Kendriya Vidyalaya Sangathan, Regional Office, Kolkata

Pre Board

ECONOMICS (030)

Time allowed: 3 hours Maximum Marks: 80

Marking Scheme

SECTION - A (Macro Economics)

Q No	Value Point	Marks
1	It will fall.	1
2	The difference in the value of imports and exports.	1
3	Ans – c (0.25)	1
4	Stock variable because it is measured at a point of time. OR Currency, Demand Deposits	1
5	medium of exchange	1
6	Ans – c (subsidies)	1
7	All those receipt which either create liabilities or reduces assets of the economy.	1
8	Ans – a (rises)	1
9	Zero.	1
10	It refers to the gap by which the Actual AD exceeds the AD required to establish full employment.	1
11	a) It will not be included in domestic factor income as the branches of the bank belong to the foreign territory. b) It will not be included as it is a transfer income. OR It may be an index of welfare but this may not be always true because of the following reasons; a) Unequal distribution of income b) Non-monetary transaction not included i) Externalities not accounted	3
12	MPC = 1-0.3 = 0.7 Y = C+I I= Y-C I = 800 – [100+ 0.7(800)] i) I= 140	3
13	i) Revenue expenditure as it doesn't create asset nor reduce liability ii) Capital receipt as it reduces asset. OR Economic Growth implies a sustainable increase in real GDP of an economy. i) If the government provides tax rebates and other incentives for productive activities, it can stimulate savings and investments in the economy. Spending on infrastructure in the economy promotes the production activities across different sectors.	4
14	Credit creation explanation . Example	4
15	Meaning . determination	1+3=4
16	Definition + diagram=2 Bank Rate, CRR, SLR, OMO, Repo Rate , Margin Requirement, etc (Any 4 measures to be explained.) - 4 OR An economy is said to be operating at underemployment equilibrium level, if the planned aggregate expenditure falls short of the available output in the economy , corresponding to full employment level. It results into excess of output available over the anticipated aggregate demand at full employment level. To tackle such a situation the aggregate demand has to be	6

	increased up to the level that stocks can be cleared. Following measures may be taken for the same: i) Decrease in taxes (explanation) ii) Increase in money supply (explanation)	
17	a) GDP_{FC} = 200+300+1600+400+600-400+100 = 2800 crore b) $GDP_{MP} = GDP_{FC}$ + NIT = 3040 cr NFIA = GNP_{MP} - GDP_{MP} = 2800 – 3040 = -(240) Factor Income to Abroad = Factor Income from Abroad – NFIA = 50 – (-)240 = 290 cr	6
	SECTION-B (Indian Economic Development)	
18	Tariff and Quota	1
19	Jute industry as most of the jute producing areas went to Pakistan.	1
20	Curbing Corruption and arresting black money (any 2 valid points)	1
21	ANS-(b)	1
22	The stock of skill, ability, expertise,etc. embodied in the people. OR All the man made inputs which are required for further production.	1
23	Greater physical work in rural area compared to urban area.	1
24	It has increased the pressure on the absorptive capacity of the environment.	1
25	Golden Revolution.	1
26	Number of infants (0-1year) dying before reaching 1 year per 1000 live birth.	1
27	Less people below poverty line, more % people using improved sanitation	1
28	Use of solar lightings for street Wastage of electricity to be reduced by creating awareness Use of LED bulbs Energy efficient Star rated equipments (any valid suggestion) OR Displacement of workers from large industries in urban areas Slow growth of employment opportunities in organized sector Demand for casual workers increasing in constructions, trade, etc (any 2 relevant reasons)	3
29	The environmental degradation in India is caused due to a. Poverty induced environmental degradation b. Affluence induced industrial pollution	3
30	Discriminatory Tariff policy Competition from machine made products New pattern of demand Introduction of railways Disappearance of princely states (any 4 relevant points)	4
31	Through quality vocational training skilled employees are prepared Meets the modern pattern of market demand for labour Enables unemployed and unskilled youth employable Thus reduces poverty(any other valid argument) OR Yes. Because : i) It provides equality of opportunity ii) Reduces income inequality	4
32	Brief explanation of the table. China has followed the classical path of development, a gradual shift from primary to secondary and then to service sector. Whereas India and Pakistan both directly shifts from primary to the tertiary sector. In all 3 countries service sctor is the biggest contributor to the GDP.	4
33	Correct definition. a. Use of non-conventional energy	6

	b. Organic farming c. Use of bio-compost d. Reduce, Recycle and Reuse of Resources e. Waste management f. Public awareness g. Taxes and fines on harmful entities (or any other valid suggestion) OR a. Promoting economic growth – GDP and Per capita income (brief explanation) b. PAPS (Poverty alleviation programmes) – some programmes by the Govt. Providing basic minimum needs – PDS, ICDS & Mid day meal scheme, et	
34	a. Importance of small scale industries: b. Greater employment opportunities c. Equity in distribution of income d. Decentralization e. Less pressure on agriculture f. Less capital requirement g. Immediate increase in production (any relevant points with brief description)c.	6

KENDRIYA VIDYALAYA SANGATHAN (KOLKATA REGION)

MARKING SCHEME of QUESTION PAPER

1ST PRE-BOARD Examination 2019-20

CLASS: XII Subject : MATHEMATICS (Code-041)

Q. No.	***VALUE POINTS***	***MARKS***
	Section – A	
Q. No.	Q. No. 01 to 10: Multiple Choice Questions.	**Marks**
01.	(d) (x+4)/3.	**1**
02.	(b) 5.	**1**
03.	(b) [–1, 1].	**1**
04.	(c) 2π/3.	**1**
05.	(b) 2.	**1**
06.	(c) n x m.	**1**
07.	(b) 8.	**1**
08.	(d) $(A + B)^{-1} = B^{-1} + A^{-1}$.	**1**
09.	(b) 2.	**1**
10.	(b) f(x) is everywhere continuous but not differentiable at x = (2n+1) π/2, n∈Z .	**1**
Q. No.	Q. No. 11 to 15: Fill in the blanks.	**Marks**
11.	(¼, ½).	**1**
	OR	
	6π cm^2/cm.	
12.	e^x. sec x + C.	**1**
13.	$\frac{tan^7 x}{7}$ + C.	**1**
	OR	
	$\frac{tan^3 x}{3} - \tan x + x$ + C.	
14.	72 – 12 = 60.	**1**
15.	0.	**1**
Q. No.	Q. No. 16 to 20: Answer the following questions.	**Marks**
16.	Expressing $\frac{dy}{dx} + \frac{1}{x.log\, x} . y = \frac{2}{x}$, and getting $P = \frac{1}{x.log\, x}$. Finding Integrating Factor I. F. = $e^{\int P\, dx} = \log x$.	**½** **½**
17.	Order is 2. Degree is not defined.	**½** **½**
18.	Writing correct answer: $\pm\left(-\frac{2}{7}, \frac{3}{7}, -\frac{6}{7}\right)$.	**1**
	OR	
	Finding $\hat{a} = \frac{\vec{a}}{\lvert\vec{a}\rvert} = \frac{-2\hat{\imath}+\hat{\jmath}+2\hat{k}}{3}$. Getting required vector $9\hat{a} = 3\,(-2\hat{\imath} + \hat{\jmath} + 2\hat{k})$.	**½** **½**
19.	Writing correct answer: r = $\left(2\hat{\imath} - 3\hat{\jmath} + 5\hat{k}\right) + \lambda(3\hat{\imath} + \hat{7}\jmath - 2\hat{k})$.	**1**
20.	E(X^2) = ∑ X^2. P(X) = 100/10 = 10.	**1**
Q. No.	**Section – B**	**Marks**
21.	$y = \sqrt{\sin x + y} \Longrightarrow \frac{dy}{dx} = \frac{1}{2\sqrt{\sin x+y}} . (\cos x + \frac{dy}{dx})$. Expressing $\frac{dy}{dx} = \frac{1}{2y} . (\cos x + \frac{dy}{dx})$. Simplifying and getting $\frac{dy}{dx} = \frac{\cos x}{2y-1}$.	**½** **½** **1**
22.	Let $y = x^{\frac{1}{3}}$, where x = 64 and Δx = 1 and y = 4 at x = 64. $\frac{dy}{dx} = \frac{1}{3x^{\frac{2}{3}}} = \frac{1}{48}$ at x = 64. $\Delta y = \frac{dy}{dx} . \Delta x = \frac{1}{48} . 1 = 0.021$. Approximate value = $y + \Delta y$ = 4 + 0.021 = 4.021. Ans.	**½** **½** **½** **½**

