UPES

UNIVERSITY OF PETROLEUM & ENERGY STUDIES

End Semester Examination, December 2018

Program/course: **MBA (OG)**   Semester – I
Subject: **Fundamental of Petroleum Exploration**   Max. Marks: 100
Code   :   **OGOG7002**   Duration   : 3 Hrs.
No. of page/s: 2

Note: All sections are compulsory.

SECTION A (5 x 4 =20 Marks)		
Note: All Questions are compulsory.		
S. No.		Marks	CO
Q 1	What is the significance of a Geological Time Scale? Write in ascending order the following of the *Geological Eras* (increasing times) and their age in millions years. a. Mesozoic b. Paleozoic c. Cenozoic d. Proterozoic	5	CO1, CO2
Q 2	Draw the *Rock Symbol* for each of the following rock types. a. Carbonate b. Volcanic c. Shale d. Conglomerate e. Granite	5	CO1, CO2
Q 3	Draw the *Well Symbol* against each of the followings Well type. a. Abandoned b. Dry Well c. Gas Well d. Dry well with Oil Show e. Well Location	5	CO1, CO2

Q 4	Kerogen varies in chemical composition, by weight percentage, within the following ranges (fill the gaps). a. Carbon........ b. Hydrogen....... c. Nitrogen......... d. Oxygen. .... e. Sulfur.............	5	CO1, CO2

SECTION B (5X4 = 20 Marks)
Note: Attempt any of the four questions and answer in brief

Q 5	Describe the formation of sedimentary basins and Indian sedimentary basins classification with respect to petroleum exploration	5	CO4
Q 6	Describe the significance of petroleum reserves and resource and total world petroleum reserves estimated as on 2017	5	CO3, CO4
Q 7	Describe natural oil seeps and their significance in hydrocarbon exploration. How you distinguish *natural oil seep from man- made sources such as oil tankers*	5	CO2
Q 8	What are Strategic Petroleum reserves (SPR) and India's preparedness with respect to this?	5	CO3, CO4
Q 9	Describe the frontier areas of petroleum exploration and the present status petroleum production from deep-water basins in India.	5	CO3, CO4

SECTION-C (10x3 = 30 Marks)
Note: Attempt any three questions

Q 10	Describe the main petroleum system elements. Summarize the primary and secondary hydrocarbon migration processes	10	CO1, CO2
Q 11	Describe the *Production Sharing Contracts* (PSC) and explain the terms *Cost Oil* and *Profit Oil. Draw a model PSC contract.*	10	CO4, CO5
Q 12	What are geophysical, geochemical and geological methods for petroleum exploration?. Describe the importance of seismic 3D surveys	10	CO2, CO4
Q 13	What are the main characteristic of petroleum reservoirs? Describe various types of natural reservoir rocks	10	CO2

SECTION-D (10x3 = 30 Marks)
Note: All questions are compulsory

Q 14	Describe the main "Economic Indicators", of an economic model for, run over an oil and gas investment opportunity. Describe the "Decision Tree" analysis to make investment decision	10	CO4, CO5

Q 15	Describe the classical *volumetric equation for oil-in-place*. Also, calculate the six values of Reserves necessary to draw the tornado chart for the three-parameter system, using the following input value**s,** draw the *Tornado chart*.	10	**CO4, CO5**

Parameters (Units)	Worst	Most-likely	Best
A-Area (acres)	200	300	400
H-Net Pay (ft)	35	50	65
R-Recovery factor (STB/ac-ft)	75	100	200
Reserves (MMSTB	------	-----	-----

Q 16	Complete the following discounted cash flow table, plot the cumulative cash flow graph and calculate profitability indicator such as P/I Ratio.	10	**CO4, CO5**

Year	Net Cash ($MM)	Cumulative Cash Flow ($MM)	Discounted Cash Flow at.... 5%	10%	20%
1993	-450	-450	-450	-450	-450
1994	-250	-700	-667	-645	- 605
1995	-50				
1996	100				
1997	180				
1998	220				
1999	240				
2000	260				
2001	250				
2002	230				
2003	220				
2004	200				
2005	180				
2006	160				
2007	130				
2008	100				
Totals	1720	------	------	------	-------