

GUJCET-PCE-2024

2362

Test Booklet No. **1300618**

Test Booklet Set No. **13**

This booklet contains 32 pages.

DO NOT open this Test Booklet until you are asked to do so.

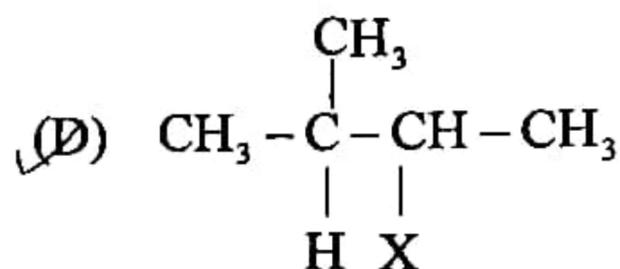
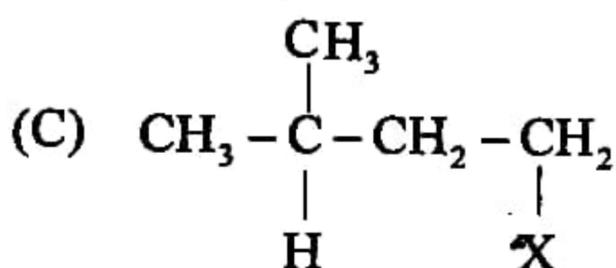
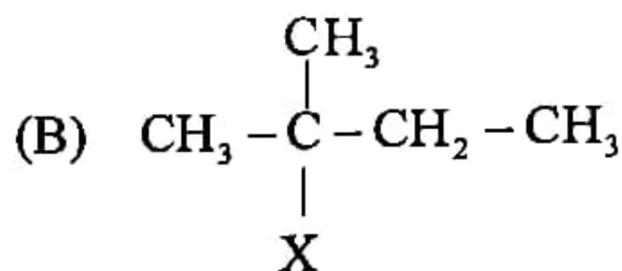
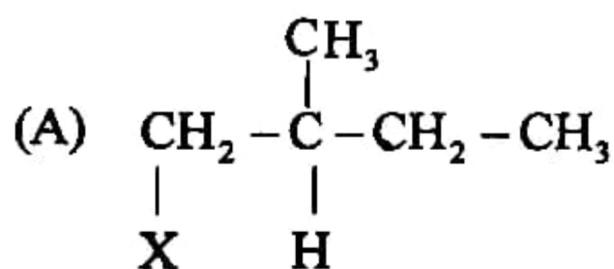
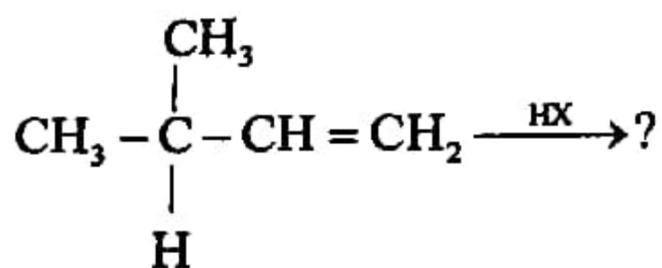
Important Instructions :

- 1) The Physics and Chemistry test consists of 80 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response $\frac{1}{4}$ mark will be deducted. The maximum marks are 80.
- 2) This Test is of 2 hours duration.
- 3) Use **Black Ball Point Pen only** for writing particulars on OMR Answer Sheet and marking answers by darkening the circle '●'.
- 4) Rough work is to be done on the space provided for this purpose in the Test Booklet only.
- 5) **On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.**
- 6) The Set No. for this Booklet is **13**. Make sure that the Set No. printed on the Answer Sheet is the same as that on this booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
- 7) The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
- 8) Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
- 9) Use of White fluid for correction is not permissible on the Answer Sheet.
- 10) Each candidate must show on demand his / her Admission Card to the Invigilator.
- 11) No candidate, without special permission of the Superintendent or Invigilator, should leave his / her seat.
- 12) Use of Simple (Manual) Calculator is permissible.
- 13) The candidate should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and must sign the Attendance Sheet (Patrak - 01). Cases where a candidate has **not** signed the Attendance Sheet (Patrak - 01) will be deemed not to have handed over the Answer Sheet and will be dealt with as an unfair means case.
- 14) The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
- 15) No part of the Test Booklet and Answer Sheet shall be detached under any circumstances.
- 16) The candidates will write the Correct Test Booklet Set No. as given in the Test Booklet / Answer Sheet in the Attendance Sheet. (Patrak - 01)