	OR	
	Taking log of $y = \left(\frac{1}{x}\right)^x$ i.e. $\log y = x.\log(\frac{1}{x})$. Finding $\frac{dy}{dx} = \left(\frac{1}{x}\right)^x . [\log\left(\frac{1}{x}\right) - 1]$. For maximum value of *y* , $\frac{dy}{dx} = 0 \Longrightarrow x = \frac{1}{e}$. Hence, the maximum value is $e^{\frac{1}{e}}$.	½ ½ ½ ½
23.	Any vector perpendicular to both vector $\vec{a}$ and vector $\vec{b}$ is given by $\vec{a}$ x $\vec{b}$ where $\vec{a} = 2\hat{\imath} - \hat{\jmath} + 2\hat{k}$ and $\vec{b} = 4\hat{\imath} - \hat{\jmath} + 3\hat{k}$. $\vec{a}$ x $\vec{b} = \begin{vmatrix} \hat{\imath} & \hat{\jmath} & \hat{k} \\ 2 & -1 & 2 \\ 4 & -1 & 2 \end{vmatrix} = -\hat{\imath} + 2\hat{\jmath} + 2\hat{k} = \vec{r}$ (say). Required vector is $\hat{r}.6 = \frac{\vec{r}}{\lvert\vec{r}\rvert}.6 = -2\hat{\imath} + 4\hat{\jmath} + 4\hat{k}$.	½ ½ 1
24.	Projection of vector $\vec{a}$ on vector $\vec{b}$ is given by $\frac{\vec{a}.\vec{b}}{\lvert\vec{b}\rvert}$. $\vec{a}.\vec{b} = (\lambda\hat{\imath} + \hat{\jmath} + 4\hat{k}).(2\hat{\imath} + 6\hat{\jmath} + 3\hat{k}) = 2\lambda + 18$. Also, $\lvert\vec{b}\rvert = 7$. Projection $\frac{\vec{a}.\vec{b}}{\lvert\vec{b}\rvert} = 4 \Rightarrow \frac{2\lambda+18}{7} = 4 \Rightarrow \lambda = 5$.	½ 1 ½
	OR	
	For any three vectors $\vec{a}$, $\vec{b}$ and $\vec{c}$, $\vec{a}$ x $(\vec{b} + \vec{c}) + \vec{b}$ x $(\vec{c} + \vec{a}) + \vec{c}$ x $(\vec{a} + \vec{b})$ $= \vec{a}$ x $\vec{b} + \vec{a}$ x $\vec{c} + \vec{b}$ x $\vec{c} + \vec{b}$ x $\vec{a} + \vec{c}$ x $\vec{a} + \vec{c}$ x $\vec{b}$. $= \vec{a}$ x $\vec{b} + \vec{a}$ x $\vec{c} + \vec{b}$ x $\vec{c} - \vec{a}$ x $\vec{b} - \vec{a}$ x $\vec{c} - \vec{b}$ x $\vec{c} = 0$.	1 1
25.	Let the required point be R (4, y, z) which divides PQ in ratio λ : 1. By section formula, $4 = \frac{5\lambda+2}{\lambda+1} \Rightarrow \lambda = 2$. Hence, $z = \frac{-2\lambda+1}{2+1} \Rightarrow z = -1$.	½ ½ 1
26.	Here $P(A) = \frac{1}{2}$, $P(B) = \frac{7}{12}$ and $P(\bar{A} \cup \bar{B}) = \frac{1}{4}$ $\Rightarrow P(\overline{A \cap B}) = \frac{1}{4} \Rightarrow 1 - P(A \cap B) = \frac{1}{4} \Rightarrow P(A \cap B) = \frac{3}{4}$. and $P(A)$ X $P(B) = \frac{1}{2}$ x $\frac{7}{12} = \frac{7}{24}$. Here, $P(A \cap B) \neq P(A)$ X $P(B)$. Thus, *A* and *B* are not independent.	1 1
Q. No.	**Section – C**	**Marks**
27.	For proving one-one function: $f(x_1) = f(x_2) \Rightarrow x_1 = x_2$. For proving onto function: $y = f(x) \Rightarrow x = \frac{-3+\sqrt{y-6}}{2}$. For concluding: $x \epsilon N \ as \ y > 6 \ in \ S$. Thus f is invertible. For writing Inverse of f as $f^{-1}(x) = \frac{-3+\sqrt{x-6}}{2}$.	1 1 1 1
OR	For finding: $y = f(x) \Rightarrow x = \frac{-3+\sqrt{y-6}}{2}, x \epsilon N \ as \ y > 6 \ in \ S$. Let $g(y) = \frac{-3+\sqrt{y-6}}{2}, g: S \to N$. For Showing: $gof\ (x) = x = I_N$. For showing: $fog\ (y) = y = I_S$. For concluding: f is invertible. For writing Inverse of f as $f^{-1}(x) = \frac{-3+\sqrt{x-6}}{2}$	1 1 1 1
28.	Taking log to both the sides of $y^x = e^{y-x} \Rightarrow x \log y = (y - x) \log e$. $\Rightarrow x \log y = (y - x) \Rightarrow x = \frac{y}{1+\log y}$. Differentiating and getting $\frac{dx}{dy} = \frac{\log y}{(1+\log y)^2}$. Then writing: $\frac{dy}{dx} = \frac{(1+\log y)^2}{\log y}$.	2 2
29.	We have $I = \int_{\pi/6}^{\pi/3} \frac{\sin x+\cos x}{\sqrt{\sin 2x}}\ dx \Rightarrow \int_{\pi/6}^{\pi/3} \frac{\sin x+\cos x}{\sqrt{1-(\cos x-\sin x)^2}}\ dx$. Let $t = \cos x - \sin x \Rightarrow dt = -(\sin x + \cos x)\ dx$.	1 1

