

- (1) Question No. 1 is compulsory.
- (2) Attempt any four questions out of remaining six questions.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if required.

(a) Answer any four :-

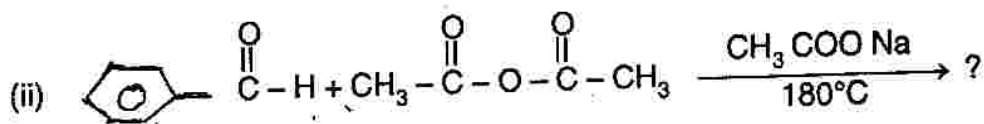
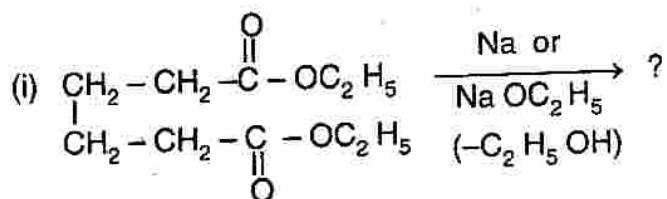
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- (i) Write the chemical formula of the following co-ordination compounds :
 - (1) Diammine silver (I) tetra iodoplatinate (II)
 - (2) Potassium trioxalate aluminate (III)
- (ii) Which is the most stable among the following and why ?
Ph CH₂, Ph₂ CH, Ph₃ C.
- (iii) Explain "Lanthanide contraction."
- (iv) Write the IUPAC names of the following co-ordination compounds :
 - (1) [Cr Cl₃ (NH₃)₃]
 - (2) [Co (NH₂)₂ (NH₃)₄] (NO₃).
- (v) Explain Halogenation of alkanes.
- (vi) How do you distinguish among 1°, 2° and 3° alcohols ? Give atleast one method.

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| (a) | (i) What is crystal field splitting ? Explain with reference to octahedral complex. | 5 |
| | (ii) How HNO ₃ is prepared by Ostwald's process ? | 5 |
| (b) | (i) Write preparation, properties, structure and applications of Xenon Tetrafluoride. | 5 |
| | (ii) Write a note on Werner's Co-ordination Theory. | 5 |
| (a) | (i) Give preparation of Phthalic acid (two methods). | 5 |
| | (ii) Distinguish between phenols and carboxylic acid. | 5 |
| (b) | (i) What is singlet carbene and Triplet carbene ? | 5 |
| | (ii) Give any two methods of manufacture of benzophenone. | 5 |
| (a) | (i) Compare Lanthanides and actinides w.r.t. their :- | 5 |
| | (1) Magnetic properties | |
| | (2) Colour and Spectra. | |
| | (ii) Explain molecular orbital structures of heteromolecular molecules. | 5 |
| (b) | (i) Write a note on-Valence bond theory. | 5 |
| | (ii) What is the effect of lone pair of electron on structure of molecules (write atleast one example). | 5 |

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5. (a) Complete the reaction and justify with the mechanism.



- (b) How following compounds are prepared (any two) :-

- (i) Glycerol
- (ii) 2-methyl indole
- (iii) Cinnamic acid.

6. Write notes on (any four) :-

- (a) Preparation, properties and structure of N₂O and N₂O₅.
- (b) Effective atomic no. theory.
- (c) Inorganic polymers.
- (d) Bonding, Non-bonding and antibonding orbitals.
- (e) Isomerism in co-ordination compounds w.r.t. co-ordination number-6.

7. (a) Explain following reactions with their mechanism and applications (any two) :-

- (i) Pinacol - Pinacolone rearrangement
- (ii) Mannich reaction
- (iii) Stobbe condensation.

- (b) (i) Explain formation of free radicals.

- (ii) How phenol is converted in to :

- (1) Anisole ?
- (2) Ortho and Para bromophenol ?