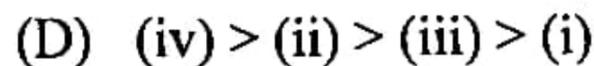
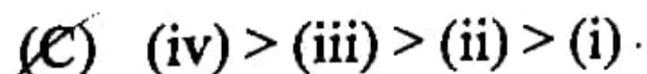
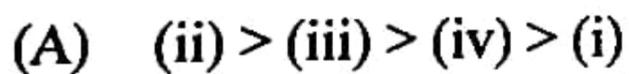
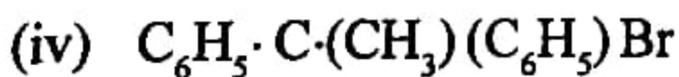
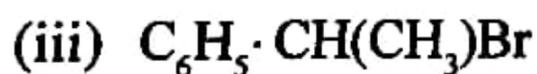
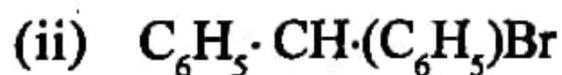


CHEMISTRY

41) What is the major product in the following reaction?



42) Predict the order of reactivity of the following compounds in S_N1 reaction.



(Space for Rough Work)

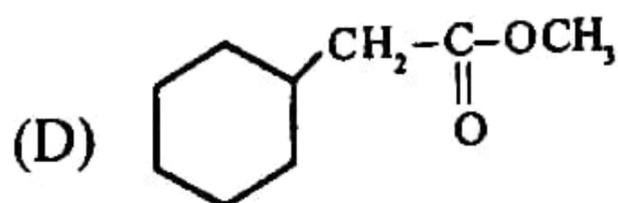
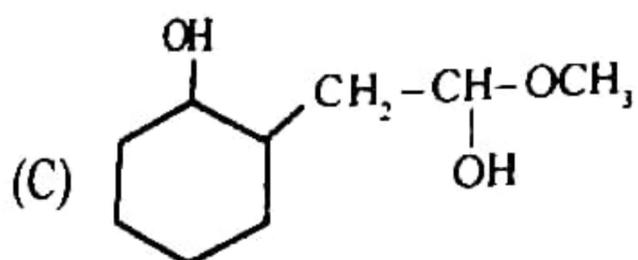
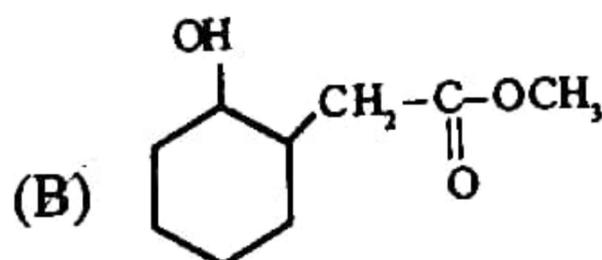
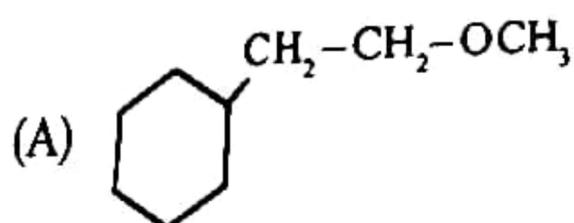
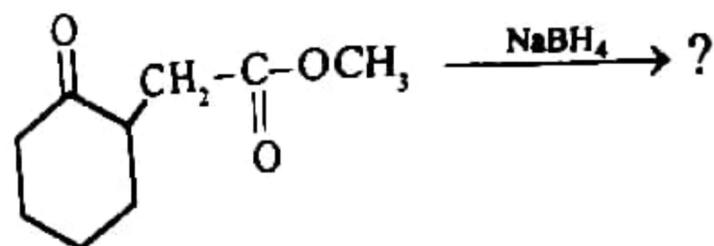


43) Match the reactions given in column - I with the names given in column - II.

Column - I	Column - II
i) $R-Cl + NaI \xrightarrow[\text{acetone}]{\text{dry}} R-I + NaCl$	a) Swarts reaction
ii) $CH_3-Br + AgF \xrightarrow{\Delta} CH_3-F + AgBr$	b) Wurtz reaction
iii) $R-X + Mg \xrightarrow[\text{ether}]{\text{dry}} R-Mg-X$ $\downarrow H_2O$ $RH + Mg(OH)X$	c) Finkelstein reaction d) Grignard reaction

- (A) (i) \rightarrow (c); (ii) \rightarrow (a); (iii) \rightarrow (d)
(B) (i) \rightarrow (d); (ii) \rightarrow (c); (iii) \rightarrow (b)
(C) (i) \rightarrow (a); (ii) \rightarrow (c); (iii) \rightarrow (d)
(D) (i) \rightarrow (b); (ii) \rightarrow (a); (iii) \rightarrow (d)

44) Which product will be obtained in the following reaction _____.