	Limits $x = \frac{\pi}{6} \Rightarrow t = \frac{\sqrt{3}-1}{2}$ and $x = \frac{\pi}{3} \Rightarrow t = \frac{1-\sqrt{3}}{2}$. $I = -\int_{\frac{\sqrt{3}-1}{2}}^{\frac{1-\sqrt{3}}{2}} \frac{1}{\sqrt{1-t^2}}\, dt = -[\sin^{-1} t]_{\frac{\sqrt{3}-1}{2}}^{\frac{1-\sqrt{3}}{2}} = 2\sin^{-1}\frac{\sqrt{3}-1}{2}$.	**2**
	OR	
	Expressing N^r as $5x + 3 = A\frac{d}{dx}(x^2 + 4x + 10) + B$ Getting A = 5/2 and B = – 7 . Expressing $I = \int \frac{5x+3}{\sqrt{x^2+4x+10}}\, dx = \int \frac{\frac{5}{2}\frac{d}{dx}(x^2+4x+10)-7}{\sqrt{x^2+4x+10}}\, dx = \frac{5}{2}I_1 - 7I_2$. Evaluating $I_1 = \int \frac{\frac{d}{dx}(x^2+4x+10)}{\sqrt{x^2+4x+10}}\, dx = 2\sqrt{x^2+4x+10} + C_1$. Evaluating $I_2 = \int \frac{1}{\sqrt{x^2+4x+10}}\, dx = \int \frac{1}{\sqrt{(x+2)^2+(\sqrt{6})^2}}\, dx$. $= \log\left\|(x+2) + \sqrt{x^2+4x+10}\right\| + C_2$. Writing: $I = \frac{5}{2}I_1 - 7I_2 = 5\sqrt{x^2+4x+10} - 7\log\left\|(x+2) + \sqrt{x^2+4x+10}\right\| + C$.	**½** **½** **1** **1** **1**
30.	D. E. $\left[x\, sin^2\left(\frac{y}{x}\right) - y\right]dx + x\, dy = 0 \Rightarrow \frac{dy}{dx} = \frac{y - x\, sin^2\left(\frac{y}{x}\right)}{x}$ ..... (i) Let $F(x,y) = \frac{y - x\, sin^2\left(\frac{y}{x}\right)}{x}$. Then $F(\lambda x, \lambda y) = \frac{\lambda y - \lambda x\, sin^2\left(\frac{\lambda y}{\lambda x}\right)}{\lambda x} = \lambda^0 F(x,y)$. Thus D. E. (i) is homogeneous. Let $y = vx \Rightarrow \frac{dy}{dx} = v + x\frac{dv}{dx}$. Putting these values in (i) and getting $\frac{dv}{sin^2 v} = -\frac{dx}{x}$. Integrating both the sides and getting $log\, x - cot\left(\frac{y}{x}\right) = C$.....(ii) Putting $y = \pi/4$ and $x = 1$ in (ii) and getting $C = -1$. Writing Particular Solution as $log\, x - cot\left(\frac{y}{x}\right) + 1 = 0$.	**1** **1** **1** **1**
31.	Let number of rings and chains manufactured per day be x and y respectively. LPP is Maximise Z = 300 x + 190 y (Objective Function). Subject to the constraints: x + y ≤ 24 (Constraint on number of items) ; x + ½ y ≤ 16 (Constraint on number of hours) ; x ≥ 0 ; y ≥ 0. Plotting the graph and shading the correct feasible region (bounded) with the corner points for maximum Z as A (0, 24), B (8, 16) and C (16, 0). Calculating values of Z = 300 x + 190 y at A (0, 24) as 4560; at B (8, 16) as 5440 and at C (16, 0) as 4800. Hence, Z is maximum at B (8, 16) i.e. x = 8 and y = 16.	**1** **2** **1**
	OR	
	Plotting the graph of the LPP of Objective function Z = 5 x + 2 y subject to the constraints: x – 2 y ≤ 2 ; 3 x + 2 y ≤ 12 ; – 3 x + 2 y ≤ 3 ; x ≥ 0 ; y ≥ 0 and shading the correct feasible region (bounded) with the corner points as O (0, 0), A (2, 0), B (7/2 , 3/4), C (3/2 , 15/4) and D (0, 3/2). Calculating the values of Z = 5 x + 2 y at O (0, 0) as 0; at A (2, 0) as 10; at B (7/2, 3/4) as 19; at C (3/2, 15/4) as 15 and at D (0, 3/2) as 3. Hence, Z is minimum at x = 0 & y = 0 and the minimum value of Z is 0 and Z is maximum at x = 7/2 & y = 3/4 and the maximum value of Z is 19.	**2** **1** **1**
32.	Let events be defined as E_1 = Selection of a hostlier; E_2 = Selection of a day scholar; A = Selection of a student getting A grade. P(E_1) = 60/100 = 3/5; P(E_2) = 40/100 = 2/5; P(A / E_1) = 30/100 = 3/10; P(A / E_2) = 20/100 = 1/5; P(E_1 /A) = Required. By Baye's Theorem, P(E_1/A) = $\frac{P(E_1).\, P(A/E_1)}{P(E_1).\, P\left(\frac{A}{E_1}\right) + P(E_2).\, P(A/E_2)}$ and calculating correct value of P(E_1/A) = 9/13.	**½** **1** **1** **1½**
Q. No.	**Section – D**	**Marks**
33.	Finding Product $PQ = \begin{bmatrix}4 & 3 & 2\\ 1 & 2 & 3\\ 6 & 2 & 3\end{bmatrix}\begin{bmatrix}0 & -1 & 1\\ 3 & 0 & -2\\ -2 & 2 & 1\end{bmatrix} = 5\, I$.	**2**

