Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, DEC 2022

Program Name : B. Tech. (APE Gas) **Semester : V**
Course Name : Petroleum Engineering Economics **Time : 3 hours**
Course Code : CHGS 3015 P **Max. Marks: 100**
Nos. of page(s) : 03

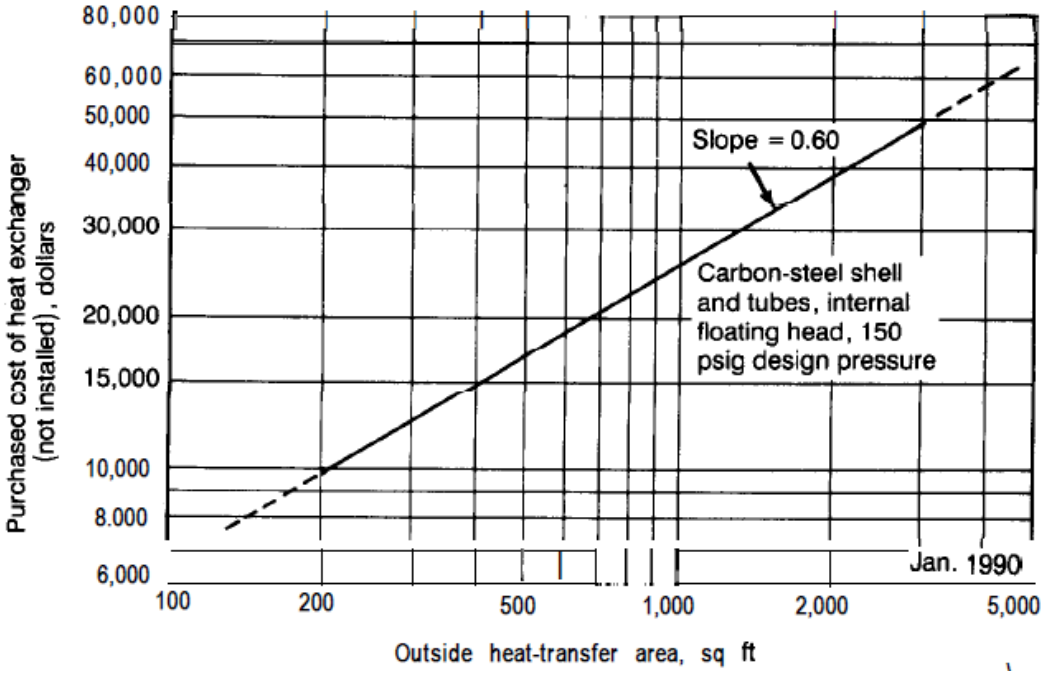
Instructions : Assume any missing data. Draw the diagrams, wherever necessary. Write roll number and name on any additional sheet that you use.

SECTION A
(5X4=20 marks)

S. No.		Marks	CO
1	***Enumerate*** Journal with single and double entry bookkeeping.	**4**	**CO1**
2	***Explain*** the use of annuity in the industrial economics.	**4**	**CO2**
3	***Explain*** depletion and obsolescence in depreciation.	**4**	**CO2**
4	**Demonstrate** the concept of incremental investment and selection of project in the industrial economics.	**4**	**CO3**
5	***Dramatize*** the cost indices used in petroleum industry.	**4**	**CO3**
	SECTION B **(4X10=40 marks)**		
6	***Explain*** the importance of accountancy in the industry. Brief about journal and ledger entries in the accountancy principles.	**10**	**CO1**
7	The cost of a piece of equipment is Rs. 25,00,000. The scrap value of the equipment after it's useful life of 10 years will be Rs. 50,000. **Enumerate** the value of the asset after 4 years using 1. Straight line method 2. Decline balance method 3. Double decline balance method.	**10**	**CO1**
8	**Enumerate** the effective annual interest rate when the interest is compounding continuously and amount of money that would accumulate after 6 years with the initial investment of 35,000 and a nominal interest rate of 20 percent.	**10**	**CO2**
9	**Interpret** the relations for annuity due. (R represent the uniform periodic payment made during n discrete periods in an annuity due with an interest rate i and the total amount of annuity at the end is S) The periodic payment will be paid at the beginning of each period like an LIC premium plan.	**10**	**CO2**

SECTION C
(2 X 20=40 marks)

<table>
<tr>
<td>10</td>
<td>Solve the rate of return based on discounted cash flow method for the following.
Initial Fixed capital investment = Rs. 16,00,000
Working capital investment = Rs. 1,26,000
Service life = 7 years
Salvage value = Rs. 55,000
Yearly cash flow is as shown in the table
<table>
<tr><td>Year</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>Cash(Lakhs) Rs</td><td>3.21</td><td>3.76</td><td>4.04</td><td>3.67</td><td>3.99</td><td>4.02</td><td>3.96</td></tr>
</table>
</td>
<td>20</td>
<td>CO3</td>
</tr>
<tr>
<td>11</td>
<td>A petrochemical industry is needs some modifications in the design. The installed heat exchangers need to be replaced with one heat exchanger of equal area in comparison with the two heat exchangers. The old heat exchangers were of carbon steel shell and tube having an outside heat exchanging area of 400 sq ft. which need to be upgraded to 800 sq ft. Use sixth tenth factor rule and solve for the present cost of the heat exchanger. Also use Marshall and Swift all-industry and process-industry equipment indexes to accurately estimate the present cost of the heat exchanger

Marshall and Swift all-industry and process-industry equipment indexes states that the index at 1926 is 100 and at present time its index value is 1526.3 at present.
The following graph is applicable for the sixth tenth factor rule.
 

OR

Illustrate the importance of economics in the oil and gas industry including the marketing and pricing.</td>
<td>20</td>
<td>CO3</td>
</tr>
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