

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1	<p>Find out the total number of voids in 0.5 mole of a compound forming hexagonal closed packed structure.</p> <p>A1 : 9.034×10^{23}</p> <p>A2 : 6.023×10^{23}</p> <p>A3 : 18.069×10^{23}</p> <p>A4 : 3.011×10^{23}</p>	4.0	1.00
Objective Question				
2	2	<p>How much energy will be required to ionise 1 mole of hydrogen atoms?</p> <p>A1 : 1350 KJ</p> <p>A2 : 1350 J</p> <p>A3 : 1312 KJ</p> <p>A4 : 1312 J</p>	4.0	1.00
Objective Question				
3	3	<p>A_1 and A_2 are two ores of metal 'M'. A_1 on calcination gives black precipitate, CO_2 and H_2O</p> <p>$A_1 \xrightarrow{\text{calcination}} \text{Black Ppt.} + CO_2 + H_2O$</p> <p>While A_2 on roasting gives metal and a gas.</p> <p>$A_2 \xrightarrow{\text{roasting}} \text{Metal} + \text{Gas}$</p> <p>$\text{Gas} \xrightarrow{K_2Cr_2O_7 + H_2SO_4} P$</p> <p>Where P is a Green coloured precipitate</p> <p>In the given sequence, A_1 and A_2 respectively are</p> <p>A1 : $CuCO_3$ and Cu_2S</p> <p>A2 : $CuCO_3 - Cu(OH)_2$ and Cu_2S</p>	4.0	1.00

		<p>A3 CuCO_3 and Cu_2O :</p> <p>A4 $\text{CuCO}_3\text{-Cu(OH)}_2$ and Cu_2O :</p>		
Objective Question				
4	4	<p>The values of observed and calculated molecular weights of silver nitrate are 92.64 and 170 respectively. The degree of dissociation of silver nitrate will be</p> <p>A1 52.8% :</p> <p>A2 83.5% :</p> <p>A3 46.7% :</p> <p>A4 60.2% :</p>	4.0	1.00
Objective Question				
5	5	<p>The total number of gas molecules in a room of capacity 25m^3 at a temperature of 27°C and 1atm pressure will be</p> <p>A1 3.011×10^{23} :</p> <p>A2 6.119×10^{23} :</p> <p>A3 6.119×10^{26} :</p> <p>A4 3.011×10^{26} :</p>	4.0	1.00
Objective Question				
6	6	<p>The entropy change can be calculated by using the expression, $\Delta S = \frac{q_{rev}}{T}$. When water freezes in a glass beaker what happens?</p> <p>A1 ΔS(system) decreases but ΔS(surroundings) remains the same :</p> <p>A2 ΔS(system) increases but ΔS(surroundings) decreases :</p> <p>A3 ΔS(system) decreases but ΔS(surroundings) increases :</p> <p>A4 ΔS(system) and ΔS(surroundings) both decrease :</p>	4.0	1.00
Objective Question				
7	7	Under which of the following reaction conditions, aniline gives <i>P</i> -nitro derivative as the major product?	4.0	1.00

		<p>A1 Acetyl chloride/pyridine followed by reaction with conc. H_2SO_4 + conc. HNO_3 :</p> <p>A2 Ethyl alcohol/pyridine followed by conc. H_2SO_4 + conc. HNO_3 :</p> <p>A3 e^{-4} :</p> <p>A4 Reaction with conc. HNO_3 + conc. H_2SO_4 :</p>		
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Objective Question

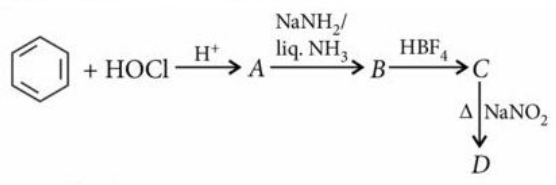
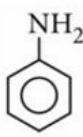
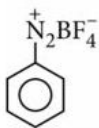


8	8	<p>Which of the following statements is <i>not</i> true?</p> <p>A1 Nascent hydrogen can be produced even at room temperature, but atomic hydrogen is produced at elevated temperature :</p> <p>A2 Nascent hydrogen can never be isolated but atomic hydrogen can be isolated :</p> <p>A3 Reducing power of atomic hydrogen is much less than that of nascent hydrogen :</p> <p>A4 Both nascent and atomic hydrogen are more reactive than ordinary hydrogen :</p>	4.0	1.00
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Objective Question

9	9	<p>Amongst TiF_6^{2-}, CoF_6^{3-}, Cu_2Cl_2 and NiCl_4^{2-}, the colourless species are</p> <p>A1 CoF_6^{3-} and NiCl_4^{2-} :</p> <p>A2 TiF_6^{2-} and CoF_6^{3-} :</p> <p>A3 Cu_2Cl_2 and NiCl_4^{2-} :</p> <p>A4 TiF_6^{2-} and Cu_2Cl_2 :</p>	4.0	1.00
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Objective Question


10	10	<p>The values of k_{sp} of two sparingly soluble salts $\text{Ni}(\text{OH})_2$ and AgCN are 2×10^{-15} and 6×10^{-17} respectively. Which salt is more soluble?</p> <p>A1 $\text{Ni}(\text{OH})_2$:</p> <p>A2 AgCN :</p> <p>A3 Both are equally soluble :</p> <p>A4 Cannot be predicted :</p>	4.0	1.00
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Objective Question				
11	11	<p>In the following sequence of reactions</p>  <p>Identify 'D'</p> <p>A1 : </p> <p>A2 : </p> <p>A3 : </p> <p>A4 : </p>	4.0	1.00