	Writing the system as $A\,X = B \Rightarrow X = A^{-1}\,B$ ……. (i) Where $A = \begin{bmatrix}4 & 3 & 2\\ 1 & 2 & 3\\ 6 & 2 & 3\end{bmatrix} = P$, $X = \begin{bmatrix}x\\ y\\ z\end{bmatrix}$, $B = \begin{bmatrix}60\\ 45\\ 70\end{bmatrix}$ And $A^{-1} = \frac{1}{5}\,Q = \frac{1}{5}\begin{bmatrix}0 & -1 & 1\\ 3 & 0 & -2\\ -2 & 2 & 1\end{bmatrix}$. Putting these values in (i) and getting x = 5; y = 8 and z = 8.	**2** **2**
	OR	
	LHS = $\begin{vmatrix}a^2+1 & ab & ac\\ ab & b^2+1 & bc\\ ac & bc & c^2+1\end{vmatrix} = \Delta$ (say). Multiplying a in C_1; b in C_2 & c in C_3 and then taking common a from R_1; b from R_2 & c from R_3 and getting $\Delta = \begin{vmatrix}a^2+1 & b^2 & c^2\\ a^2 & b^2+1 & c^2\\ a^2 & b^2 & c^2+1\end{vmatrix}$. Applying $C_1 \rightarrow C_1 + C_2 + C_3$ and taking $(1 + a^2 + b^2 + c^2)$ common from C_1 and getting $\Delta = (1 + a^2 + b^2 + c^2)\begin{vmatrix}1 & b^2 & c^2\\ 1 & b^2+1 & c^2\\ 1 & b^2 & c^2+1\end{vmatrix}$. Applying $R_2 \rightarrow R_2 - R_1$ and $R_3 \rightarrow R_3 - R_1$ and getting $\Delta = (1 + a^2 + b^2 + c^2)\begin{vmatrix}1 & b^2 & c^2\\ 0 & 1 & 0\\ 0 & 0 & 1\end{vmatrix}$. Expanding along C_1 and getting $\Delta = (1 + a^2 + b^2 + c^2)$ = RHS. Proved.	**2** **2** **1** **1**
34.	Let r be the radius and h be the height of cylinder inscribed in a sphere of radius R. Drawing correct figure/diagram. Volume of cylinder $V = \pi r^2 h = \pi(R^2 - h^2/4)\,h$. For maxima or minima, $dV/dh = 0 \Rightarrow h = 2R/\sqrt{3}$. $d^2V/dh^2 = -3\pi h/2 = -3\pi R/\sqrt{3} < 0$ (– ive) at $h = 2R/\sqrt{3}$. Hence, V is maximum at $h = 2R/\sqrt{3}$. And, the maximum volume is $4\pi R^3/(3\sqrt{3})$.	**1** **1** **2** **1** **1**
35.	Drawing the figure of corresponding curves i.e. a circle $x^2 + y^2 = 16a^2$ having centre at (0, 0) & radius $4a$ and a right handed parabola $y^2 = 6ax$ having vertex at (0, 0) & axis along positive x-axis. Identifying the region with points of intersection of the curves. Required area = $2\left[\int_0^{2a} y\ (\text{for parabola})\ dx + \int_{2a}^{4a} y\ (\text{for circle})\ dx\right]$. $=2\left[\int_0^{2a} \sqrt{6ax}\ dx + \int_{2a}^{4a} \sqrt{16a^2 - x^2}\ dx\right]$. Find the correct area = $4a^2(\sqrt{3} + 4\pi)/3$.	**2** **1** **1** **2**
36.	Eq. of line $\vec{r} = (-\hat{\imath} + 3\hat{\jmath} + \hat{k}) + \lambda(2\hat{\imath} + 3\hat{\jmath} - \hat{k}) \Rightarrow \frac{x+1}{2} = \frac{y-3}{3} = \frac{z-1}{-1}$ … (i) Let Q (α, β, γ) be the foot of perpendicular drawn from P (5, 4, 2) to the line (i) and R (*p, q, r*) be the image of P in the line (i). As Q lie on the line (i), $\frac{\alpha+1}{2} = \frac{\beta-3}{3} = \frac{\gamma-1}{-1} = \mu$ (say) $\Rightarrow$ α = 2μ – 1 , β = 3μ + 3, γ = – μ + 1 … (ii) Now $\overrightarrow{PQ} = (\alpha - 5)\hat{\imath} + (\beta - 4)\hat{\jmath} + (\gamma - 2)\hat{k}$ is perpendicular to the parallel vector $\vec{b} = 2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ of line (i). So, $\overrightarrow{PQ}\,.\,\vec{b} = 0 \Rightarrow 2(\alpha - 5) + 3(\beta - 4) + (-1)(\gamma - 2) = 0$. Putting the values of α, β, γ from (ii) and getting μ = 1. Hence, the coordinate of the foot of perpendicular is Q (1, 6, 0). The length of perpendicular is $\sqrt{24} = 2\sqrt{6}$ units. Also, Q is the mid-point of PR.	**1** **1** **1** **1** **1**

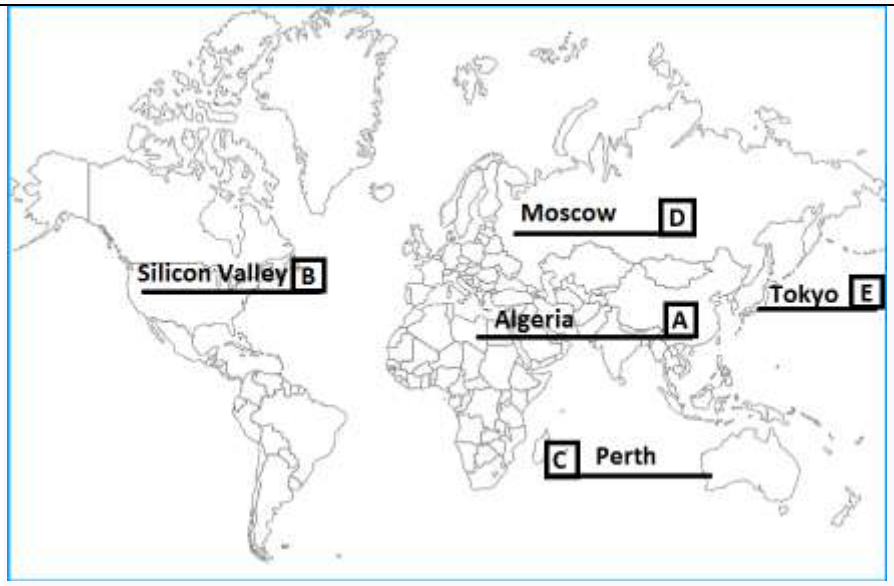
	So, $1 = \frac{p+5}{2} \Rightarrow p = -3$, $6 = \frac{q+4}{2} \Rightarrow q = 8$, $0 = \frac{r+2}{2} \Rightarrow r = -2$. Thus, the image of P is R (– 3, 8, – 2).	**1**
	OR	
	The equation of the plane passing three points $\hat{\imath} + \hat{\jmath} - 2\hat{k}$, $2\hat{\imath} - \hat{\jmath} + \hat{k}$ and $\hat{\imath} + 2\hat{\jmath} + \hat{k}$ i.e. (1, 1, –2), (2, –1, 1) and (1, 2, 1) is given by $\begin{vmatrix} x - x_1 & y - y_1 & z - z_1 \\ x_2 - x_1 & y_2 - y_1 & z_2 - z_1 \\ x_3 - x_1 & y_3 - y_1 & z_3 - z_1 \end{vmatrix} = 0 \Rightarrow \begin{vmatrix} x - 1 & y - 1 & z + 2 \\ 2 - 1 & -1 - 1 & 1 + 2 \\ 1 - 1 & 2 - 1 & 1 + 2 \end{vmatrix} = 0.$ Solving this and getting equation of plane as $9x + 3y - z = 14$ … (i) Its vector form is $\vec{r}.(9\hat{\imath} + 3\hat{\jmath} - \hat{k}) = 14$. The line is $\vec{r} = (3\hat{\imath} - \hat{\jmath} - \hat{k}) + \lambda(2\hat{\imath} - 2\hat{\jmath} + \hat{k}) \Rightarrow \frac{x-3}{2} = \frac{y+1}{-2} = \frac{z+1}{1}$ … (ii) Let the line (ii) intersect plane (i) at (α, β, γ). As the point (α, β, γ) lie on the line (ii), $\frac{\alpha-3}{2} = \frac{\beta+1}{-2} = \frac{\gamma+1}{1} = \mu$ (say). $\Rightarrow$ α = 2μ + 3 , β = –2μ – 1, γ = μ – 1 … (iii) Also, the point (α, β, γ) lie on the plane (i) $\Rightarrow$ 9α + 3β – γ = 14. Putting the values of α, β, γ from (iii) and getting μ = – 1. Therefore, the point of intersection is (α, β, γ) = (1, 1, – 2).	**1** **2** **1** **1** **1**