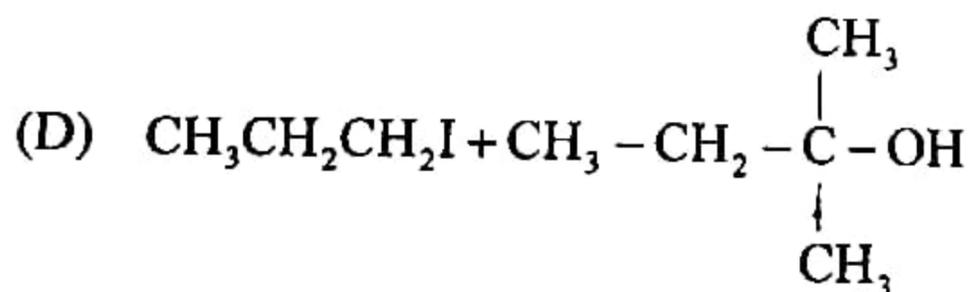
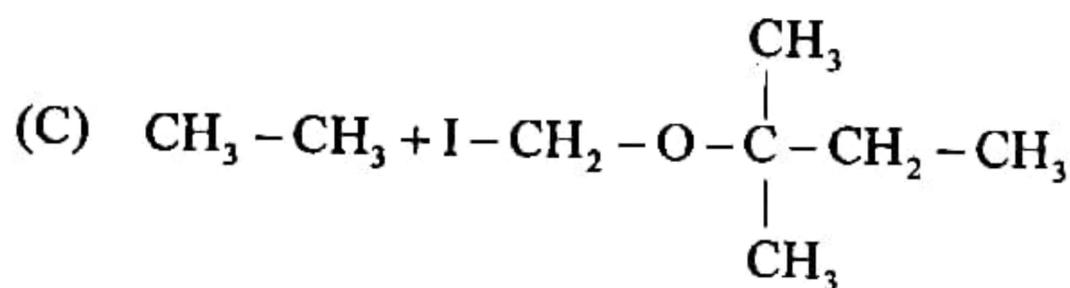
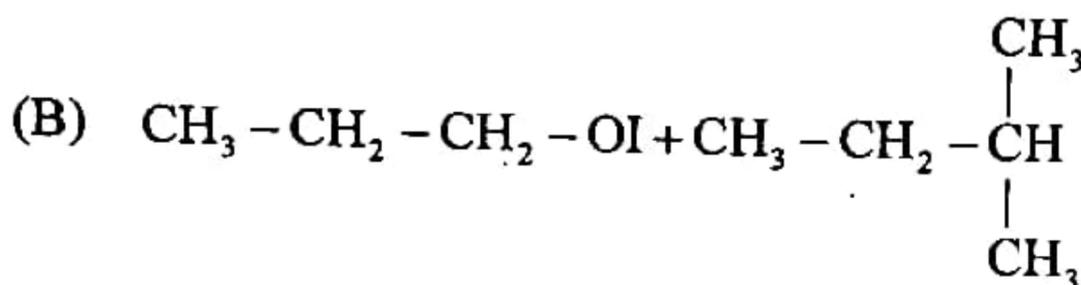
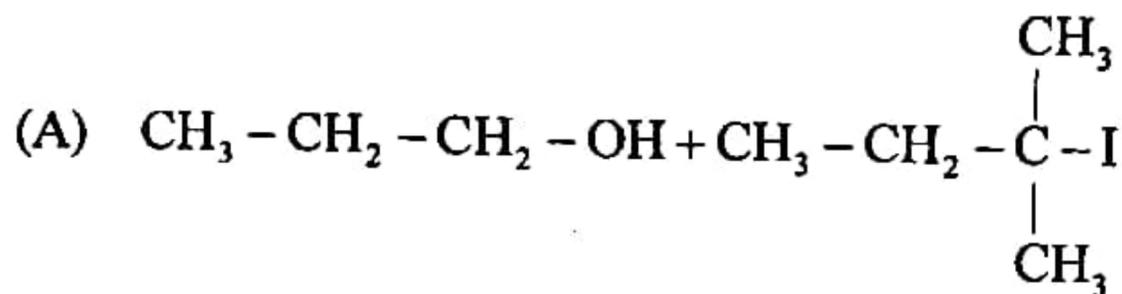
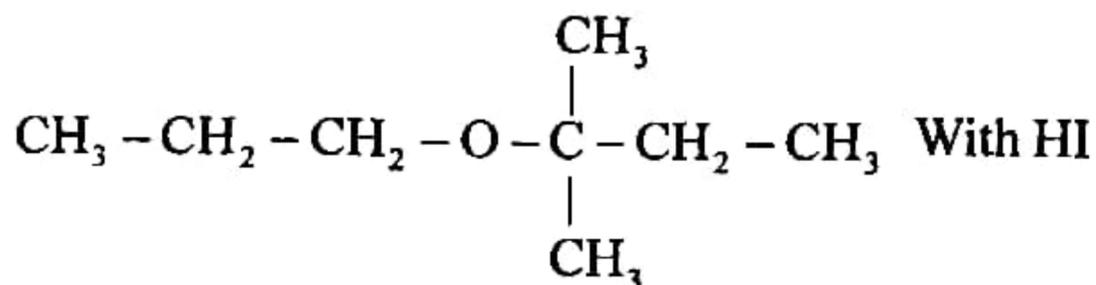


