CHEMISTRY
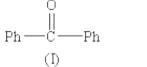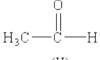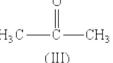
1. The nucleus of an element contains 11 protons. Its valency would be

   A) 0   B) 1   C) 2   D) 3

2. Identify the lanthanide which is obtained only by synthesis.

   A) Lu   B) Pm   C) Pr   D) Gd

3. Which one of the following compounds shows Frenkel defect?

   A) ZnS   B) CsCl   C) FeO   D) NaCl

4. A cylinder of cooking gas supplied by Indian Oil Corporation is assumed to contain 14 kg of butane (ΔH_c for C_4H_{10} = - 2600 kJ mol^{-1}). If a small family of three persons, requires 10,000 J of heat energy per day for cooking, the gas in the cylinder would last for

   A) 44 days   B) 54 days   C) 72 days   D) 63 days

5. The molar conductivities of infinite dilution for sodium iodide, sodium acetate and aluminium acetate are 12.69, 9.10 and 24.52 S cm^2 mol^{-1} respectively at 25 °C. What is the molar conductivity of AlI_3 at infinite dilution?

   A) 35 S cm^2 mol^{-1} B) 32 S cm^2 mol^{-1} C) 28 S cm^2 mol^{-1} D) 40 S cm^2 mol^{-1}

6. The number of structural isomers for the alcohols with the formula $C_5H_{11}OH$ is

   A) 4   B) 6   C) 8   D) 10

7. The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is

   A) pyridinium chloro-chromate   B) acidic dichromate   C) acidic permanganate   D) chromic anhydride in glacial acetic acid

8. The correct order of reactivity of PhMgBr with

   is

   A) I > II > III   B) III > II > I   C) II > III > I   D) I > III > II

9. The product Z in the following reaction sequence is

   A) CH_3CN B) CH_3OH C) CH_3CONH_2 D) CH_3CH_2OH

10. An unknown amine is treated with an excess of methyl iodide. Two equivalents of methyl iodide react with the amine. The amine is treated with silver oxide and water, and then heated to 120 °C. The resulting products are trimethylamine and ethylene. The unknown amine is

    A) $CH_3CH_2NHCH_3$ B) $CH_3CH_2NH_2$ C) $CH_2=CHNH_2$ D) $CH_2=CHNHCH_3$