Objective Question				
12	12	<p>Aniline is diazotised and the diazonium salt hydrolysed to yield phenol which is brominated to produce $C_6H_2(Br_3OH)$. Calculate the mass of the final product obtained from of aniline if the yield in the two steps is and respectively. (Atomic mass of)</p> <p>A1 : 1.04 g</p> <p>A2 : 10.43 g</p> <p>A3 : 14.89 g</p> <p>A4 : 23.17 g</p>	4.0	1.00

Objective Question				
13	13	<p>A cylinder of gas is assumed to contain 11.2kg of butane (C_4H_{10}). If a normal family needs 20,000kJ of energy per day, the cylinder will last in (Given : ΔH for combustion of butane is -2658kJ)</p> <p>A1 : 20 days</p>	4.0	1.00


		<p>A2 22 days :</p> <p>A3 26 days :</p> <p>A4 24 days :</p>		
Objective Question				
14	14	<p>An electric current is passed through an aqueous solution of a mixture of alanine (isoelectric point 6.0), glutamic acid (3.2) and arginine (10.7) buffered at pH 6. What is the fate of the three acids?</p> <p>A1 Glutamic acid migrates to anode at pH 6. Arginine present as a cation and migrates to the cathode. Alanine as a dipolar ion remains uniformly distributed in solution :</p> <p>A2 Glutamic acid migrates to cathode and others remain uniformly distributed in solution :</p> <p>A3 All these remain uniformly distributed in solution :</p> <p>A4 All three move to cathode :</p>	4.0	1.00
Objective Question				
15	15	<p>Oxidation states of X, Y, Z are +2, +5 and -2 respectively. Formula of the compound formed will be</p> <p>A1 X_2YZ_6 :</p> <p>A2 XY_2Z_6 :</p> <p>A3 XY_5Z_2 :</p> <p>A4 X_3YZ_4 :</p>	4.0	1.00
Objective Question				
16	16	<p>Half-life time of a radioactive element X is same as the mean life time of another radioactive element Y. Initially both have same number of atoms, then</p> <p>A1 X and Y have the same decay rate initially :</p> <p>A2 X and Y :</p> <p>A3 Y will decay at faster rate than X :</p> <p>A4 X will decay at faster rate than Y :</p>	4.0	1.00
Objective Question				
17	17		4.0	1.00


 $\xrightarrow[\text{(ii) Mg/ether}]{\text{(i) Br}_2/\text{Fe}}$ (B) $\xrightarrow[\text{H}_3\text{O}^+]{\text{CH}_2=\text{O}}$ (C) $\xrightarrow{\text{Cl}_2/\text{Fe}}$ (D) $\xrightarrow{\text{Ione's reagent}}$ (E)

Al
:

Clc1ccc(CO)cc1

A2
:

Oc1ccc(Cl)cc1

A3
:

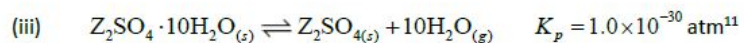
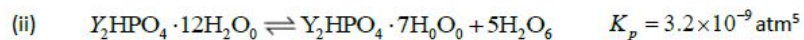
O=Cc1ccc(Cl)cc1

A4
:

CC(=O)c1ccc(Cl)cc1

18	18
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4.0	1.00
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$$\text{A1 } \text{XCL}_2 \cdot 6\text{H}_2\text{O}_{(\text{S})}$$
$$\text{A2 } \text{Y}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}_6$$
$$\text{A3} \quad \text{Z}_2\text{SO}_4(\text{S})$$

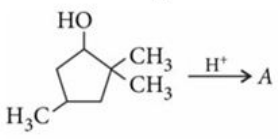
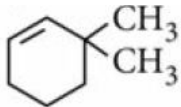
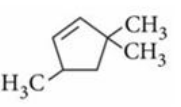
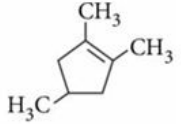
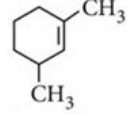
A4 $Z_2SO_4 \cdot 10H_2O(s)$
:

Objective Question				
19	19	<p>The correct IUPAC name</p> <p>A1 : 5-methyl-4-(1"-2"-dimethylpropyl) heptane</p> <p>A2 : 3-methyl-4-(1; 2'-dimethylpropyl) heptane</p> <p>A3 : 2, 3, 5-trimethyl-4-propylheptane</p> <p>A4 : 4-propyl-2, 3, 5-trimethylheptane</p>	4.0	1.00
Objective Question				
20	20	<p>Electrolysis of NaCl solution with inert electrodes for certain period of time gave 600cm^3 of 1.0M Na OH in the electrolytic cell. During the same period, 31.80g of copper was deposited in a copper voltmeter in series with the electrolytic cell. What is the percentage of current efficiency in the electrolytic cell?(At. wt. of Cu = 63.6)</p> <p>A1 : 40</p> <p>A2 : 50</p> <p>A3 : 60</p> <p>A4 : 25</p>	4.0	1.00
Objective Question				
21	21	<p>Aluminium displaces hydrogen from dilute HCl whereas silver does not. The emf of a cell prepared by combining Al/Al^{3+} and Ag/Ag^+ is 2.46V. The reduction potential of silver electrode is +0.08V . The reduction potential of aluminium electrode is</p> <p>A1 : +1.66V</p> <p>A2 : -3.26V</p> <p>A3 : +3.26V</p> <p>A4 : -1.66V</p>	4.0	1.00
Objective Question				
22	22	<p>The hybridisation, oxidation number and shape of central metal ion of Wilkinson's catalyst are respectively</p> <p>A1 : dsp^2+1 , square planar</p> <p>A2 : sp^3+4, tetrahedral</p>	4.0	1.00

