AS–1478

B.Sc. (Part—III) Semester—VI Examination
PETROCHEMICAL SCIENCE

Time : Three Hours] [Maximum Marks : 80

N.B. :— (1) Question No. **1** is compulsory.
(2) Remaining **SIX** questions carry 12 marks each.
(3) Give chemical equations and draw diagrams wherever necessary.

1. (A) Fill in the blanks with appropriate words :— 2

(i) When visible light is passed through a _____ it splits up into seven colours.

(ii) _____ is unit of wave length.

(iii) HPLC stands for High _____ Liquid Chromatography.

(iv) Main constituent in Natural gas is _____.

(B) Choose the correct alternative :— 2

(i) Which of following solvents is used in UV-Spectroscopy ?

(a) Ethanol (b) Water

(c) Benzene (d) All above

(ii) What is AQI ?

(a) Air Quality Index (b) Air Quality Intex

(c) Air Quality Intensity (d) All above

(iii) In polymerization process catalyst is termed as _____.

(a) Promoter (b) Initiator

(c) Ion (d) Radical

(iv) In shift converter all CO is converted into _____.

(a) CO_2 (b) H_2O

(c) CO_3 (d) CH_4

(C) Answer the following question in **ONE** sentence each :—

(i) Which major catalyst was used in IPCL plant for reforming and isomerization of Xylene ?

(ii) Define air pollution.

(iii) What do you mean by synthetic fuels ?

(iv) What is homogeneous catalyst ? 4

2. (A) Describe the following with their units and formula :

(a) Wave length 3

(b) Wave Number 3

(c) Frequency 3

(d) Energy. 3

OR

3. (P) Discuss the principle of IR spectroscopy. 6

(Q) Explain the important characteristics of electromagnetic radiation. 6

4. (A) Which are important features of NMR spectroscopy ? 6

(B) What are the applications of mass spectroscopy ? 6

OR

5. (P) Discuss theory; working and principle of mass spectrometer. 12

6. (A) Explain theory of Gas Chromatography. 6

(B) How we will compare HPLC and ELC ? 6

OR

7. (P) What is Chromatography ? Classify with tree diagram. 6

(Q) Discuss the characteristic features of HPLC. 6

8. Describe the following :—

(i) Cracking Catalyst 6

(ii) Homogeneous Catalysts. 6

OR

9. (P) What is Catalyst ? Describe importance of catalyst in petrochemical industries nowadays. 6

(Q) Which catalyst is used in various units for manufacture of synthesis gas ? 6

10. (A) Explain concept of chemical refinery. 6

(B) Describe and explain, natural gas is important feed stock for petrochemical industries. 6

OR

11. (P) In future hydrogen is considered as an important fuel. 6

(Q) "Ecology is contributing to precipitate the energy crisis" ? How ? Explain in detail. 6

12. (A) What is pollution ? Describe various types of pollution in detail. 12

OR

13. (P) Explain Ethanolamine sweetening process for removal of sulphur and its derivaties with its process flow. 12