(Space for Rough Work)

45) Predict the major product of acid catalysed dehydration of butan-1-ol.

- (A) $2\text{CH}_2 = \text{CH}_2$ (B) $\text{CH}_3 - \overset{\text{CH}_3}{\underset{|}{\text{C}}} = \text{CH}_2$
 (C) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3$ (D) $\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH}_2$

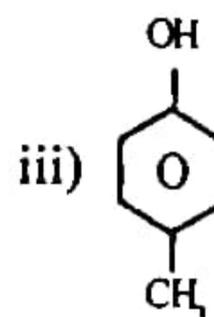
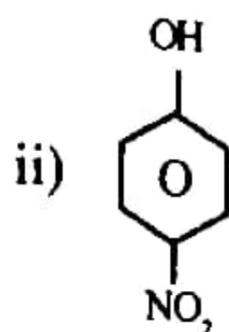
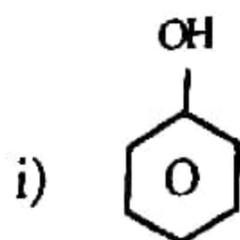
46) Give the major product formed by heating



(Space for Rough Work)



47) Arrange the following compounds in decreasing order of their acidic strength



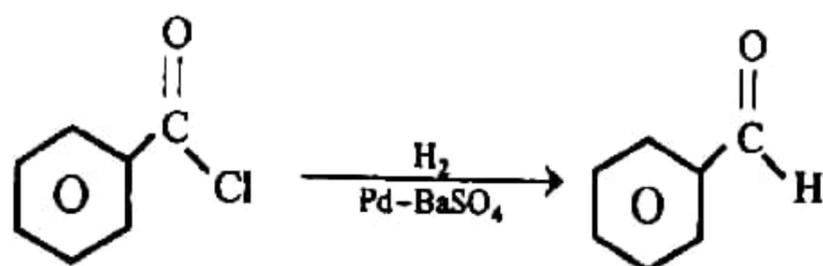
(A) (ii) > (iii) > (i)

(B) (iii) > (i) > (ii)

(C) (i) > (ii) > (iii)

(D) (ii) > (i) > (iii)

48) Name the following reaction.



(A) Clemmensen reduction

(B) Stephen reaction

(C) Etard reaction

~~(D)~~ Rosenmund reduction

49) 'R' + $\text{CH}_3 - \text{CO} - \text{CH}_3 \xrightarrow{\text{H}^+}$ Schiff's base what is 'R' in this reaction?

(A) $\text{C}_6\text{H}_5 - \text{NH} - \text{NH}_2$

(B) $\text{NH}_2 - \text{NH}_2$

(C) $\text{CH}_3 - \text{NH}_2$

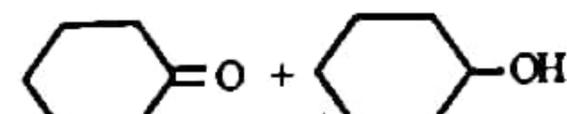
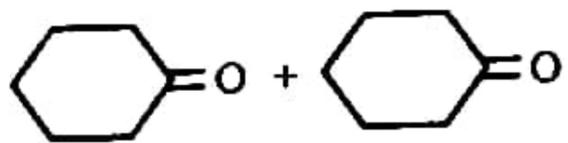
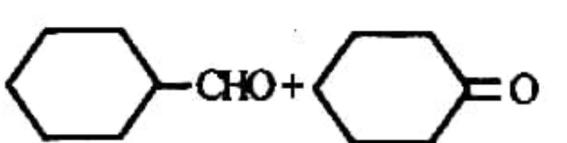
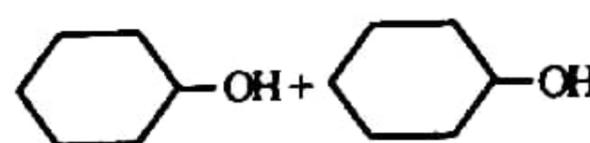
(D) NH_2OH

