

## SARDAR PATEL UNIVERSITY

## SEMESTER EXAM, M.Sc. INDUSTRIAL CHEMISTRY

## SEMESTER -2, PS02CICH10-PETROCHEMICAL TECHNOLOGY

09-04-2016, Saturday, TIME: 10:30 a.m to 1:30 p.m

Total Marks: 70

**Note: Attempt all questions. Draw neat and labeled diagram where ever necessary. Figures on the right show marks.**

Q.1 Answer the following MCQs.

(08)

1. \_\_\_\_\_ is the chief component of natural gas.  
A. Methane B. Ethane C. Propane D. Butane
2. \_\_\_\_\_ is use to remove moisture from natural gas.  
A. Distillation B. Drying C. Filtration D. Zeolite
3. \_\_\_\_\_ is the first major operation for refining of crude oils.  
A. Extraction B. Adsorption C. Fractional distillation D. Absorption
4. For the better separation of mixture by distillation, the reflux ratio should be \_\_\_\_\_.  
A. Lower B. Higher C. Medium D. None of these
5. Main aim of viscosity breaking is to \_\_\_\_\_.  
A. Remove impurities B. Reduce pour point C. Increase octane no. D. All of these
6. \_\_\_\_\_ are major reactions in catalytic reforming process.  
A. Dehydrocyclization B. Isomerization C. Hydrocracking D. All of these
7. Carbon disulphide is primarily used for production of \_\_\_\_\_.  
A. Nylon B. Rayon C. Freon D. Neon
8. Synthesis gas is use to produce following important chemicals  
A. Ammonia B. Methanol C. Both A & B D. None of these

Q.2 Answer the following short questions (Any 7)

(14)

1. What is natural gas? Explain associated and non-associated natural gas.
2. What are oil shales?
3. Enlist various physical separation processes and chemical conversion processes used for the production of hydrocarbon intermediates.

P.T.O

4. What is coking? Differentiate between Delayed coking and Fluid coking.

5. What are FCC & DCC?

6. What is synthesis gas? Enlist the methods used for its production.

7. What are NLGs?

8. Why ethylene is known as 'king of petrochemicals'?

9. Enlist the important chemicals derived from toluene.

**Q.3 (a)** Discuss various treatments for removing acid gases from natural gas. (06)

**Q.3 (b)** Discuss the chief constituents present in crude oil and classify the crude oil on the basis of relative amount of hydrocarbon classes present in it. (06)

OR

**Q.3 (b)** Write a note on following raw materials for petrochemicals:

i. Coal ii. Tar sand iii. Gas hydrates (06)

**Q.4 (a)** Write a note on following physical separation processes:

i. Atmospheric distillation ii. Vacuum distillation (06)

**Q.4 (b)** Explain the aim of catalytic reforming with special emphasis on:

i. feed ii. catalysts iii. reactions (06)

OR

**Q.4 (b)** Explain the aim of catalytic cracking process with special emphasis on:

i. feed ii. catalysts iii. reactions (06)

**Q.5 (a)** Enlist various important chemicals produced from methane and discuss the production of  $CS_2$  and HCN in detail. (06)

**Q.5 (b)** Discuss chemicals produced from propane. (06)

OR

**Q.5 (b)** Discuss production of ammonia from synthesis gas and enlist various important chemicals that are produced from ammonia. (06)

**Q.6 (a)** Present an overview of chemicals obtained from ethylene. (06)

**Q.6 (b)** Give a brief account of chemicals produced from propylene. (06)

OR

**Q.6 (b)** Give a brief account of chemicals produced from benzene. (06)

Good Luck