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**UNIVERSITY OF PETROLEUM
AND ENERGY STUDIES**



End Semester Examination – April, 2017

Program/course: B.Tech : APE(GE) & APE(UP)
Subject: Petroleum Engineering Economics
Code : PEEO 401
No. of page/s: 2

Semester : VIII
Max. Marks : 100
Duration : 3 Hrs

Instructions:

1. Assume suitable and necessary data if required and justify.
2. Write clearly and legibly.
3. No student is allowed to leave before one hour.

PART-A

Answer all FOUR questions from this section. All questions carry equal marks. [5 X 4 = 20]

1. Illustrate by drawing the cash flow diagram of annuity that ‘an annuity is a finite stream of fixed payments over a specified period of time’. Explain the difference between Ordinary annuity and Annuity due. Give some examples of annuities.
2. Costs involved in the inventory management system are Inventory Carrying Cost, Inventory Ordering cost, and Inventory Shortage cost. Explain in a sentence or two each of these.
3. Explain what is meant by depreciation? Distinguish between Straight Line depreciation method and double declining depreciation method.
4. What are the major components for capital cost estimation in a Gas or oil pipeline project?

PART-B

Answer any FOUR questions from this section. All questions carry equal marks. [10 X 4 = 40]

5. Write a short note on ‘The objectives of retailers’? Specifically discuss retail-marketing strategies, retail-marketing mix, store positioning etc. Also, explain why retail sales are lost.
6. What does Gross Refinery Margin (GRM) mean? Discuss the factors that determine the profitability of a refinery.
7. A company has purchased an equipment whose first cost (V) is 100,000 \$ with an estimated life of 8 years. The estimated salvage value (V_s) of the equipment at the end of its lifetime is 20,000 \$. Determine the book value (V_a), and depreciation, d_a for the 5th year using ‘Sum-of-the-years digits’ (SOYD) method of depreciation. Recall that for SOYD, is given by following equation:

$$d_a = \text{depreciation for year } a = \frac{(n - a + 1)}{\sum_1^n a} (V - V_s) = \frac{2(n - a + 1)}{n(n + 1)} (V - V_s)$$

Solve the same problem, but this time using (i) straight-line depreciation method, and (ii) sinking fund method with an interest rate of 12% compounded annually. Compare the results.

8. A natural gas pipeline transports 100 MMSCFD (millions standard cubic feet per day) at a load factor of 95%. The capital cost is estimated at, \$60 million, and the annual operating cost is \$5 million. Amortizing the capital at 10% for a project life of 25 years, determine the cost of service and transportation tariff for this pipeline.
9. A proposed chemical plant will require a fixed-capital investment of \$10 million. It is estimated that the working capital will amount to 25% of the total investment, and annual depreciation costs are estimated to be 10% of the fixed-capital investment. If the annual profit will be \$3 million, determine the standard percent return on the total investment (TI), and the minimum payout period.

PART-C

Answer any TWO questions from this section. All questions carry equal marks. [20 X 2= 40]

10. Discuss in detail the causes and consequences of Bullwhip Effect. Explain the strategies to combat this effect.
11. Explain what is meant by logistics and supply chain management? Explain the supply chain planning by demonstrating the Dynamics of Material Flow and Dynamics of Order Flow. What are important supply chain decisions? Explain the role of some soft-wares like SAP and Peoplesoft.
12. How the economic evaluation of oil field is carried out? Explain the concept of optimal abandonment time.
13. Explain what is meant by EOQ model of inventory management. With a diagram, show EOQ Inventory Order Cycle. Also comment on Total Cost of Inventory and show the optimum with help of a diagram. In the equation $Q^* = \sqrt{\frac{2DS}{H}}$, identify each term. Explain how EOQ model changes with Variable Demand.

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