



PIONEER INTERNATIONAL UNIVERSITY

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UNIVERSITY EXAMINATIONS

ACADEMIC YEAR: 2021/2022

SEMESTER: SEP-DEC

UNIT CODE: DPG 106

UNIT NAME: INTRODUCTION TO OIL AND GAS INDUSTRY

DATE: DEC 2021

TIME: 1.5 HOURS

Instructions: Answer question **ONE** and any other **TWO** questions.

Question 1

- a) Differentiate between Conventional and Non-conventional sources/methods of extracting Oil and Gas. **[2 Marks]**
- b) Most oil and gas companies are segmented and organized according to business segment, assets, or function. Discuss the three segments providing three characteristics of each segment **[6 Marks]**
- c) Describe the generation and migration of oil and gas in the subsurface of the earth **[8 Marks]**
- d) During production of oil, the environment may be affected especially if no remedial actions are in place. Identify six environmental effects that may be attributed to oil and gas production. **[4 Marks]**

Question 2

- a) Briefly discuss the following terms as used in the Oil and Gas Industry
 - i. Fracking
 - ii. Oil Field Services(OFS)
 - iii. Onshore and Offshore oil drilling **[3 Marks]**
- b) Differentiate between the following:
 - i. A Wildcat and Dry Hole
 - ii. A Successful Well and Development Well
 - iii. A Source Rock and Reservoir Rock
 - iv. Proved Oil reserves and Unproved Oil Reserves **[8 Marks]**
- c) List 8 global factors affecting the Markets and Pricing of oil and gas commodity **[4 Marks]**
- d) Before an Oil and Gas company decommissions an oil field, there are at least three activities they are required to undertake. Discuss the three activities before abandonment of an oil field. **[2 Marks]**

- e) While the major use of crude oil is for fuel and natural gas, often petroleum and natural gas are employed to generate electricity, there are many other uses of petroleum that we interact with on a daily basis. Discuss at least six of other uses and benefits attributed to the oil and gas. **[3 Marks]**

Question 3

- a) Define a Petroleum System. **[2 marks]**
- b) Oil and gas are formed by the thermal cracking of organic compounds buried in fine-grained rocks. Complete the decomposition formulae below:
- Algae = _____ = Oil-prone
 - Wood = Hydrogen poor = _____ **[1 Mark]**
- c) Geopolitics of oil has played a central role in international relations. Some would argue that geopolitical rivalry over access to oil and gas resources has been the source of much of the conflict in the 20th century. Explain five key factors associated with geopolitics. **[5 Marks]**
- d) Estimated Ultimate Recovery (EUR) is defined as getting as many hydrocarbons out of the ground to maximize the value of a lease holding. Discuss the challenges faced by International Oil Companies that may hinder the maximization of value of an onshore or offshore rig. **[5 Marks]**
- e) The indication of potential for faults or traps become drilling targets, called a drilling prospect. Briefly discuss the following terms used in drilling of Crude oil.
- Drilling mud
 - Casing and Cementing
 - Cable tool rigs **[3 Marks]**
- f) Contractors are typically used by oil and gas exploration and producing companies to provide some or all of the supporting services required to drill and develop producing fields. Identify and give examples of four support services provided to a multinational in any upstream sector of oil and gas **[4 Marks]**

Question 4

- a) Rigs come in a variety of configurations and designs for surface environments that range from arctic to desert, ocean to land. Briefly discuss the following rigs built in an offshore oil and gas production site.
- Submersible Rigs
 - Semi-submersible Rigs
 - Platform Rigs
 - Drill Ships **[8 Marks]**
- b) What do you understand by the term a kick and how is it controlled? **[2 Marks]**