord, C– Peripheral nervous system (PNS), D–Sympathetic neural system, E–Parasympathetic neural system.

34. The first triploblastic animal is

(1) Coelenterates	(2) Platyhelminthes
(3) Aschelminthes	(4) Annelids

- 35. Proteins perform many physiological functions. For example, some functions as enzymes. One of the following represents an additional function that some proteins discharge
 - (1) Antibiotics
 - (2) Pigments conferring colour to skin
 - (3) Pigments making colours of flowers
 - (4) Hormones
- 36. Which of the following contraceptive methods play the role of a hormone?
 - (1) Barrier method, Lactational amenorrhea, Pills
 - (2) CuT, Pills, Emergency contraceptives
 - (3) Pills, Emergency Contraceptives, Barrier methods
 - (4) Lactional amenorrhea, Pills, Emergency contraceptives

3

37.	The DNA fragments separated on an agarose gel can be
	visualized after staining with:
	(1) Acetocarmine

- (2) Aniline blue
- (3) Ethidium bromide
- (4) Bromophenol blue
- 38. Eustachian tube connects A with the B. choose the correct option w.r.t. blanks labelled as A and B.
 (1) A–Internal ear; B–Larynx
 - (2) A-Middle ear; B-Pharynx
 - (3) A-External ear; B-pharynx
 - (4) A–Middle ear; B–Larynx

Which of the following glucose transporters is insulin-
independent?(1) GLUT II(2) GLUT III(3) GLUT IV(4) GLUT I

39.

40. Which of the following sexually transmitted disease is not completely curable?
(1) Genital warts
(2) Genital herpes
(3) Chlamydiasis
(4) Gonorrhoea

Institut Institut

711

000