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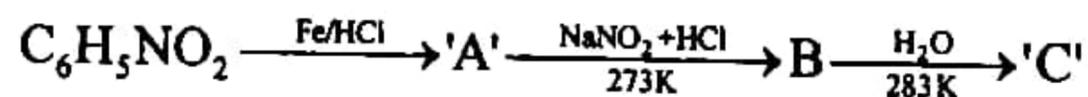
What is X in this reaction?

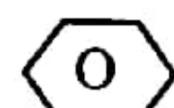
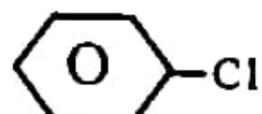
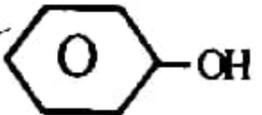
- (A)  (B) 
- (C)  (D) 

51) Which of the following carboxylic acid has least pKa value among all?

- (A) $\text{NO}_2 \cdot \text{CH}_2 \cdot \text{COOH}$ (B) $\text{CH}_3 \cdot \text{COOH}$
 (C) HCOOH (D) $\text{C}_6\text{H}_5 \cdot \text{COOH}$

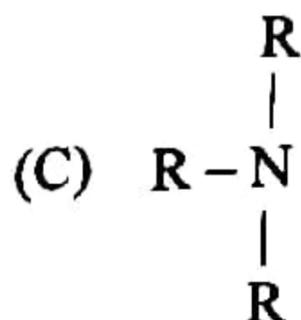
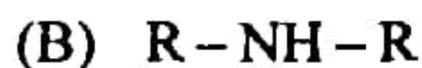
52) Identify 'C' in the following reaction.



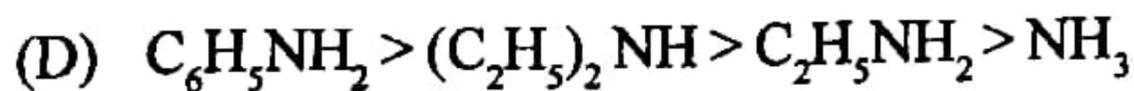
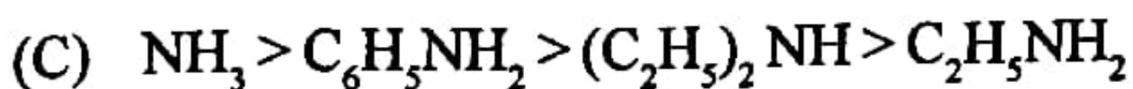
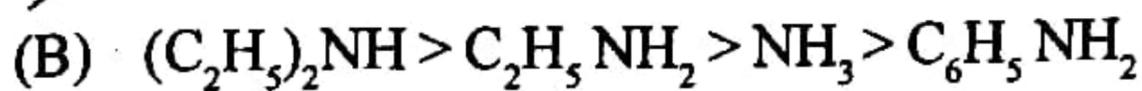
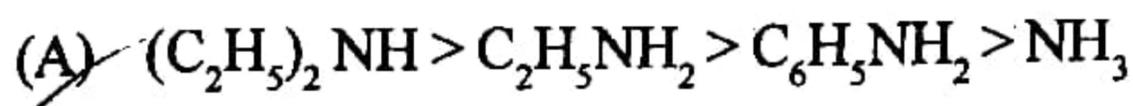
- (A)  (B) 
- (C)  (D) 

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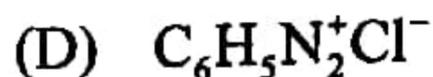
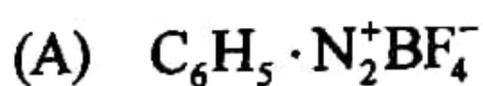
53) Which amine is prepared by Gabriel phthalimide synthesis?