Code No:		Total Pages:	
KENDRIYA VIDYALAYA SANGATHAN.KOLKATA REGION MARKING SCHEME 1ST Pre-Board Examination, 2019-20			
Subject	Geography(Theory)	Class	XII
Time	03 Hours	Max. Marks	70

Question No.	Answer	Marks
1	B. South East Asia	1
2	C. Kobe Osaka Region	1
3	B. Japan	1
4	C. Dr Mahabub-Ul-Haq OR C. Sustainability Approach	1
5	C. Mixed Farming	1
6	B. Wheat	1
7	C. Comprehensive port	1
8.	A. SAFTA	1
9.	A. Latvia	1
10.	D. Goa OR B. Main Worker	1
11.	A. Lakshadweep	1
12.	B. Bhopal	1
13.	A. Gram	1
14.	C. Salinization of Soil	1
15.	C. Soil	1
16.	B. Maharashtra- Goa- Karnataka	1

17.	C. Sadia to Dhubri	1
18.	D. Tuticorin Port OR B. Sea	1
19.	Environmental Determinism - 1. People began to understand their environment and the forces of nature with passage of time. 2. The movement from state of necessity to a state of freedom creating possibilities with resources obtained from environment. 3. Nature provides opportunities and human beings make use of this opportunities. Possibilism – 1. Man is treated as an independent and active agent everywhere 2. There are possibilities and man is the master of these possibilities. 3. Man can transform nature by culture and technological knowledge.	3
20.	1. Economic problem - decreasing employment 2. Environmental problem – many cities of developing countries do not provide the minimum required quantity of drinking water. 3. Problem of urban waste disposal. (any other relevant points to be explained properly)	3
21.	Push Factors: 1. Unemployment 2. Poor Living condition. 3. Political turmoil 4. Unpleasant Climate 5. Natural Disaster Pull Factors: 1. More attractive job 2. Good living condition 3. Peace 4. Security of life 5. Pleasant climate (any three point of each to be explained properly)	3
22.	1. Selection of one water stressed village in each 672 districts of the country to create Jal Gram 2. Identification of Model Command Area 3. Reducing Groundwater pollution 4. Creating Mass Awareness through Social Media Radio TV etc (any other relevant points to be explained properly) OR An efficient management and conservation of surface and groundwater resources which involved the prevention of runoff and shortage and recharge of groundwater through various methods. Certainly water shed management can play an important role in sustainable development. For example, Central and State government initiated in many programmes such as Hariyali by Central Government. Neeru Meeru by Andhra Pradesh Government.	3

	Arvari Pani Sansad by Rajasthan Government. (any other relevant points to be explained properly)	
23.	Manufacturing refers to conversion of raw material into finished goods through application of power and machinery. Characteristics of modern large scale manufacturing: 1. Specialisation of skills 2. Mechanisation 3. Technological innovation 4. Organisational structure and stratification (Points to be explained properly)	5
24.	When medical treatment is combined with international tourism, it is known as Medical Tourism. Factors affecting tourism: 1. Demand 2. Transport 3. Climate 4. Landscape 5. History and Art 6. Culture and Economy (any four point to be explained properly)	5
25.	Different modes of transportation are not competitive but complementary in nature. All of them have their own importance in specific situation. For example: a. Heavy machinery – for water transport b. urgent materials – air transport c. common people – land transport(any other relevant points to be explained properly) OR Trans Continental Railway passes through different parts of a continent and connects its two ends having economic and political motive. 1. 7050 Km long connect Halifax in the east and Vancouver on the west. 2. Constructed in 1886. 3. Connect Quebec industrial region with wheat belt of Prairie. 4. It is an important train route having wheat and meat important export.	5
26.	Conventional Sources of Energy : 1. They are exhaustible in nature 2. They are not eco friendly 3. Coal Petroleum Natural Gas etc are the example. Non Conventional Sources of Energy : 1. They are non exhaustible in nature 2. They are not eco friendly 3. Hydroelectricity, Nuclear power plant etc	5
27.	Following steps taken for attainment of tribal sub-plan strategy : 1. Improving the quality of life of Gaddis in Bharmaur and other districts of Himachal Pradesh 2. Highest priority on Transport and Communication 3. Improvement of basic infrastructure of health care facility, potable water supply school etc	5

	4. Employment generation through agriculture and small scale industry. 5. Instead of subsistence agriculture, cash crops are been grown. OR Measures for promotion of Sustainability : 1. Rigorous implementation of water management policy 2. Adaption of plantation crop instead of water intensive crop 3. CAD programme 4. The areas should be reclaimed that what affected by water logging and soil salinity. 5. Promotion of eco development programme in stage II. (any other relevant points to be explained properly)	
28.	Following are the major problems associated with urban waste in India: 1. Growing Population 2. Slow Administrative Action 3. Casual Attitude towards cleanliness 4. Unscientific Disposal Management 5. Problem of Water pollution (any other relevant points to be explained properly) OR Following are the problems of slums in India: • Poor Hygienic condition • Lack of light and drinking water facility • Lack of toilet facility • Poor ventilation • Low paid and high risk works (any other relevant points to be explained properly)	5
29	A. Bihar B. Shimoga C. Koraput D. Bhilai E. Mohali F. Silchar G. Thiruvananthpuram (Any 5 to be answered)	5
30		5

KENDRIYA VIDYALAYA SANGTHAN, KOLKATA REGION

MARKING SCHEME

BUSINESS STUDIES (054)

Class - XII

Pre- Board Examination-(2019-20)

1.	Social Objective.	1
2.	Efficiency	1
3.	1 mark for correct meaning	1
4.	Authority and Responsibility.	1
5.	Legal environment	1
6.	Any one difference between 'Objective' and ' Strategy'	1
7.	d) Planning	1
8.	Product concept	1
9.	a) Rule	1
10.	a) Identification and division of work	1
11.	d) no duplication of activities	1
12.	b)Coordination	1
13.	d) Departmentation	1
14.	a) Direct Recruitment	1
15.	Co-partnership/Stock option	1
16.	c)Abraham Maslow	1
17.	a) Management by Exception	1
18.	Wealth maximization is the primary objective of financial management, which means maximising the market value of investment in the share of the company.	1
19.	(d) All the above	1
20.	(d) All the above	1
21.	Any three importance of controlling i) It helps to judge accuracy of standard ii) It helps to achieve goals iii) It ensures best use of resources	3
22.	In order to keep fixed capital requirement low, Shyam should take this decisions a) Nature of business. b) Scale of operation. c) Financial Alternatives'.	3
23.	a) The principle of "Order" b) In the absence of orderliness, school objectives will not be achieved efficiently and effectively.	3
24.	A) labelling (1 Mark) b) two functions of labelling (2 Mark) i) Identification of product ii) Description about product iii) Statutory requirement OR Three factors affecting pricing decision. (Any Three) a) Pricing Objectives. b) The utility of demand c) Product cost d) Extent of competition in the market.	3

