UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2023

Course: Petroleum Economics and Risk Management   Semester   : II
Program: M.Sc. (Petroleum Geosciences)   Time   : 3 hr
Course Code: PEGS 7035   Max. Marks : 100

Instructions: Assume any missing data. The notations used here have the usual meanings. Draw the diagrams, wherever necessary.

SECTION - A (5 × 4 = 20 marks) (Answer all the questions)		
S. No.		**Marks**	**CO**
1.	Differentiate between the ring fenced and non-ring fenced projects.	**4**	**CO1**
2.	Discuss the use of capital allowance in the calculation of taxable income.	**4**	**CO2**
3.	Discuss the role of inflation in cash flow analysis.	**4**	**CO3**
4.	Differentiate between the concessionary systems and production sharing contracts.	**4**	**CO2**
5.	Explain the main characteristics of an efficient fiscal system?	**4**	**CO2**
SECTION - B (4 × 10 = 40 marks) (Answer all the questions)		
S. No.		**Marks**	**CO**
6.	Define internal rate of return (IRR). Discuss the use of IRR in comparing the economic viability of projects.	**10**	**CO4**
7.	Define sensitivity analysis. Explain the typical parameters which may be varied in the sensitivity analysis.	**10**	**CO5**
8.	Discuss the stage gate process for the risk analysis for major capital investments.	**10**	**CO5**
9.	Describe the life cycle of a petroleum project.	**10**	**CO4**
SECTION – C (2 × 20 = 40 marks) (Answer all the questions)		
10.(a)	Discuss the types of depreciation and their impact on the cash flow analysis.	**8**	**CO3**
(b)	An oil company purchases a sucker rod pump costing $1 million to be used in the production of oil. It is assumed that the sucker rod pump would be able to produce 40	**12**	

lakhs barrel of oil after which it will have a scrap value of $ 0.2 million. It is also assumed that during the first year, the company would be able to produce 2 lakhs barrels of oil with the help of that sucker rod pump. Compute the annual depreciation using units of production depreciation method

11. An oil industry has three potential projects all with an initial investment of $2,000,000. The capital budget for the year will only allow the industry to accept one of the three projects. Given the discount rates and the future cash flows of each project, calculate the NPVs and payback period of each project. Suggest the project accepted by industry based on the NPV and payback period.

Year	Cash Flow ($)		
	Project 1	Project 2	Project 3
1	600000	1000000	300,000
2	600000	800000	500000
3	600000	600000	700000
4	600000	400000	900000
5	600000	200000	1100000
Discount rate, i (%)	9	15	22

20

CO6

OR

(a) Discuss the use of Expected Monetary Value (EMV) in analyzing the economic viability of project.

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(b) You have the mineral rights on a piece of land that you believe may have oil reserves. There is only 10% chance that you will strike oil if you drill, but the payoff is $ 200000. It cost $10000 to drill. The alternative is not to drill at all in which case your profit is zero. Draw a decision tree to represent your problem. Should you drill?

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