A3 $sp^3 d, +2$, trigonal bipyramidal
:

A4 $d^2 sp^3 + 6$, octahedral
:

Objective Question

23	23	<p>Consider the following reactions</p>  <p>The product 'A' is</p> <p>A1 :</p>  <p>A2 :</p>  <p>A3 :</p>  <p>A4 :</p> 	4.0	1.00
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Objective Question

24	24	<p>Consider the following reactions, $A + B \rightleftharpoons k_1 C$, $C + B \xrightarrow{k_2} D$ The rate in terms of $-\frac{d[B]}{dt}$ will be</p> <p>A1 :</p> $k_1[A][B] - k_{-1}[C]$ <p>A2 :</p> $k_1[A][B] - k_1[C] - k_2[C][B]$ <p>A3 :</p> $k_1[A][B] - k_2[C][B]$ <p>A4 :</p> $k_1[A][B] - k_{-1}[C] + k_2[C][B]$	4.0	1.00
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Objective Question

25	25	<p>Aluminium vessels should not be washed with materials containing washing soda since</p> <p>A1 :</p> <p>washing soda is expensive</p>	4.0	1.00
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		<p>A2 : washing soda is easily decomposed</p> <p>A3 : washing soda reacts with Al to form soluble aluminate</p> <p>A4 : washing soda reacts with Al to form insoluble aluminium oxide</p>		
Objective Question				
26	26	<p>when I_2 is passed through KCl, KF, KBr</p> <p>A1 : Cl_2 and Br_2 are evolved.</p> <p>A2 : Cl_2 is evolved.</p> <p>A3 : Cl_2, Br_2, f_2 are evolved</p> <p>A4 : Br_2 is evolved</p>	4.0	1.00
Objective Question				
27	27	<p>Zeta potential (or electrokinetic potential) is the</p> <p>A1 : potential required to bring about coagulation of a colloidal sol</p> <p>A2 : potential required to give the particles a speed of 1cm/sec in the sol</p> <p>A3 : potential difference between fixed charged layer and the diffused layer having opposite charges</p> <p>A4 : potential energy of the colloidal particles</p>	4.0	1.00
Objective Question				
28	28	<p>Gadolinium belongs to 4f series and its atomic number is 64. Which of the following is the correct electronic configuration of gadolinium?</p> <p>A1 : $[Xe]4f^95s^1$</p> <p>A2 : $[Xe]4f^7sd^16s^2$</p> <p>A3 : $[Xe]4f^6sd^26s^2$</p> <p>A4 : $[Xe]4f^8sd^2$</p>	4.0	1.00
Objective Question				
29	29		4.0	1.00

		<p>In the nuclear reaction, $\frac{7}{3}\text{Li} + 1\text{H} \rightarrow 2\frac{4}{2}\text{He}$, the mass loss is nearly 0.02 amu. Hence, the energy released (in million kcal/mol) in the process is approximately</p> <p>A1 428 :</p> <p>A2 200 :</p> <p>A3 100 :</p> <p>A4 50 :</p>		
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Objective Question

30	30	<p>Three separate samples of a solution of a single salt gave these results. One formed a white precipitate with excess ammonia solution, one formed a white precipitate with dil. NaCl solution and one formed a black precipitate with H_2S the salt could be</p> <p>A1 AgNO_3 :</p> <p>A2 $\text{Pb}(\text{NO}_3)_2$:</p> <p>A3 $\text{Hg}(\text{NO}_3)_2$:</p> <p>A4 MnSO_4 :</p>	4.0	1.00
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Objective Question

31	31	<p>Which of the following has largest number of isomers?</p> <p>A1 $[\text{Ru}(\text{NH}_3)_4\text{Cl}_2]^4$:</p> <p>A2 $[\text{Co}(\text{en})_2\text{Cl}_2]^+$:</p> <p>A3 $[\text{Ir}(\text{PR}_3)_2\text{H}(\text{CO})]^{2+}$:</p> <p>A4 $[\text{Co}(\text{NH}_3)_5\text{Cl}]^{2+}$:</p>	4.0	1.00
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Objective Question

32	32	<p>The first ionisation potential of Na, Mg, Al and Si are in the order</p> <p>A1 $\text{Na} < \text{Mg} > \text{Al} < \text{Si}$:</p> <p>A2 $\text{Na} > \text{Mg} > \text{Al} > \text{Si}$:</p> <p>A3 $\text{Na} < \text{Mg} < \text{Al} > \text{Si}$:</p>	4.0	1.00
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A4 : $\text{Na} > \text{Mg} > \text{Al} < \text{Si}$