	e) Govt and regulation. f) Marketing methods used.	
25.	(a) Business environment helps in tapping useful resources. "It assembled various inputs like finance, machines, raw materials, etc. from its environment." (b) (i) *Social environment* "…it has been dumping its untreated poisonous waste on the river bank which has created many health problems for the people." (ii*) Legal environment* "the court passed an order to seal the manufacturing unit of the company".	3
26.	Any four function of NGO i) Making the consumer aware of their rights ii) Filing cases on behalf of consumer iii) Conducting consumer awareness programme iv) Filing PIL **OR** The reliefs available to Reena are listed below: (Any Four) ➢ To withdraw the hazardous goods from sale. ➢ To provide replacement for the defective product. ➢ To refund the price paid for the product, or the charges paid for the service. ➢ To pay a reasonable amount of compensation for any loss or injury suffered by the consumer due to the negligence of the marketer. ➢ Not to offer hazardous goods for sale. ➢ To issue corrective advertisement to neutralize the effect of a misleading advertisement.	4
27.	Two limitations of planning a) it may not work in dynamic environment b)planning does not guarantee success	4
28.	Presently, Rajat & Co. are manufacturing only one product so the most suitable organisation structure is functional but on expansion if they are adding more line of products then the suitable organisation structure will be **divisional structure** as it is a perfect structure for multiproduct manufacturing company due to following reasons: (Any Four) a) Product specialisation. All the activities related to one type of product are grouped under one department only which brings integration and co-ordination in the activities. b) Fast decision making. The decisions are taken must faster in divisional structure because there is no dependence on other departments for taking decisions. c) Accountability. In this type of structure, the performance of individual departments can easily be assessed and you can hold the department accountable for non- accomplishment of objectives. d) Flexibility. Fast decision making leads to flexibility. e) Expansion and growth. New departments can be added without disturbing existing departments.	4
29.	(a) Principles of management (any three) 3 marks ➢ Stability of Personnel ➢ Initiative ➢ Discipline ➢ Esprit de corps	5

	(b) Characteristic of management (2 Marks) ➢ Goal oriented ➢ Group activity	
30.	i) Profit maximisation Wealth maximisation- (2 Marks) ii) Three factors affecting the choice of long term finance.- ➢ Rate of return (3 Marks) ➢ Cost of finance ➢ Floatation cost ➢ Charge on asset OR Dividend decision (1 Mark) Factors affecting dividend decision. (4 Marks) ➢ Earnings: ➢ Stability of earnings: ➢ Stability of dividends: ➢ Growth opportunities: ➢ Cash flow position	5
31.	a) to check insider trading conducting enquiry/inspection- (2 Marks) b) two other functions- i) development function ii)regulatory function (3 Marks) Or 1 mark for each correct function.	5
32.	*(a) Labelling* and *Packaging* are the two important decisions related to a product. (b) *Branding* is considered to be a very important decision by the marketers because it facilitates product differentiation. Through branding the prospective buyers are able to bring about a distinction between a company product and its substitutes available in the market. This helps the company to obtain a desirable market share. (c) The four features of a good brand name are stated below: ➢ The brand name should be short, easy to pronounce, spell, recognize and remember e.g., Ponds. ➢ A brand should suggest the product's benefits and qualities e.g. Sunsilk. ➢ A brand name should be distinctive e.g., Lotus. ➢ It should be capable of being registered and protected legally (1+1+4= 6)	6
33.	HRM-promotion Marketing head- placement agency Assistant manager- casual callers (1x3=3) Merits of each source (1x3=3) i) Promotion- less expensive ii) Placement agency- reliable source iii) Casual callers- easily available Or 1 marks for each correct process in sequence.	6
34.	a) Personal barrier (1 Mark) b) Lack of proper incentives (2 Marks) c) Three barriers of same category- (3 Marks)	6

i) Fear of challenge to authority
ii) Unwillingness to communicate
iii) Lack of proper incentive

OR

a) The various elements of directing mentioned in the above paragraph are as follows: (4 Marks)

- *Communication:* "He is very clear and specific in issuing instructions to his subordinates in order to ensure smooth working of the department."
- *Supervision:* "He personally oversees the method followed by the chefs for preparation of each dish."
- *Leadership:* "He provides constant guidance to them in order to improve upon its taste and presentation and also encourages them to innovate and be more creative in their work."
- *Motivation:* "He misses no opportunity to praise his subordinates for their good work."

b) The importance of directing as a function of management is described below: (Any Two) (2 Marks)

- *Initiates action:* Directing helps to initiate action by people in the organization towards attainment of desired objectives. It is the first execution function of management.
- *Integrates employees' efforts:* Directing seeks to integrate the individual efforts of employees in the organization towards the realization of the organizational goals.
- *Helps to realize their potential:* Directing provides effective guidance, motivation and leadership to the employees so as to enable them to realize their potential and capabilities. (any two)

KENDRIYA VIDYALAYA SANGATHAN KOLKATA REGION

PRE- BOARD EXAMINATION 2019 20

CHEMISTRY

MARKING SCHEME

Q.1 Aldehyde

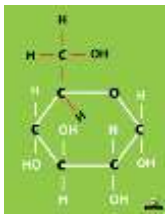
questions 1 to 20- 1 M for each correct ans

Q.2 Acetic Anlydride

Q.3 It has got 5-OH groups

Q.4 Aldehyde group is not free

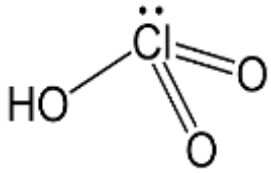
Q.5



Q 6)false

Q.7 Ag or Au

Q 8)



Q.9 4

q.10 +3

Q.11 (c) option

Q.12 b) 1M,Na_2SO_4

Q13) (a) 1

Q.14 B

Q.15 (c) Vanderwaal

Q.16 (a)

Q.17 (c)

Q.18 (b)

Q.19 (c)

Q.20 (a)

Q.21 Those which undergo dissociation ½ M

example . NaCL,KCl... 1/2M

Explanation with formula & Van't half factor 1M

Q.22 When the volume is reduced to 1/3 the concentration of each reactant in increased by 3 times 1/2M

Rate= $k(3NO)^2(3O_2)$ 1/2M

Rate= $27K(NO^2)(O2)$

Rate=$27\ K(NO)^2(O_2)$

Rate increased by 27 times.,no change in order ½ + 1/2 M

Q.23 Vapour phase refining definition 1M

Equation for Van Arkel OR Mond's process.

1M

Or

$Al_2O_3+2NaOH+H_2O \rightarrow 2\ Na[Al(OH)_4]$ 1M

$2Na(Al(OH)_4)+CO_2 \rightarrow A_{l2}O_3\ xH_2O+2\ NaHCO_3$ 1/2M

$Al_2O_3xH_2O \xrightarrow{\text{----------}} Al_2O_3\ (s)+ x\ H_2O$ 1/2M

Q 24) a) $2\ C+ 4H_2SO_4 \xrightarrow{\text{---------}} 4SO_2 +2CO_2+4H_2O$ 1M

b)$XeF_4 +SbF_5 \xrightarrow{\text{------}} XeF_3 +SbF_6$

Q.25 Hybridisation with electronic configgnration 1M

Magenetic property & geometery 1M

Q.26 i)+R effect 1M

ii) presence of chiral carbon 1M

Q.27 a) Lucas Test,b) Neutral $FeCl_3$ test(observation to be written) 1+1M

Or

a) iodoform test b) Fehling test (observation to be written)

