

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech., Summer_2021 - 22 Examination

Semester: 8**Subject Code: 203120451****Subject Name: Unconventional Energy Resources****Date: 28/03/2022****Time: 10:30 am to 01:00 pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) (15)

1. The best type of coal in terms of purity is?

(a) Lignite	(b) Anthracite
(c) Bituminous	(d) Sub-bituminous
2. Coals mainly contains.....?
3. Which of the following are the favorable conditions for formation of gas hydrate?

(a) High P and High T	(b) High P and Low T
(c) Low P and High T	(d) Low P and Low T
4. The hardest type of coal, consisting of nearly pure carbon is.....?
5.process is the formation of gas hydrate?
6. Write two names of production methods of heavy oil?
7.unconventional resource is a fine grained sedimentary rock that contains kerogen?
8. Which of the following liquid petroleum is defined as heavy oil?

(a) <30 API and <400 cp	(b) >30 API and >400 cp
(c) <20 API and <200 cp	(d) <20 API and >200 cp
9. Which of the following recovery process is used on gas hydrate?

(a) Depressurization	(b) Thermal stimulation
(c) Inhibitor injection	(d) All of the above
10. What is the primary production mechanism for the coal-bed methane?

(a) Depressurization	(b) Hydraulic fracturing
(c) Injections of solvents	(d) Production of solvent
11. Structure..... has hexagonal crystal system?
12. As the coal rank increases, the amount of methane produced.....?
13. The Langmiur equation is generally derived using?
14. The shale formation has.....permeability?
15.is a measure of percentage of incident light reflected from the surface of vitrinite particles in a sedimentary rock?

Q.2 Answer the following questions. (Attempt any three) (15)

- A) What are oil sands? Define origin of oil sands?
- B) What is cold heavy oil production with sand (CHOPS)? Define advantages and disadvantages of CHOPS.
- C) What is total organic carbon (TOC)? Explain in short.
- D) What is coal bed methane? Define the geological aspects of coal formation.

Q.3 A) What do you mean by oil shale? Define the mining method of oil shale with the help of diagram. (07)

- B) What do you mean by Kerogen? Explain all types of kerogen with the help of diagram in detail. (08)**

OR

- B) How you can differentiate between depressurization and inhibitor injection? Explain with the help of diagram. (08)**

Q.4 A) What is the basic difference between lost gas and residual gas? Explain properly. (07)

OR

- A) What do you mean by fluid flow in coal bed reservoir? Explain in detail with diagram and equation. (07)**

- B) What is the basic difference between SAGD and VAPEX? Explain in detail with the help of diagrams. (08)**