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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, Dec., 2021

Course: Petroleum Economics and Risk Management | **Semester: III**
Program: M.Sc. Petroleum GeoSciences | **Time: 3 hrs.**
Course Code: PEGS 8013P | **Max. Marks: 100**

	SECTION A **Each Question carries 4 Marks**	**(5× 4M = 20 Marks)**
Q.1	Define Declining Balance Depreciation Method.	CO3
Q.2	What is abandonment cost for oil and gas project?	CO2
Q.3	Define Internal Rate of Return. List its decision rules.	CO4
Q.3	Give the full form of the following: (i) HAZID (ii) HAZOP (iii) EIA (iv) RCA	CO5
Q.5	Define Sensitivity analysis technique.	CO5
	SECTION B **1. Each question carries 10 marks** **2. Instruction: Write short / brief notes**	**(4 ×10M = 40 Marks)**
Q.1	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 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.	CO3
Q.2	Suppose in any particular year, (i) the production of oil = 25 MMbbl, (ii) Oil price = S55/bbl, (iii) Royalty rate = 12% , (iv) Tax rate = 50 %, (v) CAPEX = $ 100 Million, (vi) OPEX = $25 Million, (Assume that previous CAPEX was $150 million with 25% straight line capital allowance). Calculate the net Cash flow for just 1 year of the project	CO2

OR,

Suppose a Company is considering for investment in an oil and gas venture which involves capital expenditure of $5000 million used up over the life of the project and regular annual running costs of $100 million over a period of 5 years after the first year. The Co. anticipates that annual income generated by the business will be $ 10,000 million in each of those five years. The Co assumes that tax will be payable at the rate of 12% . How would you calculate tax for the project?

Q.3 Illustrate the impacts of price volatility risk and climate & environmental risk on hydrocarbon industry and also demonstrate the ways to mitigate them. CO5

Q.4 You are given the cash flows of the two oil and gas projects, A and B. Using the Payback Period decision model, calculate the Pay back period of the projects and determine which project should be accepted with a three year cut-off period for recapturing the initial cash outflow? CO4

Projects	A	B
Cost	$250,000	$100,000
Cash Flow Year One	$40,000	$30,000
Cash Flow Year Two	$120,000	$30,000
Cash Flow Year Three	$200,000	$30,000
Cash Flow Year Four	$200,000	$20,000
Cash Flow Year Five	$200,000	$10,000
Cash Flow Year Six	$200,000	$0

Section C **(2 × 20M= 40 Marks)**

1. Each Question carries 20 Marks.
2. Instruction: Write long answer.

Q.1 An oil industry has three potential projects all with an initial cost 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 of each project and you as a project team leader, suggest your management which project should they accept based on NPV. CO4

Cash Flows	Project M	Project N	Project O
Year one	$500,000	$600,000	$1,000,000
Year two	$500,000	$600,000	$800,000
Year three	$500,000	$600,000	$600,000
Year four	$500,000	$600,000	$400,000
Year five	$500,000	$600,000	$200,000
Discount Rate	6%	9%	15%

OR,

An oil and gas company uses the IRR to evaluate investment opportunity and need to make a decision regarding the economic viability of a project. The company anticipates the cash flows for five years as given below considering the initial investment as $10,000 and the cost of capital or the discount rate as 12%. Compute the IRR of the project and you as a project team leader, suggest your management whether the project can be accepted for investment or not based on IRR value.

Year	**Cash Flows**
1	$4,000
2	$6,000
3	$8,000
4	$7,000
5	$4,000

Q.2 (a) Explain Concessionary and Contractual systems that are present in the petroleum industry. CO6

(b) Illustrate in details the significant features of the legal arrangements that have been developed to address the rights and obligations of host govt. and of private investors in the petroleum industry.