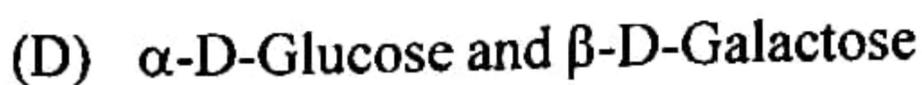
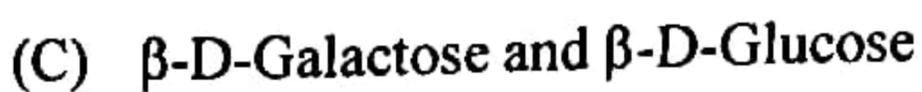
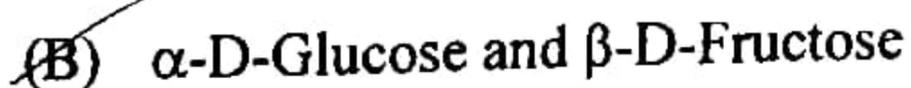
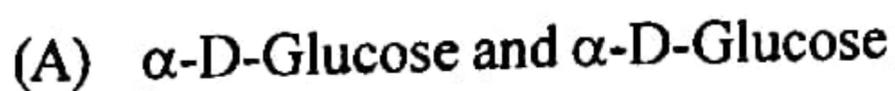
54) Which is the correct order of the basic strength of given amines?



55) Which diazonium salt is water insoluble and stable at room temperature?



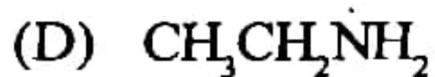
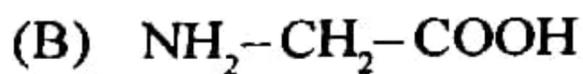
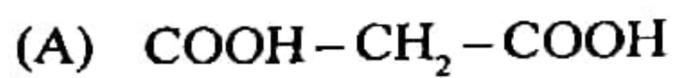
56) Lactose is composed of which units?



(Space for Rough Work)



57) Which of the following gives Zwitter ion in its aqueous solution?



58) Deficiency of which vitamin is responsible for RBC deficient in haemoglobin

(A) Vitamin B₁₂

(B) Vitamin B₆

(C) Vitamin B₂

(D) Vitamin B₁

59) Which of the following statement is incorrect for the structure of Nucleic acid

(A) Nucleotides are joined together by phosphodiester linkage

(B) In DNA molecule, the sugar moiety is β -D-2-deoxyribose

(C) A unit formed by the attachment of a base 1' position of sugar is known as nucleoside

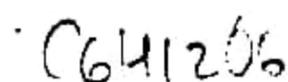
(D) RNA contains four bases adenine, guanine, cytosine and thymine

(Space for Rough Work)

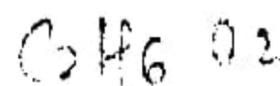


- 60) Calculate the mass of Glucose ($C_6H_{12}O_6$) required in making 2.5 kg of 0.25 molal aqueous solution.
[Atomic wt : H = 1, O = 16, C = 12 amu]
- (A) 135.0 g (B) 107.65 g
(C) 90.0 g (D) 112.5 g
- 61) The vapour pressure of pure liquids 'P' and 'Q' are 450 and 750 mm of Hg respectively at 350 K. If total vapour pressure is 600 mm of Hg, the mole fractions of 'P' and 'Q' respectively will be _____ and _____.
- (A) 0.7 and 0.3 (B) 0.4 and 0.6
(C) 0.6 and 0.4 (D) 0.5 and 0.5
- 62) The freezing point depression of 645 g of aqueous solution of ethylene glycol ($C_2H_6O_2$) is 2.25 K. Find weight of ethylene glycol in the solution.
[$K_f = 1.86 \text{ K kg mol}^{-1}$; H = 1, C = 12, O = 16 amu]
- (A) 45.0 g (B) 42.50 g
(C) 48.375 g (D) 50 g
- 63) Van't Hoff factor (i) for dilute aqueous solution of $K_4[Fe(CN)_6]$, $Fe_4[Fe(CN)_6]_3$ and $[CoCl_2(en)_2]Cl_2$ are respectively _____, _____, _____.
- (A) 2, 7, 5 (B) 2, 5, 7
(C) 5, 7, 2 (D) 7, 5, 2
- 64) Calculate the potential of hydrogen electrode in contact with a solution whose pH is 10.
- (A) +0.059 V (B) -0.059 V
(C) +0.59 V (D) -0.59 V

(Space for Rough Work)



