



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Nov-Dec., 2021

Course: Economics and Risk management in Exploration
Program: M.Tech. PE
Course Code: PEGS 8001

Semester: III
Time: 3 hrs.
Max. Marks: 100

	SECTION A Each Question carries 5 Marks	(5× 4M = 20 Marks)
Q.1	Define the term CAPEX supported with example	CO1
Q.2	Define Straight line Depreciation Method . Give one example	CO3
Q.3	If the annual production of Compressor units by "X" company is 1250 and the gross revenue is 100,000,000 rupees. What will be the product price of a Compressor unit?	CO1
Q.4	Describe the concept of Time Value of Money, and state the importance of time value of money	CO4
Q.5	Define Delphi technique that is used in qualitative Risk analysis.	CO5
	SECTION B 1. Each question carries 10 marks 2. Instruction: Write short / brief notes	(4 ×10M = 40 Marks)
Q.1	Suppose a Co. is considering investing in an oil and gas venture which involves capital expenditure of \$500 million used up over the life of the project and regular annual running costs of \$75 million over a period of 5 years after the first year. The Co. anticipates that annual income generated by the business will be \$ 200 million in each of those five years. The Co. accepts that tax will be payable at the rate of 35% . How would you calculate tax on the project? OR, Compute the Cost Recovery & Profit Oil for an oil and gas company assuming its CAPEX of \$ 500 million spread over the life of the project of 5 years and the OPEX of \$ 50 million over a period of 5 years after the first year. The Co. anticipates that	CO2

	annual income will be generated by the business as \$ 250 million in each of those five years and considers the payable tax rate is at the rate of 35% . The Company's share in this project has been anticipated as 60%.															
Q.2	<p>Compute the profitability index for a petroleum project considering 10% as discount rate. The future cash flows of the project are given as below:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Net Cash Flows</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>\$ 5,000,000</td> </tr> <tr> <td>1</td> <td>\$200,000</td> </tr> <tr> <td>2</td> <td>\$200,000</td> </tr> <tr> <td>3</td> <td>\$500,000</td> </tr> <tr> <td>4</td> <td>\$400,000</td> </tr> <tr> <td>5</td> <td>\$100,000</td> </tr> </tbody> </table>	Year	Net Cash Flows	0	\$ 5,000,000	1	\$200,000	2	\$200,000	3	\$500,000	4	\$400,000	5	\$100,000	CO4
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5	\$100,000															
Q.3	<p>Calculate the Pay Back Period for an oil and gas project with an initial investment of \$190,000 that provides an annual cash flow of \$30,000 per year for the first three years and \$40,000 per year for 4th and 5th year and \$45,000 per year for 6th to 8th year. Using the payback period decision model, you take a decision whether this project can be accepted or not with a three cut off period for recapturing the initial cash outflow.</p>	CO4														
Q.4	<p>Illustrate the impacts of supply chain risks and human capital risks on hydrocarbon industry and also demonstrate the ways to mitigate them.</p>	CO5														
	Section C															
	<p>1. Each Question carries 20 Marks. 2. Instruction: Write long answer.</p>	(2 × 20M= 40 Marks)														
Q.1	<p>(a) Classify the legal arrangements that are present in the petroleum industry.</p> <p>(b) Illustrate in details the key features of the legal systems that have been developed to address the rights and obligations of host Govt. and of private investors in the petroleum industry.</p>	CO6														

Q.2	<p>(a) Illustrate the principal steps that are followed in the risk management process in the hydrocarbon industry..</p> <p>(b) A general criticism for the capital intensive hydrocarbon projects is that many companies progress too far with projects without identifying the associated risks that result into uncertain feasibility of the project. Illustrate the stage – gate process that is mainly used by the oil and gas companies to overcome these risks and uncertainties.</p> <p>OR,</p> <p>(a) Explain the term risk management.</p> <p>(b) Illustrate the risk assessment matrix models for Qualitative and Quantitative risk analysis that are used for monitoring , prioritizing and developing action plans for managing risks in the oil and gas projects.</p>	CO5
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