

B.Sc. (Part-I) Semester-I Examination
1S : PETROCHEMICAL SCIENCE

Time—Three Hours]

[Maximum Marks—80

Note: (1) Question No. 1 is compulsory and carries 8 marks.

(2) Remaining all **SIX** questions carry 12 marks each.

(3) Give chemical equations and draw diagram wherever necessary.

(4) Use of calculator is permitted.

1. (A) Fill in the blanks :

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(i) 1 Atm. _____ mmHg.

(ii) The residue from ADU further distilled under _____.

(iii) Chemical which obtained from petroleum is called as _____.

(iv) Generally _____ type of hydrocarbons are absent in crude oil.

(B) Choose correct alternative :

2

(i) C.N.G. stands for :

(a) Continuous Natural Gas

(b) Compair Natural Gas

(c) Compressed Natural Gas

(d) Conform Natural Gas

(ii) Petroleum fractions have :

- (a) Boiling point
- (b) Boiling range
- (c) Boiling ratio
- (d) Boiling curve

(iii) Seismic method is used for _____.

- (a) Distillation of Petroleum
- (b) Drilling of Petroleum
- (c) Origin of Petroleum
- (d) Exploration of Petroleum

(iv) Specify gravity =

- (a) Wt. of sample/Wt. of water
- (b) Wt. of water/Wt. of sample
- (c) Wt. of sample/Wt. of Toluene
- (d) Wt. of sample/Wt. of Ice

(C) Answer the following questions in **one** sentence :

4

- (i) What is knocking ?
- (ii) What is petroleum ?
- (iii) What is the significance of flash point ?
- (iv) What is the molecular weight of pentane ?

- 10. (a) What is distillation ? On which basic principle it works ? Discuss its utility in petroleum refinery. 6
- (b) Why desalting and dehydration of crude oil is carried out ? Discuss any one method in detail. 6

OR

- 11. (p) What is reflux ? Discuss its uses. 3
- (q) Explain the following reflux with diagram :
 - (i) Pump back reflux 3
 - (ii) Top tray reflux 3
 - (iii) Pump around reflux. 3
- 12. Describe the following. How it is determined ?
 - (i) Aniline Point 4
 - (ii) Carbon Residue 4
 - (iii) Vapour Pressure. 4

OR

- 13. Define the following with its significance :
 - (i) Flash Point 3
 - (ii) Smoke Point 3
 - (iii) Pour Point 3
 - (iv) Octane Number. 3

2. Define the following with its formula and with suitable examples :

(a) Molarity	4
(b) Normality	4
(c) Molality	4

OR

3. (p) Note down the units of following basic quantity in C.G.S., MKS , FPS, SI :

(i) Length	
(ii) Mass	
(iii) Temperature	
(iv) Time.	6

- (q) Describe the following :

(i) Vapour pressure	3
(ii) Part per million.	3

4. (a) What do you mean by primary fuel ? Explain it with suitable examples. 6

- (b) What is Natural Gas ? Discuss utility of petroleum as a fuel with suitable examples. 6

OR

5. (p) Name the various types of Natural Gas. Discuss any two of them in detail. 6

- (q) What are the Non-Conventional energy resources ? Explain any two of them. 6

6. What is bore hole logging ? Discuss following bore hole logging methods with principle involved :
- (i) Electrical Logging
 - (ii) Acoustic Logging
 - (iii) Radioactive Logging
 - (iv) Density Logging. 12

OR

7. (p) Which are the essential parts of rotary drilling rig ? Describe any four of them. 6
- (q) Describe the organic theory for origin of Petroleum. 6
8. (a) Describe the Mallison Method for classification of crude oil. 4
- (b) Describe the following with its general formula ,and properties with suitable examples :
- (i) Olefins 4
 - (ii) Aromatics 4

OR

9. (p) Describe U.O.P. characterization factor for classification of crude oil in detail. 6
- (q) Name the various Hydrocarbons and Non-hydrocarbons present in crude oil. Give their general formula and example with structural formula. 6