$= 72 + 12 + 96$



$(2 \times 12) + (6 \times 1) + (2 \times 16)$

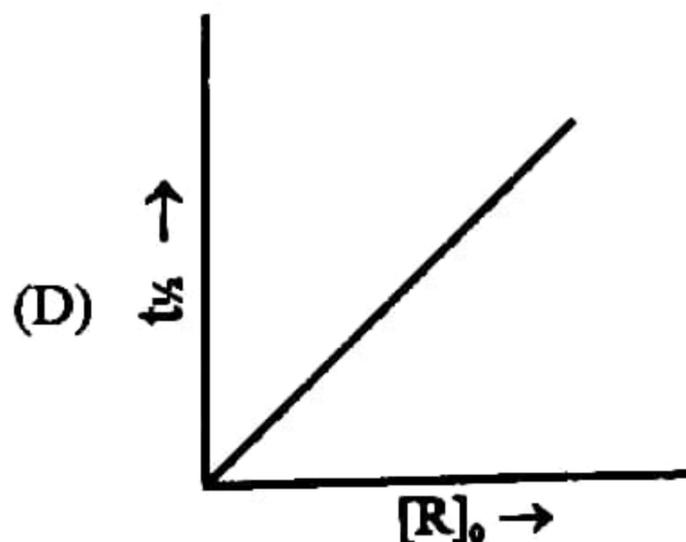
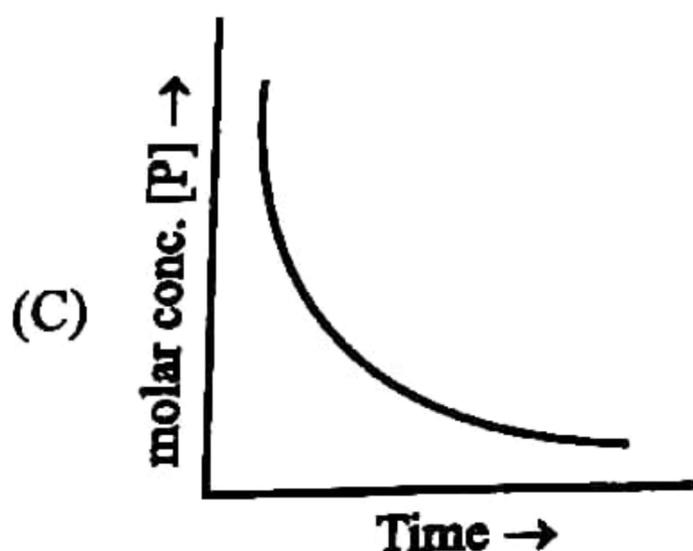
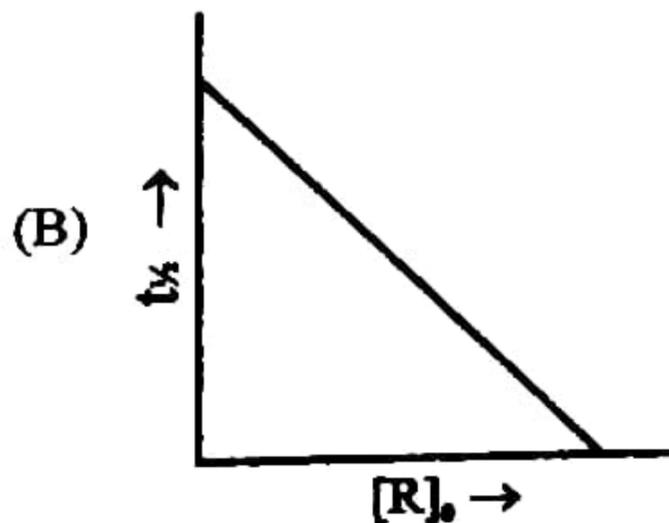
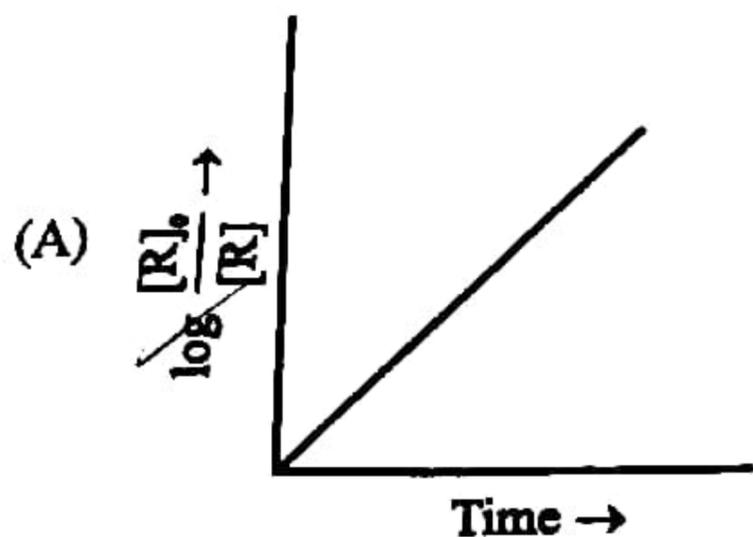
$24 + 6 + 32$

