

B.Sc. (Part-I) Semester—I Examination
PETROCHEMICAL SCIENCE

Time : Three Hours]

[Maximum Marks : 80

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

(2) Remaining **six** questions carry **12** marks each.

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

(4) Use of calculator is permitted.

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

(i) Density of the substance is its ratio of mass to its _____.

(ii) Conversion of vegetable of organic matter in to hydrocarbon is generally _____ process.

(iii) Drilling fluid is normally called as _____.

(iv) Melting point increases with increase in _____ and symmetry of molecules.

(B) Choose correct alternative : 2

(i) _____ is defined as molecular weight to its valence.

(a) Molecular weight

(b) Atomic weight

(c) Equivalent weight

(d) Mass weight

(ii) Conradson Carbon residues of good oil should not exceed _____.

(a) 0.8–0.10%

(b) 0.1–0.2%

(c) 0.11–0.12%

(d) 0.82 to 0.89%

(iii) The molecular weight of glucose is.

(a) 98

(b) 106

(c) 180

(d) 170

(iv) Regeneration of copper chloride is achieved by blowing air in contact with.

- (a) HCl (b) H_2SO_4
(c) HNO_3 (d) $AlCl_3$

(C) Answer the following question in **one** sentence : 4

- (i) Which is first technique used for crude oil drilling ?
(ii) Which type of physical impurities present in crude oil ?
(iii) Which fractions are separated in A.D.V. ?
(iv) Define Acid value.

2. (A) What is pH ? Explain in detail. 8

(B) Describe term "Vapour Pressure" in detail. 4

OR

3. (P) What is Unit ? Explain with example. 6

(Q) Explain term weigh fraction with example. 4

(R) Which are units of following quantity :

- (i) Area (ii) Velocity
(iii) Pressure (iv) Power ? 2

4. (A) What is Natural Gas ? How is it classified according to its sources ? Explain any two of them. 8

(B) What is primary and secondary fuel ? Explain with suitable example. 4

OR

5. (P) Describe the various uses of petroleum as a fuel and petrochemical with example. 8

(Q) Describe wet and dry natural gas with composition. 4

6. (A) Describe Gravity based method adapted for crude oil exploration. 6

(B) Discuss cable tool drilling method in detail. 6

OR

7. (P) Explain Inorganic Theory of origin and formation of petroleum. 6
(Q) Why lubrication is required for drilling bit in drilling operation. Explain in detail. 6
8. Describe the following Hydrocarbons with their formula, general properties and examples in detail.
(i) Aromatics 6
(ii) Naphthenes. 6

OR

9. (P) What is hydrocarbon ? Explain with example. 6
(Q) Explain composition of crude oil in detail. 6
10. (A) Why crude oil purification is necessary before fractionation ? 6
(B) Desalting of petroleum crude is important task in petroleum refineries. Why ? How this process removes the salt ? 6

OR

11. (P) Various fractions obtained from A.D.U. explain each one of them with their boiling range. 6
(Q) What is reflux ? Explain term "pump around reflux" with neat sketch. 6
12. (A) What is calorific value of fuel ? Explain in detail. 6
(B) What is acid value ? Explain with its formula. 6

OR

13. (P) How to calculate API gravity ? Explain with their formula. 6
(Q) Define smoke point with its significance. 6

