Name:

Enrolment No:

UPES

End Semester Examination, May 2023

Course: Economics & Risk Management in Oil & Gas Industry **Semester: II**

Program: M.Tech. PE **Time : 03 hrs.**

Course Code: PEAU 7024 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		**Marks**	**CO**
Q. 1	Define cost benefit analysis for oil and gas project.	[4]	CO1
Q.2	Define NCF and Gross Revenue	[4]	CO2
Q.3	Define Time value of money.	[4]	CO4
Q.4	Define Pay Back period and illustrate its decision rules for oil and gas business.	[4]	CO4
Q.5	Distinguish between scoping and screening of project.	[4]	CO5

SECTION B
(4Qx10M= 40 Marks)

Q .6	Illustrate Briefly the following terms: (a) Cash Flow, (b) Capex, (c) Opex, (d) Tax and (e) Royalty	[5Q×2M =10]	CO2
Q.7	Describe the principal stages in risk management process for an oil and gas asset.	[10]	CO5
Q.8	(a) Explain Declining Balance depreciation method. (b) A Hydrocarbon company purchased a machine costing $ 12500 with a useful life of 5 years. The machine is expected to have a salvage value of $2500 at the end of its useful life. The rate of Depreciation is 10%. Compute the annual Depreciation using declining balance depreciation method.	[2+8=10]	CO3

<table>
<tr><td>Q.9</td><td>(a) Illustrate the impacts of geological risks and human capital risks on hydrocarbon industry and demonstrate the ways to mitigate them.

OR

(b) Describe SWOT analysis and Root cause analysis used in qualitative risk analysis for an oil and gas asset.</td><td>[10]</td><td>CO5</td></tr>
<tr><td colspan="4">SECTION-C
(2Qx20M=40 Marks)</td></tr>
<tr><td>Q.10</td><td>(a) Assume that an oil and gas company is considering two projects, namely Project X and Project Y and wants to calculate the NPV for each project. Both project X and project Y are four-year projects. The cash flows of both the projects for four years are given below:

<table>
<tr><td>Year</td><td>Cash Flows of Project X</td><td>Cash Flows of Project Y</td></tr>
<tr><td>1</td><td>$ 5000</td><td>$ 1000</td></tr>
<tr><td>2</td><td>$4000</td><td>$3000</td></tr>
<tr><td>3</td><td>$3000</td><td>$4000</td></tr>
<tr><td>4</td><td>$1000</td><td>$6750</td></tr>
</table>
The company’s cost of capital is 10% for each project and the initial investment amount is $10000. Compute the NPV of each project and take a decision on which project the company should invest in.

OR,

(b) An investment of $200,000 in the oil and gas project is expected the following cash inflows in six years.

Year 1: $70,000
Year 2: $60,000
Year 3: $55,000
Year 4: $40,000
Year 5: $30,000
Year 6: $25,000</td><td>[20]</td><td>CO4</td></tr>
</table>

	Compute the Pay Back Period of the investment. Should the investment be made if the company wants to recover the initial investment in 3 years or less?		
Q.11	Describe the legal arrangements that are present in the petroleum industry illustrating in detail 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.	[20]	CO6