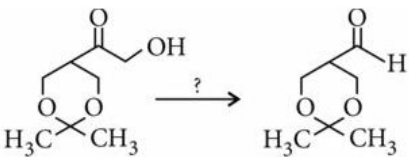
Objective Question

33	33	Softening of hard water is done using sodium aluminium silicate (zeolite). This causes	4.0	1.00
		A1 : adsorption of Ca^{2+} and Mg^{2+} ions of hard water replacing Na^+		
		A2 : adsorption of Ca^{2+} and Mg^{2+} ions of hard water replacing Al^{3+} ions		
		A3 : adsorption of Ca^{2+} and Mg^{2+} ions of hard water replacing Na^+ and Al^{3+} ions		
		A4 : adsorption of Ca^{2+} and Mg^{2+} ions of hard water but Na^+		

Objective Question

34	34	1.25 g of a sample of Na_2CO_3 and Na_2SO_4 is dissolved in 250mL solution. 25ml of this solution neutralises 20mL of 0.1N H_2SO_4 . The % of Na_2CO_3 in this sample is	4.0	1.00
		A1 : 84.8%		
		A2 : 8.48%		
		A3 : 15.2%		
		A4 : 42.4%		

Objective Question

35	35	<p>The reagents employed to carry out the following transformation are</p>  <p>A1 : $\text{LiAlH}_4, \text{H}_2\text{SO}_4 / \text{heat}$</p> <p>A2 : $\text{PCC} / \text{CH}_2\text{Cl}_2$ followed by HIO_4</p> <p>A3 : $\text{NaBH}_4 / \text{CH}_3\text{OH}$ followed by HIO_4</p> <p>A4 : O_3 followed by $(\text{CH}_3)_2\text{S}$</p>	4.0	1.00
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Objective Question

36	36		4.0	1.00
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		<p>The value of $\begin{vmatrix} x+1 & 3 & 5 \\ 2 & x+2 & 5 \\ 2 & 3 & x+4 \end{vmatrix}$</p> <p>A1 0 :</p> <p>A2 $(x-1)(x+9)^2$:</p> <p>A3 $(x-1)^2(x+9)$:</p> <p>A4 $(x-1)(x+9)$:</p>		
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Objective Question

37	37	<p>The rank of the matrix $\begin{bmatrix} 1 & 1 & -1 \\ 2 & -3 & 4 \\ 3 & -2 & 3 \end{bmatrix}$ is</p> <p>A1 2 :</p> <p>A2 3 :</p> <p>A3 1 :</p> <p>A4 0 :</p>	4.0	1.00
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Objective Question

38	38	<p>The value of "k" for which the equations $x+y+3z=0$; $4x+3y+kz=0$; and $2x+y+2z=0$ have a trivial solution is</p> <p>A1 $k=8$:</p> <p>A2 $k=-8$:</p> <p>A3 $k \neq 8$:</p> <p>A4 $k \neq -8$:</p>	4.0	1.00
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Objective Question

39	39	<p>The domain of the rational function $f(x) = \frac{x^2+x+2}{x^2-x}$ is</p> <p>A1 $[0,1]$:</p> <p>A2 $R - \{0\}$</p>	4.0	1.00
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		<p>:</p> <p>A3 $R-\{1\}$</p> <p>:</p> <p>A4 $R-\{0,1\}$</p> <p>:</p>		
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Objective Question

40	40	<p>The domain of the reciprocal function of $F(X)=X$ is</p> <p>A1 $(-\infty, 0)$</p> <p>:</p> <p>A2 $(0, \infty)$</p> <p>:</p> <p>A3 $(-\infty, \infty)$</p> <p>:</p> <p>A4 $(-\infty, 0) \cup (0, \infty)$</p> <p>:</p>	4.0	1.00
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Objective Question

41	41	<p>$\lim_{x \rightarrow 0^+} \frac{3x + x }{7x - 5 x }$ is</p> <p>A1 $\frac{1}{2}$</p> <p>:</p> <p>A2 $\frac{-1}{2}$</p> <p>:</p> <p>A3 2</p> <p>:</p> <p>A4 -2</p> <p>:</p>	4.0	1.00
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Objective Question

42	42	<p>$\lim_{x \rightarrow 0} \frac{\sin(\beta x)}{\sin(\alpha x)}, \alpha \neq 0$ is</p> <p>A1 $\frac{\beta}{\alpha}$</p> <p>:</p> <p>A2 $\frac{-\beta}{\alpha}$</p> <p>:</p> <p>A3 $\frac{\alpha}{\beta}$</p> <p>:</p> <p>A4 $\frac{-\alpha}{\beta}$</p> <p>:</p>	4.0	1.00
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Objective Question

43	43	$\lim_{x \rightarrow 0} \frac{3^x + 1 - \cos x - e^x}{x}$ is A1 $1 - \log 3$: A2 $\log 3 - 1$: A3 $\frac{1}{\log 3 - 1}$: A4 $\frac{1}{1 - \log 3}$	4.0	1.00
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Objective Question

44	44	<p>If $f(x) = \begin{cases} -x^2; & \text{if } x \leq 0 \\ 5x - 4; & 0 < x \leq 1 \\ 4x^2 - 3x; & \text{if } 1 < x \leq 2 \\ 3x + 4; & \text{if } x \geq 2 \end{cases}$</p> <p>Then for what values of "a" and "b", we have</p> <p>$\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x)$ and $\lim_{x \rightarrow b^-} f(x) = \lim_{x \rightarrow b^+} f(x)$</p> <p>A1 $a = 0; b = 1$: A2 $a = 1; b = 2$: A3 $a = 0; b = 2$: A4 $a = -1; b = -2$:</p>	4.0	1.00
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Objective Question