Q.28 Moles of BaCl2=3.1/208.3 = 1.48x10-2

Molality = 1.48x10-2/0.250=0.59m 1.5M

ΔT_b = 100.083-100- 0.083K

$\Delta T_b = ik_b.m$

i=0.083/0.52x0.59 =2.7 1.5M

Or

The freezing point of the solution will be 272.47 K

Given data,
W_2 = 10.5 g
W_1 = 200 g
Molar mass of MgBr, M_2 = 184 g
Kf of water = 1.86
Hence the change in freezing point is given by the relation,
$\Delta Tf = (1000 \times Kf \times W_2)/(W_1 \times M_2)$ 1/2M
$= (1000 \times 1.86 \times 10.5)/(200 \times 184)$ 1/2M
$\Rightarrow \Delta Tf = 0.53$ K 1M
Hence new freezing point ,
$T_f = T_o - \Delta T_f = 273 - 0.53 = 272.47$ K 1M
Hence the freezing point of the solution will be 272.47 K

Q 29) $2\ N_2O_5(g) \rightarrow 2\ N_2O_4 + O_{2(G)}$

GIVEN,
At t = 0 0. 5 atm 0 atm 0 atm
At time t 0. 5 - 2x atm 2x atm x atm
To find total pressure: 1M
P_t = sum of partial pressures of all reactants and products
P_t = 0. 5 - 2x + 2x + x
$x = p_t - 0.5$
$p_{N_2O_5} = 0.5 - 2x$
$= 0.5 - 2(p_t - 0.5)$
$= 1.5 - 2p_t$
At t = 100 s ; $p_t = 0.512$ atm
$p_{N_2O_5} = 1.5 - 2 \times 0.512 = 0.476$ atm

Formula to find rate constant of a first order reaction

$$k = \frac{2.303}{t} \log \frac{P_i}{P_a}$$

$$k = \frac{2.303}{100s} \log \frac{0.5}{0.476}$$

$$k = \frac{2.303}{100s} \times 0.0216 = 4.98 \times 10^{-4}\ s^{-1}$$ 1M

the rate constant for the following reaction is $4.98 \times 10^{-4}\ s^{-1}$ 1M Q.30

a) Correct equation 1Mb) AlCl3, b) AlCl3

,explain mentioning Hardy schulz rule ½ +1/2 M

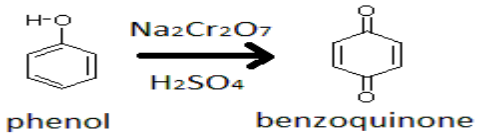
c) Correct definition 1M

Q.31 Each correct reason 1M

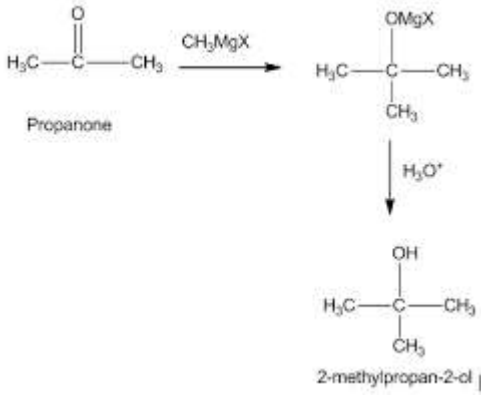
Or

correct geometry with lone pair 1M each

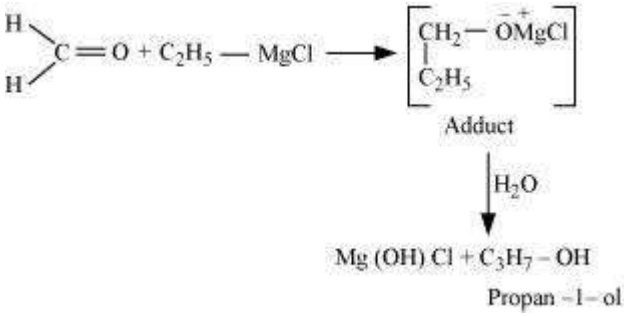
Q 32) a)



Q32 b) 1M each

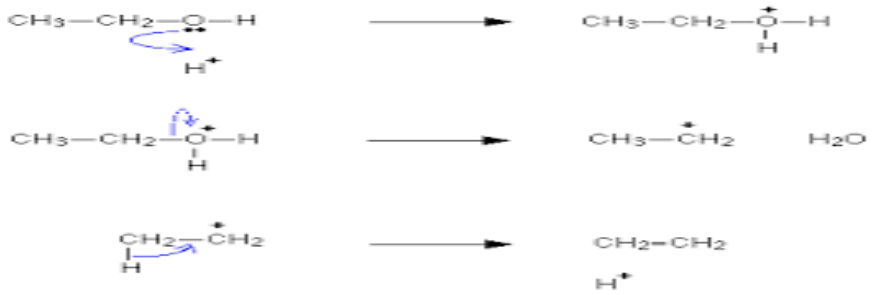


Q 32 c)



Q.33a) A- CH_3CHO (Stephen's reaction) 1+2M each

B CH3-CH(OH)-CH2 CHO



34 Correct explanation + example. 1M each

Q 35)a) formula ,substitution,correct ans (2.96 V) 1+1+1

(b)Given,

t = 10 mins = 600s

charge = current x time = 1A x 600s = 600C 2M

The reaction is given by $Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$

We need 2 x 96500C to deposit 1 mol or 63g of copper on the electrode, for 900C the amount of copper deposited will be 0.29g.

The amount of silver and copper deposited will be different because Ag has a different molar mass and equivalent mass.

OR

(a)$\kappa = 8.0 \times 10^{-5}$ S cm^{-1}

C = M = 0.0024M ,Molar conductivity =$1000x8x10^{-5}/0.0024$ =33.33Scm^2mol^{-1} 1.5M

Limiting Molar conductivity = 40.9 +349.6 =390.5 S cm^2 mol^{-1}

Degree of dissociation is given by

α =33.33/390.5 =0.085 =8.5% 1.5M

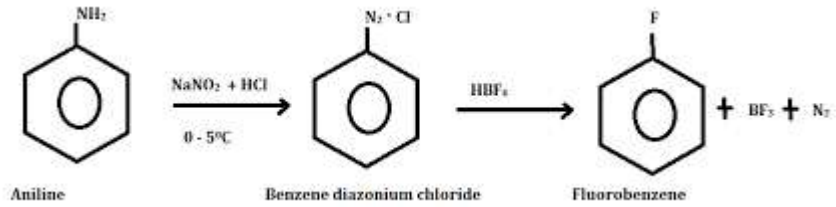
(b)'B' is the strong electrolyte because on dilution of a strong electrolyte, number of ions almost remain the same. Only the interionic attraction decreases and therefore the increase in limiting molar conductivity of 'B' is small. This is because on dilution for both strong and weak electrolyte, there is increase in molar conductivity. But it has been observed that there is a large increase in molar conductivity of weak electrolyte on dilution than strong electrolyte. Because, weak electrolytes dissociate very less at higher concentration. On dilution, degree of dissociation of weak electrolyte increases means there is increase in number of ions per unit volume. Hence, 'A' is the weaker electrolyte. On the other hand, for strong electrolyte, degree of dissociation increases slowly on dilution. Thus, 'B' whose limiting

molar conductivity increases to a lesser extent is a strong electrolyte.
2M

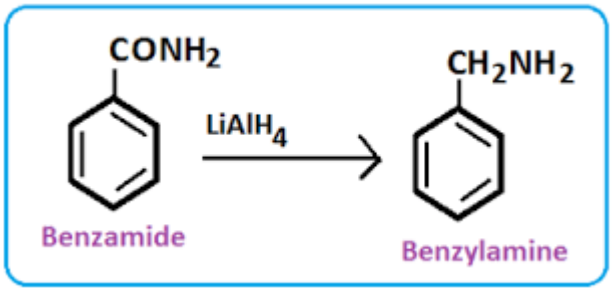
Q 36)
A $C_6H_6CONH_2$
B $C_6H_5NH_2$
C $C_6H_5N_2Cl$
D C_6H_6
E 2,4,6 TRIBROMOANILINE Identifying 2.5 M , Four equations 2M
Explanation ½ mark

