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:
    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”.  

OR

B Give the steps involved in the process of patenting.

Q2  A Attempt Any Two of the following:
    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.

OR

B What is the selection criterion for reverse osmosis membrane?

Q3  A Attempt Any Two of the following:
    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.

OR

B How is atom economy calculated? The following reaction is used as a preparation of acetone from the calcium salt of acetic acid:

\[
\text{\( \Delta \)}: \text{(CH}_3\text{COO})_2\text{Ca} \rightarrow \text{CH}_3\text{COCH}_3+\text{CaCO}_3; \text{ Calculate the atom economy of the reaction.}
\]

Turn over
Q.P. Code :10796

Q4  A  Attempt Any Two of the following:  
   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.  

OR  
B  Discuss the principle and instrumentation of SDS page and iso-electric focusing.  

Q5  A  Attempt Any Four of the following:  
   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.