45	45	<p>$-3 + ix^2y$ and $x^2 + y + i4$ are complex conjugates of each other if</p> <p>A1 $x = \pm 2i;$: $y = \pm 1$</p> <p>A2 $x = \pm 2i;$: $y = 1$</p> <p>A3 $x = \pm 2i;$: $y = -1$</p> <p>A4 $x = 2i;$: $y = \pm 1$</p>	4.0	1.00
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Objective Question

46	46	<p>Which of the following is true?</p> <p>A1 : $z_1 - z_2 \leq z_1 - z_2$</p> <p>A2 : $z_1 - z_2 = z_1 - z_2$</p> <p>A3 : $z_1 - z_2 \geq z_1 - z_2$</p> <p>A4 : $z_1 - z_2 = z_1 + z_2$</p>	4.0	1.00
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Objective Question

47	47	<p>$\sqrt{-7+4i}$ is</p> <p>A1 : $3-4i$ (OR) $-3-4i$</p> <p>A2 : $3+4i$ (OR) $3-4i$</p> <p>A3 : $-3+4i$ (OR) $3-4i$</p> <p>A4 : $3+4i$ (OR) $-3-4i$</p>	4.0	1.00
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Objective Question

48	48	<p>If "P" represents the variable complex number "z" and if $\arg\left(\frac{z-1}{z+3}\right) = \frac{\pi}{2}$, then the locus of "P" is</p> <p>A1 : x^2-y^2+2x-3</p> <p>A2 : x^2+y^2+2x-3</p> <p>A3 : x^2+y^2-2x-3</p> <p>A4 : x^2+y^2+2x+3</p>	4.0	1.00
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Objective Question

49	49	<p>The P.I of $(D^2+6D+8)e^{-2x}$ is</p> <p>A1 : $\frac{xe^{-2x}}{2}$</p> <p>A2 : $\frac{e^{-2x}}{2}$</p> <p>A3 : $\frac{x}{2}$</p>	4.0	1.00
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		<p>A4 $\frac{x^2 e^{-2x}}{2}$</p> <p>:</p>		
Objective Question				
50	50	<p>The temperature "T" of a cooling objects drops at a rate proportional to the difference T-S, where "S" is constant temperature of surrounding medium. If initially T=150°C, then the temperature of the cooling object at any time "t" is</p> <p>A1 $S-(150-S)e^{kt}$</p> <p>:</p> <p>A2 $S+(150+S)e^{kt}$</p> <p>:</p> <p>A3 $S+(150-S)e^{kt}$</p> <p>:</p> <p>A4 $S-(150+S)e^{kt}$</p> <p>:</p>	4.0	1.00
Objective Question				
51	51	<p>The solution of $\frac{dy}{dx} + \frac{y}{x} = \frac{y^2}{x^2}$ is</p> <p>A1 $(y+2x)=cx^2y$</p> <p>:</p> <p>A2 $(y-2x)=cxy^2$</p> <p>:</p> <p>A3 $(y-2x)=cxy$</p> <p>:</p> <p>A4 $(y-2x)=cx^2y$</p> <p>:</p>	4.0	1.00
Objective Question				
52	52	<p>Order and degree of the differential equation $(1+y')^2=y'^2$ are</p> <p>A1 (1,1)</p> <p>:</p> <p>A2 (1,2)</p> <p>:</p> <p>A3 (2,1)</p> <p>:</p> <p>A4 (2,2)</p> <p>:</p>	4.0	1.00
Objective Question				
53	53	<p>A cylindrical hole 4mm in diameter and 12mm deep in a metal block is rebored to increase the diameter to 4.12 mm . Estimate the amount of metal removed.</p> <p>A1 $2.09\pi \text{ mm}^3$</p> <p>:</p>	4.0	1.00

		A2 : $2.80\pi \text{ mm}^3$		
		A3 : $2.89\pi \text{ mm}^3$		
		A4 : $2.00\pi \text{ mm}^3$		

Objective Question

54	54	$\lim_{x \rightarrow 0} (\cot x)^{\sin x}$ A1 : 0 A2 : 1 A3 : ∞ A4 : $-\infty$	4.0	1.00
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Objective Question

55	55	The radius of a sphere was measured and found to be 21cm with a possible error in measurement of atmost 0.05cm.What would be the % of error produced in the Volume? A1 : 5 A2 : 6 A3 : 8 A4 : 7	4.0	1.00
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Objective Question