OR

a)i)

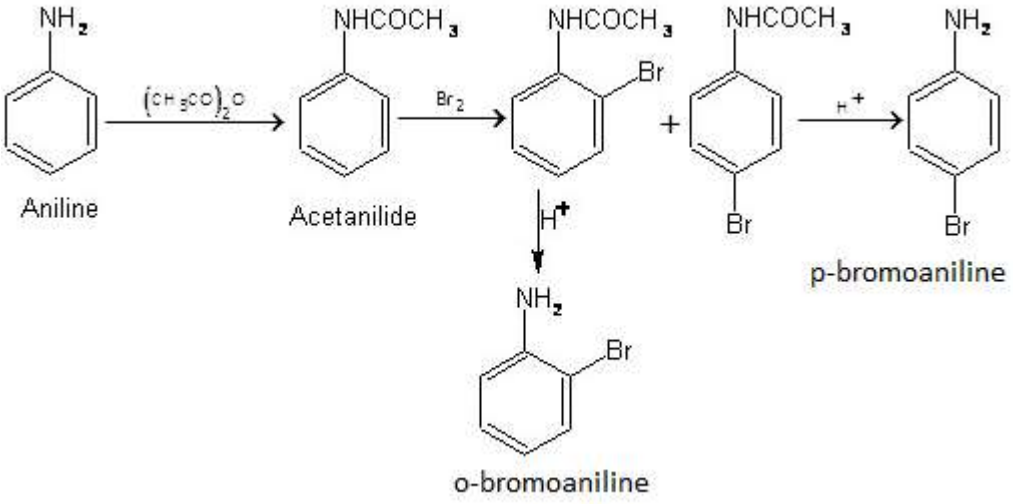


ii)



3X1 =3M

iii)



b)i) A $CH_3CH_2CONH_2$ 4X1/2=2

B $CH_3CH_2NH_2$

I) A CH_3CH_2CN

B $CH_3CH_2CH_2NH_2$

Q 37) (a)Chromite **ore $FeCr_2O_4$ compound A** is fused with an aqueous solution of sodium carbonate in excess of air, to form **compound B that is sodium chromate** that is yellow in colour. Sodium

chromate is filtered and acidified with sulphuric acid to **form compound C that is sodium dichromate**, which is an orange crystalline compound. Sodium dichromate reacts with KCl to **form potassium dichromate** which is less soluble than sodium dichromate. This is **compound D.**

4X1/2=2

$$\underset{(A)}{4FeCr_2O_4} + 8Na_2CO_3 + 7O_2 \longrightarrow \underset{(B)}{8Na_2CrO_4} + 2Fe_2O_3 + 8CO_2$$

$$2NaCrO_4 + 2H^+ \longrightarrow Na_2Cr_2O_7 + 2Na^+ + H_2O$$

$$\underset{(C)}{Na_2Cr_2O_7} + 2KCl \longrightarrow \underset{(D)}{K_2Cr_2O_7} + 2NaCl$$

B (i) The actinoids have a greater range of oxidation states than lanthanoids, which are both members of the f-block group of elements. This is because the the 5f, 6d and 7s levels are of comparable energies. The first half of the series frequently exhibit higher oxidation states but it decreases in the succeeding elements. The elements in general show +3 state and then increases to +4 in Th to +5, +6 and +7 respectively in Pa, U and Np.

(ii) Actinoids show a gradual decrease in the size of atoms or M^{3+} ions across the series. This is actinoid contraction, just like lanthanoid contraction, but there is a greater contraction from element to element in this series because of poor shielding by 5f electrons.

(iii) MnO, MnO_2 Mn_2O_7

OR

A (i) Disproportionation is a reaction where a particular oxidation state becomes less stable relative to other oxidation states. Disproportionation is a type of redox reaction in which a species is simultaneously reduced and oxidised forming two different products. Manganate ions (MnO_4^{2-}) has an oxidation number of +6. In acidic medium, it undergoes disproportionation reaction to give MnO_2 and MnO_4^-.

$3MnO_4^{2-} + 4H^+ \rightarrow MnO_2 + 2MnO_4^- + 2H_2O$

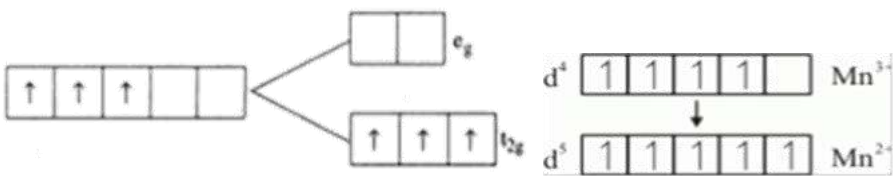
(ii) When Lanthanum is heated with Sulphur, it forms Ln_2S_3. 2x1=2

$2Ln + 3S \rightarrow Ln_2S_3$

B (i) The $E^0(M^{2+}/M)$ value of a metal depends on the energy changes involved in the following reactions:

1. Sublimation energy which is the energy needed to convert one mole of atoms from a solid state to gaseous state. 2. Ionization energy which is the energy supplied to remove electrons from one mole of atoms, which are in the gaseous state. 3. Hydration energy which is the energy emitted to hydrate one mole of ions. Copper has a high ionisation energy and low hydration energy. Copper also has high atomization energy $\Delta_a H°$. Hence, the $E^0(M^{2+}/M)$ value for copper is positive.

(ii) Cr^{2+} is reducing in nature while Mn^{3+} is oxidizing. Both of them have the same d^4 configuration. When Cr^{2+} acts as a reducing agent, it gets oxidized to Cr^{3+}, with configuration d^3. It can be written as $3t_{2g}$ configuration, which is the stable configuration. In the case for Mn^{3+}, when it oxidises, it gets reduced to Mn^{2+} with a d^5 configuration. This configuration has a half-filled orbital and has extra stability.



Cr^{3+} configuration Mn^{2+} configuration

(iii)VO_2^+ is an oxocation and $Cr_2O_7^{2-}$ and MnO_4^- are both oxoanions of the transition metals. The ions in which the central metal atom is has the highest oxidation state will have the highest oxidising power. In VO_2^+, vanadium is present in the +5 oxidation state, while in $Cr_2O_7^{2-}$ ion, Cr is present in the +6 oxidation state. Similarly in the MnO_4^-, Mn is present in the +7 oxidation state. Thus as the oxidation state of the central metal atom increases in the given order. 3x1=3

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