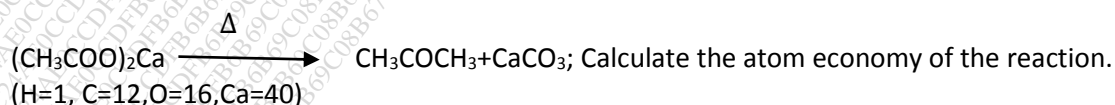


Please check whether you have got the right question paper.

- N.B:**
1. All questions are **compulsory**.
  2. **Figures** to the **right** indicate **full marks**.
  3. **The use of a log table or a non-programmable calculator is permitted.**

- Q1 A** Attempt **Any Two** of the following: **08**
- i Discuss the relevance of ASTM with reference to quality testing in chemical industry.
  - ii What are the fundamental requirements for patenting?
  - iii List the safety precautions to be taken while storing and handling of highly flammable materials.
  - iv How important is the usage of standard materials in chemical analysis?
- B** Write a note in detail on “Pharmacopeia”. **04**
- OR**
- B** Give the steps involved in the process of patenting. **04**
- Q2 A** Attempt **Any Two** of the following: **08**
- i Discuss the classification of the membrane separation processes.
  - ii Describe the construction and working of multicomponent electro-dialysis unit for desalination of brackish water.
  - iii Explain in detail the principle of microfiltration.
  - iv What are microporous and asymmetric membranes?
- B** Justify the following statement: Automation in instrumental analysis has overcome the limitations of conventional analysis. **04**
- OR**
- B** What is the selection criterion for reverse osmosis membrane? **04**
- Q3 A** Attempt **Any Two** of the following: **08**
- i What are the advantages of ionic liquids as solvent?
  - ii With suitable examples explain atom economy and atom non-economy process.
  - iii Discuss in detail the designing of green processes with reference to “Inherent Safer Design” and Process Intensification.
  - iv List the advantages of supercritical fluids over organic solvents with respect to green chemistry.
- B** Explain with suitable examples, the use of sono-chemistry in green chemical syntheses. **04**
- OR**
- B** How is atom economy calculated? The following reaction is used as a preparation of acetone from the calcium salt of acetic acid: **04**



Turn over

- Q4 A** Attempt **Any Two** of the following: **08**
- i With the emphasis on the method of detection, explain capillary electrophoresis.
  - ii Discuss the classification of carbon nano-tubes.
  - iii Explain the principle applications of gel electrophoresis.
  - iv Give an account of different factors that affect the rate of migration in zone electrophoresis.
- B** What is micellar electrokinetic capillary chromatography? Give its applications. **04**
- OR**
- B** Discuss the principle and instrumentation of SDS page and iso-electric focusing. **04**
- Q5** Attempt **Any Four** of the following: **12**
- i What are transportation symbols? Give the symbols of any two hazardous codes.
  - ii What first aid treatment is to be given to the victim for burning due to concentrated acids?
  - iii State the advantages of ultrafiltration.
  - iv Discuss the potential applications of inorganic membranes.
  - v With a suitable example, explain photo-catalysis.
  - vi Explain the term “sustainable development”.
  - vii What is the effect of migration rates in capillary electrophoresis?
  - viii Discuss the optical properties of nano materials.