- 65) Which of the statements for solution of electrolyte is not correct?
- (A) Conductivity of solution depends on the concentration of electrolyte
 (B) Conductivity of solution depends on the nature of electrolyte
~~(C)~~ Conductivity of solution does not depend upon temperature
 (D) Conductivity of solution depends on the nature of solvent and its viscosity
- 66) During the electrolysis of higher concentration of H_2SO_4 , the product obtained at anode is _____.
- (A) $\text{O}_{2(g)}$ (B) $\text{S}_2\text{O}_8^{2-}(aq)$
~~(C)~~ $\text{SO}_{2(g)}$ (D) $\text{SO}_3^{2-}(aq)$
- 67) How much Faraday of electricity is required to reduce 1.5 mole KMnO_4 into Mn^{2+} in basic medium?
- ~~(A)~~ 4.5 F (B) 7.5 F
 (C) 6.0 F (D) 3.0 F
- 68) For any reaction the rate constant $K = 2.3 \times 10^{-5} \text{ mol}^{-3/2} \text{ L}^{3/2} \text{ S}^{-1}$; then the order of reaction will be _____.
- (A) 0.0 (zero) (B) 1.5
 (C) 0.5 (D) 2.5
- 69) Which of the following statements is incorrect for a reaction carried out in presence of catalyst?
- (A) Potential energy of reactants and products change
 (B) Equilibrium constant of the reaction does not change
~~(C)~~ There is no change in Gibbs energy of the reaction
 (D) The activation energy of the reaction decreases

(Space for Rough Work)



70) Which of the following graphs is correct for a first order reaction $R \rightarrow P$?



71) Reaction $2A \rightarrow B + 3C$ is zero order reaction. If $K = 3.5 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$; What will be the rate of production of 'C'?

(A) $1.167 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$

(B) $10.5 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$

(C) $3.5 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$

(D) $7.0 \times 10^{-4} \text{ mol L}^{-1} \text{ S}^{-1}$

(Space for Rough Work)



- 72) KMnO_4 acts as an oxidising agent in acidic medium. The number of moles of KMnO_4 that will be needed to react with one mole of sulphide ion in acidic solution is _____.
- (A) $1/5$ (B) $3/5$
(C) $4/5$ (D) $2/5$
- 73) Which one of the following is amphoteric oxide?
- (A) V_2O_3 (B) CrO
(C) Cr_2O_3 (D) CrO_3
- 74) Which of the following ion show highest spin only magnetic moment value?
- (A) Co^{2+} (B) Mn^{2+}
(C) Ti^{2+} (D) Fe^{2+}
- 75) Name the member of lanthanide series which is well known to exhibit + 4 oxidation state?
- (A) Cerium (B) Thulium
(C) Gadolinium (D) Samarium
- 76) Which one is the correct formula for coordination compound tris [ethane -1, 2- diamine] cobalt (III) sulphate
- (A) $[\text{Co}(\text{en})_3]_3(\text{SO}_4)_2$ (B) $[\text{Co}(\text{en})_3]_2(\text{SO}_4)_3$
(C) $[\text{Co}(\text{en})_3](\text{SO}_4)_2$ (D) $[\text{Co}(\text{en})_3]\text{SO}_4$

(Space for Rough Work)



- 77) Hybridizations in $[\text{Ni}(\text{CO})_4]$ and $[\text{Ni}(\text{CN})_4]^{-2}$ are respectively _____.
- (A) sp^3 and dsp^2 (B) sp^3 and sp^3
 (C) dsp^2 and sp^3 (D) dsp^2 and dsp^2
- 78) Identify the optically active compound from the following.
- (A) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$ (B) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_2$
 (C) $[\text{Co}(\text{en})_3]\text{Cl}_3$ (D) $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{Cl}$
- 79) In the complex $\text{K}[\text{Cr}(\text{H}_2\text{O})_2(\text{C}_2\text{O}_4)_2] \cdot 3\text{H}_2\text{O}$, oxidation state and co-ordination number of the central metal ion is _____ and _____.
- (A) +4, 4 (B) +3, 4
 (C) +4, 6 (D) +3, 6
- 80) Which reagent will be used for the following reaction?
- $$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 \xrightarrow{?} \text{CH}_3 - \text{CH}_2 - \text{CH}_2\text{CH}_2\text{Cl} + \text{CH}_3 - \text{CH}_2 - \underset{\text{Cl}}{\text{CH}} - \text{CH}_3$$
- (A) Cl_2 , air, Fe/dark (B) $\text{NaCl} + \text{H}_2\text{SO}_4$
 (C) $\text{Cl}_2/\text{UV light}$ (D) Cl_2 , air/dark

(Space for Rough Work)