56	56	$\int \frac{dx}{x^2+5x+7}$ is A1 : $\frac{2}{\sqrt{5}} \tan^{-1}\left(\frac{2x+5}{\sqrt{3}}\right) + c$ A2 : $\frac{1}{\sqrt{2}} \tan^{-1}\left(\frac{2x+5}{\sqrt{3}}\right) + c$ A3 : $\frac{\sqrt{3}}{2} \tan^{-1}\left(\frac{2x+5}{\sqrt{3}}\right) + c$ A4 : $\frac{2}{\sqrt{3}} \tan^{-1}\left(\frac{2x+5}{\sqrt{3}}\right) + c$	4.0	1.00
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Objective Question				
57	57	<p>How many arrangements can be made with the letters of the word “MATHEMATICS”?</p> <p>A1 : 4899600</p> <p>A2 : 4989600</p> <p>A3 : 4998600</p> <p>A4 : 4969800</p>	4.0	1.00
Objective Question				
58	58	<p>If $nC_4 = nC_6$, then $12C_n$ is</p> <p>A1 : 66</p> <p>A2 : 68</p> <p>A3 : 56</p> <p>A4 : 58</p>	4.0	1.00
Objective Question				
59	59	<p>$(\sqrt{2} + 1)^5 + (\sqrt{2} - 1)^5$ is equal to</p> <p>A1 : $58\sqrt{2}$</p> <p>A2 : $2\sqrt{5}$</p> <p>A3 : 58</p> <p>A4 : $\sqrt{5}$</p>	4.0	1.00
Objective Question				
60	60	<p>If "b" is the A.M of "a" and "c" ($a \neq c$) and $(b - a)$ is the G.M of "a" and $(c - a)$, then $a : b : c$ is</p> <p>A1 : 1:5:3</p> <p>A2 : 3:1:5</p>	4.0	1.00

		<p>A3 3:5:1 :</p> <p>A4 1:3:5 :</p>		
Objective Question				
61	61	<p>The product of the perpendiculars drawn from the point (8,0) on the hyperbola to its asymptotes is $\frac{x^2}{64} - \frac{y^2}{36} = 1$ is</p> <p>A1 25/576 :</p> <p>A2 576/25 :</p> <p>A3 6/25 :</p> <p>A4 25/6 :</p>	4.0	1.00
Objective Question				
62	62	<p>The area of the triangle formed by the tangent at any point on the rectangular hyperbola $xy = 72$ and its asymptotes is</p> <p>A1 36 :</p> <p>A2 18 :</p> <p>A3 72 :</p> <p>A4 144 :</p>	4.0	1.00
Objective Question				
63	63	<p>The locus of foot of perpendicular from the focus to a tangent of the curve $16x^2 + 25y^2 = 400$ is</p> <p>A1 $x^2 + y^2 = 4$:</p> <p>A2 $x^2 + y^2 = 25$:</p> <p>A3 $x^2 + y^2 = 16$:</p> <p>A4 $x^2 + y^2 = 9$:</p>	4.0	1.00
Objective Question				
64	64	<p>The position vectors of A and B are \vec{a} and \vec{b}. P divides AB in the ratio 3:1. Q is the midpoint of AP. The position vector of Q is</p>	4.0	1.00

		A1 : $\frac{5\vec{a} + 3\vec{b}}{8}$		
		A2 : $\frac{3\vec{a} + 5\vec{b}}{2}$		
		A3 : $\frac{5\vec{a} + 3\vec{b}}{4}$		
		A4 : $\frac{3\vec{a} + \vec{b}}{4}$		

Objective Question

65	65	<p>If the initial point of vector $-2\vec{i} - 3\vec{j}$ is $(-1, 5, 8)$ then the terminal point is</p> <p>A1 : $3\vec{i} + 2\vec{j} + 8\vec{k}$</p> <p>A2 : $-3\vec{i} + 2\vec{j} + 8\vec{k}$</p> <p>A3 : $-3\vec{i} - 2\vec{j} - 8\vec{k}$</p> <p>A4 : $3\vec{i} + 2\vec{j} - 8\vec{k}$</p>	4.0	1.00
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Objective Question

66	66	<p>A particle is acted upon by a force \mathbf{F}. Which of the following is <i>always</i> true?</p> <p>A1 : The particle moves in the direction of the force</p> <p>A2 : The acceleration is in the same direction as the force</p> <p>A3 : The velocity of the particle increases</p> <p>A4 : The velocity is in the same direction as the force</p>	4.0	1.00
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Objective Question

67	67	<p>A particle is undergoing uniform circular motion with a constant angular velocity. The particle is having:</p> <p>A1 : a constant linear velocity</p> <p>A2 : an acceleration with changing direction</p> <p>A3 : a constant acceleration</p> <p>A4 : an angular position that is constant</p>	4.0	1.00
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Objective Question				
68	68	<p>A point mass of 1 Kg collides elastically with a stationary point mass of 5 Kg. After the collision, the 1 Kg mass reverses its direction and moves with a speed of 2 m/s. Which of the following statement is correct for the system of these two masses?</p> <p>A1 : Kinetic energy of the large mass after collision is 5 J</p> <p>A2 : Momentum of the 5 Kg mass after collision is 4 Kg m/s</p> <p>A3 : Total kinetic energy of the system is 6 J</p> <p>A4 : Total momentum of the system is 3 Kg m/s</p>	4.0	1.00
Objective Question				
69	69	<p>Suppose a simple pendulum of length exactly 1m is used to measure the acceleration due to gravity g. A stopwatch with least count of 1 second is used to measure the time for 20 oscillations as 40 seconds. For this observation, which of the following statements is true?</p> <p>A1 : The error in measuring the time period T is 0.05 seconds</p> <p>A2 : The error in measuring the time period T is 1 seconds</p> <p>A3 : Percentage error in determining g is 10%</p> <p>A4 : Percentage error in determining g is 1%</p>	4.0	1.00
Objective Question				
70	70	<p>A ball is dropped from a tall building and falls towards the ground with no air resistance. The isolated system for which momentum is conserved is</p> <p>A1 : The ball and the building</p> <p>A2 : The ball only</p> <p>A3 : The building only</p> <p>A4 : The ball and the earth</p>	4.0	1.00
Objective Question				
71	71	<p>A body initially at rest starts moving under the action of a constant force and travels a distance 25 cm in the first second. If the mass of the body is 25 grams, the force on it is</p> <p>A1 : 0.2N</p> <p>A2 200N</p>	4.0	1.00

