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B. Tech
PECH 7304

Sixth Semester Examination – 2008

PETROLEUM REFINERY ENGINEERING

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory
and any **five** from the rest.*

*The figures in the right-hand margin
indicate marks.*

1. (a) How petroleum deposits are detected in the crust of earth ? Mention the names of any four Indian petroleum industries.
- (b) What do you mean by wet well and dry well ?



- (c) Arrange the following fractions of petroleum in ascending order of their boiling points.
- (i) Heavy fuel oil
 - (ii) Naptha
 - (iii) Lubricating oil
 - (iv) Diesel

Write any two uses of gasoline.

- (d) What is the necessity of cracking and name the catalysts used for this process.
- (e) Differentiate between unisol and mercapsol process.
- (f) How crude oil is classified in to different types according to Mallisons classification.
- (g) What is sweetening process and name the solvent used in doctor's sweetening process ?
- (h) Name two major components present in LPG.

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Contd.

- (i) Define co-relation index.
- (j) Differentiate between ignition point and flash point.
2. Explain different theories which describe the origin and formation of petroleum in the crust of earth. Differentiate between origin of petroleum and coal. 10
3. What are the different units used for the refining of petroleum ? Explain with neat flow diagram. 10
4. Why purification process is necessary for petroleum products ? Explain different dewaxing processes used for lubricating oil. 3+7
5. What are the different distillation characteristics required for crude oil ? Explain the working principle of TBP apparatus. 10
6. Define cracking. How it is different from reforming. Write down all the reactions involved in it and the effect of various parameters. 10

7. With neat diagrams describe the purification treatment adopted for gasoline. 10
8. Mention different reactions involved in alkylation along with the catalyst used. With a neat flow diagram explain sulphuric acid alkylation process and compare it with hydrogen fluoride process. 10