**Roll No: ----------**

# UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

## End Term Examinations – MAY, 2020

**Program/course: B.Tech: APE (Gas)** | **Semester : VIII**
**Subject: Petroleum Engineering Economics** | **Max. Marks : 100**
**Code : PEEO 404** | **Duration : 3 Hrs**
**No. of page/s: 3**

Note: Assume Suitable and necessary data if required and Justify

**Section-A** (Marks: 30)

Answer ***all*** the questions

**1.** The net income available to stockholders is $ 200 and total assets are $ 1050 then return on common equity is

a. 0.250 b. 0.190 c. 0.809 d. 0.235 [5] [CO1]

**2.** In Cash flow diagram

a. Time 0 is considered to be the present
b. Time 1 is considered to be the end of time period 1
c. A vertical arrow pointing up indicates a positive cash flow
d. All the above [5] [CO2]

**3.** Which of the following costs are not considered in inventory decisions [5] [CO4]

a. Carrying Costs b. Ordering Costs c. Shortage Costs d. Machining Costs

**4.** A supply chain is essentially a sequence of linking [5] [CO4]

a. Supplier and Manufacturer
b. Events in Marketing
c. Suppliers and customers
d. Warehouse and Wholesaler

**5.** What is a Crack Spread? [5] [CO3]

**6.** If an oil company expects a cash flow of $800,000 by the end of 10 years, and 10% is the current interest rate on money, the N.P.V. of this venture is_____ [5] [CO3]

## **Section-B** (Marks: 50)

Answer ***all*** the questions and ***any one*** in question ***no: 11***

**7.** A company is considering an investment in a project. An engineering department estimated that battery limits FCI is to be $ 19,000,000. Land allotted for the project is $ 500,000 and start-up expenses to be capitalized are expected to $ 900,000. The company normally uses 20% of the TCI for the working capital. Determine the estimated amount of working capital required for the project. [10] [CO2]

**8.** A Refiner determines that the total cost of producing Q barrels of gasoline per day is

$$\mathbf{TQ = 4{,}000 + 2Q}$$

The revenue (in thousands of dollars) from selling *Q* barrels of gasoline per day is

$$\mathbf{TR = 4Q}$$

a. What is Break Even Point
b. What is Cost and Revenue at Break Even Point
c. How many barrels of gasoline must be produced and sold in order to earn a profit of $100,000? [10] [CO1]

**9.** Explain the tools used in investment analysis for evaluating the profitability. [10] [CO3]

**10.** Discuss the factors involved in economic evaluation of an oil field [10] [CO1]

**11.** What are the problems associated with SCM? Explain in brief The Bullwhip Effect.

OR

What are the objectives of Retailers? Explain why Retail sales are Lost [10] [CO4]

## **Section-C (**Marks: 20)

**12.** Four Different heat exchangers have been designed to recover heat. The prices, costs and savings for each exchanger is as below:

[20][CO3]

| Heat Exchanger | Design A | Design B | Design C | Design D |
|---|---|---|---|---|
| Total Initial Installed Cost, $ | 10,000 | 16,000 | 20,000 | 26,000 |
| Operating Cost, $/yr | 100 | 100 | 100 | 100 |
| Fixed Charges, % of initial cost/yr | 20 | 20 | 20 | 20 |
| Value of Heat Saved, $/yr | 4100 | 6000 | 6900 | 8850 |

The Management demands at least a 10% annual return based on the initial investment Neglecting effects due to income taxes and the time value of money, which design is to be selected ? Discuss in detail the approach for selecting particular design.