		: A3 20N : A4 2N :		
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Objective Question

72	72	Two bodies begin to fall freely from the same height, the second one starts falling t seconds after the first one starts. The time T at which the distance between the bodies is equal to L is A1 $\frac{1}{2} + tL/a$: A2 $t/2 + L/at$: A3 L/at : A4 $tL/2$:	4.0	1.00
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Objective Question

73	73	A block of mass 3 Kg slides down from rest along an inclined plane of angle 30 degrees. There is no friction. What is the speed of the block after it moves a distance of 10 m along the plane? A1 $\sqrt{2}$ m/s : A2 $\sqrt{5}$ m/s : A3 $\sqrt{10}$ m/s : A4 $\sqrt{15}$ m/s :	4.0	1.00
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Objective Question

74	74	The acceleration of a system of two masses M and m connected by a massless string over a massless, frictionless pulley is A1 $\frac{M}{m}g$: A2 $\frac{m}{M}g$: A3 $\frac{M-m}{M+m}g$: A4 $\frac{M+m}{M-m}g$:	4.0	1.00
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Objective Question				
75	75	<p>A rope of mass m is tied to a wall at one end and a person is pulling the other end horizontally. The force that the person should exert to make the rope perfectly straight and horizontal is</p> <p>A1 0 :</p> <p>A2 ∞ :</p> <p>A3 mg :</p> <p>A4 G :</p>	4.0	1.00

Objective Question				
76	76	<p>A mass m is moving to the right with velocity v. Suppose another mass M is dropped on it from above and suppose this new mass sticks to the first one. Which one of the following phrases describe this collision?</p> <p>A1 The collision is elastic and momentum conserving :</p> <p>A2 The collision is elastic and momentum non-conserving :</p> <p>A3 The collision is inelastic and momentum non-conserving :</p> <p>A4 The collision is inelastic and momentum conserving :</p>	4.0	1.00

Objective Question				
77	77	<p>Choose the quantity that is a scalar</p> <p>A1 $\vec{A} \cdot (\vec{B} \times \vec{C})$:</p> <p>A2 $\vec{A} \cdot (\vec{B} \cdot \vec{C})$:</p> <p>A3 $\vec{A} \times (\vec{B} \times \vec{C})$:</p> <p>A4 $\vec{A} \times (\vec{B} \cdot \vec{C})$:</p>	4.0	1.00

Objective Question				
78	78	<p>The electric field at a distance d from an infinitely long conductor carrying a uniform charge density is</p> <p>A1 Proportional to d :</p> <p>A2 Inversely proportional to d :</p> <p>A3 Inversely proportional to the square of d :</p>	4.0	1.00

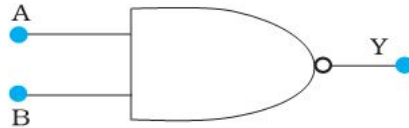
		A4 : Proportional to the square of d		
Objective Question				
79	79	<p>If a sheet of dielectric is inserted in between the plates of a air capacitor, its capacitance will</p> <p>A1 : Decrease</p> <p>A2 : Stay the same</p> <p>A3 : Increase</p> <p>A4 : Become zero</p>	4.0	1.00
Objective Question				
80	80	<p>When a ray of light is refracted by a medium, the refracted ray does not have the same wavelength as the incident ray. This means that ____</p> <p>A1 : The frequency of the light has decreased but the velocity of the light remains a constant</p> <p>A2 : The frequency of the light has increased but the velocity of the light remains a constant</p> <p>A3 : The frequency of the light remains constant but the velocity of the light has increased</p> <p>A4 : The frequency of the light remains constant but the velocity of the light has decreased</p>	4.0	1.00
Objective Question				
81	81	<p>For a concave mirror of focal length 5 centimeters, the image of an object placed 7 centimeters from the mirror will be:</p> <p>A1 : Real, upright and magnified</p> <p>A2 : Virtual, inverted and magnified</p> <p>A3 : Real, inverted and magnified</p> <p>A4 : Virtual, upright and diminished</p>	4.0	1.00
Objective Question				
82	82	<p>Which is not an intensive variable in thermodynamics</p> <p>A1 : Pressure</p> <p>A2 : Entropy</p>	4.0	1.00

		A3 Temperature :		
		A4 Chemical Potential :		

Objective Question

83	83	The semiconductor used for fabrication of light emitting diodes should have a band gap of at least	4.0	1.00
		A1 1.8 eV :		
		A2 0.5 eV :		
		A3 10 eV :		
		A4 120 eV :		

Objective Question

84	84	<p>The symbol below stands for which logic gate?</p> 	4.0	1.00
		A1 OR :		
		A2 NOT :		
		A3 AND :		
		A4 NAND :		

Objective Question

85	85	A thermocouple is made from two metals, antimony and bismuth. If one junction of the couple is kept hot and other is kept cold then, an electric current will	4.0	1.00
		A1 Flow from antimony to bismuth at the cold junction :		
		A2 Flow from antimony to bismuth at the hot junction :		
		A3 flow from bismuth to antimony at the cold junction :		
		A4 Not flow through the thermocouple :		

