Name:

Enrolment No:

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

Course: Risk Management in Exploration **Semester: VIII**
Program: B.Tech.GSE **Time : 03 hrs.**
Course Code: HSFS 4017P **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	List **five** factors that impact the economics of oil and gas projects.	[4]	CO1
Q.2	Define NCF and Abandonment Cost	[2×2]	CO2
Q.3	Write the full form of : RCA, EIA , HAZOP, HAZID	[4]	CO5
Q.4	Explain the term salvage value with suitable example.	[4]	CO3
Q.5	Define decision tree. Also outline its application in petroleum exploration.	[2+2]	CO4

SECTION B
(4Qx10M= 40 Marks)

Q.6	(a) Describe geological risks encountered in oil and gas industry. Also outline how to mitigate these risks. **OR,** (b) Define Sensitivity analysis. How do you perform sensitivity analysis for oil and gas exploration?	[10]	CO5
Q.7	Describe the Service Contract legal system that has been developed to address the rights and obligations of host Govt. and of private investors in oil and gas industry.	[10]	CO6

<table>
<tr><td>Q.8</td><td>An oil and gas company purchased a compressor for ₹ 50,000 on 2nd of March. It has an estimated useful life of 5 years and residual value of ₹2000. If the rate of depreciation is considered as 20% , how will you compute decline balance depreciation for the machinery?</td><td>[10]</td><td>CO3</td></tr>
<tr><td>Q.9</td><td>If the probability of a successful well is 0.9 and you have two alternatives which are:

(i) Farm out : Producer's return is worth $75,000 , a dry hole causes no profit or loss.

(ii) Drilling the well: A dry hole costs $300,000 and a hit brings $ 800,000 (after all costs).

You need to take a decision for your company whether it should go for farming out or go for drilling option by evaluating your options on the basis of decision tree analysis.</td><td>[10]</td><td>CO4</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">SECTION-C
(2Qx20M=40 Marks)</td></tr>
<tr><td>Q.10</td><td>Compute the Payback Period for the given cash flows of the four projects, E, F, G, and H, and take a decision on which projects do you accept and reject with a three year cut-off period for recapturing the initial cash outflow?

<table>
<tr><td>Projects</td><td>E</td><td>F</td><td>G</td><td>H</td></tr>
<tr><td>Cost</td><td>$40,000</td><td>$250,000</td><td>$75,000</td><td>$100,000</td></tr>
<tr><td>Cash Flow Year One</td><td>$10,000</td><td>$40,000</td><td>$20,000</td><td>$30,000</td></tr>
<tr><td>Cash Flow Year Two</td><td>$10,000</td><td>$120,000</td><td>$35,000</td><td>$30,000</td></tr>
<tr><td>Cash Flow Year Three</td><td>$10,000</td><td>$200,000</td><td>$40,000</td><td>$30,000</td></tr>
<tr><td>Cash Flow Year Four</td><td>$10,000</td><td>$200,000</td><td>$40,000</td><td>$20,000</td></tr>
<tr><td>Cash Flow Year Five</td><td>$10,000</td><td>$200,000</td><td>$35,000</td><td>$10,000</td></tr>
<tr><td>Cash Flow Year Six</td><td>$10,000</td><td>$200,000</td><td>$20,000</td><td>$0</td></tr>
</table></td><td>[20]</td><td>CO4</td></tr>
</table>

	OR, Find the IRR of an investment having initial cash outflow of $250,000. The cash inflows during the first, second, third and fourth years are expected to be $55,200, $90,000, $75,100 and $50,400 respectively. Assume that the rate of interest as 20%.		
Q.11	Calculate the project's net cash flow of the project. The details of the project in any particular year are given as below: Production = 20MMbbl ; Oil Price = $ 100/bbl; Royalty Rate = 10%; Tax Rate = 50% ; CAPEX = $200 Million, OPEX = $20 Million (Assume that previous CAPEX was $100 million with 20% straight line capital allowance). Estimate the net Cash flow for just 1 year of the project.	[20]	CO2