Objective Question

86	86	<p>Which of the following parameters does not characterize the thermodynamic state of matter?</p> <p>A1 : temperature</p> <p>A2 : pressure</p> <p>A3 : work</p> <p>A4 : volume</p>	4.0	1.00
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Objective Question

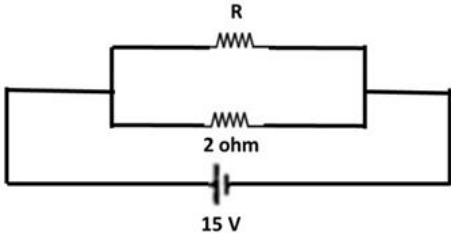
87	87	<p>What is the efficiency of Carnot engine when operated between 100 K and 400 K</p> <p>A1 : 0</p> <p>A2 : 0.25</p> <p>A3 : 0.75</p> <p>A4 : 1</p>	4.0	1.00
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Objective Question

88	88	<p>When a beam of white light is dispersed with the help of the prism, the dispersion is greatest for</p> <p>A1 : Orange</p> <p>A2 : Green</p> <p>A3 : Red</p> <p>A4 : Indigo</p>	4.0	1.00
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Objective Question

89	89	<p>What is the wavelength of light waves if their frequency is 5.0×10^{14} Hz?</p> <p>A1 : 0.60 m</p> <p>A2 : 6.0 mm</p> <p>A3 : 0.060 mm</p> <p>A4 : 0.60 micro-m</p>	4.0	1.00
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Objective Question				
90	90	<p>Equation which measures alternating voltage is</p> <p>A1 $V \sin \omega$:</p> <p>A2 $\sin t$:</p> <p>A3 $V_0 \sin \omega t$:</p> <p>A4 $V=IR$:</p>	4.0	1.00
Objective Question				
91	91	<p>An observer moves towards a stationary source of sound with a velocity one-fifth of the velocity of sound. What is the percentage increase in the apparent frequency?</p> <p>A1 5% :</p> <p>A2 20% :</p> <p>A3 Zero :</p> <p>A4 0.5% :</p>	4.0	1.00
Objective Question				
92	92	<p>If in the circuit, power dissipation is 150W, then R is</p>  <p>A1 2 ohm :</p> <p>A2 6 ohm :</p> <p>A3 5 ohm :</p> <p>A4 4ohm :</p>	4.0	1.00
Objective Question				
93	93	Mean square velocity of five molecules of velocities 2 m/s, 3 m/s, 4 m/s, 5 m/s and 6 m/s is	4.0	1.00

		<p>A1 : $10 \text{ m}^2/\text{s}^2$</p> <p>A2 : $18 \text{ m}^2/\text{s}^2$</p> <p>A3 : $20 \text{ m}^2/\text{s}^2$</p> <p>A4 : $15 \text{ m}^2/\text{s}^2$</p>		
Objective Question				
94	94	<p>An ant is moving on the surface of a cylinder. The number of degrees of freedom associated with the ant is</p> <p>A1 : one</p> <p>A2 : two</p> <p>A3 : three</p> <p>A4 : four</p>	4.0	1.00
Objective Question				
95	95	<p>Convert the hexadecimal number 5B in to binary number.</p> <p>A1 : 1011011</p> <p>A2 : 1010011</p> <p>A3 : 1011001</p> <p>A4 : 1001011</p>	4.0	1.00
Objective Question				
96	96	<p>If $F[f(x)]$ denotes the Fourier transform of the function $f(x)$, then $F^4[f(x)]$ is</p> <p>A1 : $f(x)$</p> <p>A2 : $f(-x)$</p> <p>A3 : $-f(x)$</p> <p>A4 : $1/f(x)$</p>	4.0	1.00

Objective Question				
97	97	<p>The function $\sin 2(\omega t)$ represents</p> <p>A1 : simple harmonic motion with a period $2\pi/\omega$</p> <p>A2 : a simple harmonic motion with a period π/ω</p> <p>A3 : a periodic, but not simple harmonic motion with a period $2\pi/\omega$</p> <p>A4 : a period, but not simple harmonic motion with a period π/ω</p>	4.0	1.00
Objective Question				
98	98	<p>A material B has twice the specific resistance of A. A circular wire made of B has twice the diameter of a wire made of A. Then for the two wires to have the same resistance, the ratio I_B/I_A of their respective lengths must be</p> <p>A1 : 2</p> <p>A2 : 1</p> <p>A3 : 1/2</p> <p>A4 : 1/4</p>	4.0	1.00
Objective Question				
99	99	<p>Kinetic energy of the molecules in terms of absolute temperature (T) is proportional to</p> <p>A1 : T</p> <p>A2 : j</p> <p>A3 : V_r</p> <p>A4 : $1/V_r$</p>	4.0	1.00
Objective Question				
100	100	<p>If planet A and B are circling around star S and the distance between planet A and star S is twice of that between planet B and the star S, which of the planet need more time to finish an orbit around the star?</p> <p>A1 : Planet A</p> <p>A2 : Planet B</p> <p>A3 : Planet A and Planet B will finish in same time</p>	4.0	1.00

		A4 :	Planet A and Planet B will not be able to complete the orbit		
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