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Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) REGULAR EXAMINATION MARCH 2025
SECOND SEMESTER
Discipline Specific Core Course (DSC) - MG2DSCPEG100 - DRILLING,
TRANSPORTATION AND REFINING TECHNIQUES
(2024 ADMISSION ONWARDS)

Duration: 1.5 Hours

Maximum Marks: 50

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I)
and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Multiple choice questions

Answer all questions

Each question carries 1 marks

1. Select which of the following technologies helps to detect leaks and monitor the condition of offshore rigs in real-time. [K] / [CO1]
 - a). Drones and remote sensing systems
 - b). Manual inspection by workers
 - c). Automated drilling rigs
 - d). Seismic wave monitoring

2. Identify the purpose of casing in an oil well. [U] / [CO1]
 - a). To drill faster
 - b). To prevent the collapse of the wellbore
 - c). To remove drilling fluid
 - d). To increase production rate

3. What environmental risk is associated with improper disposal of oil field water? [K] / [CO1]
 - a). Increase in crude oil prices
 - b). Increase in drilling efficiency

- c). Contamination of groundwater d). Reduction in oil density
4. Connate water brines are classified as : [U] / [CO1]
- a). Meteoric brines
 - b). Fossil seawater trapped in sediments
 - c). Hydrothermal brines
 - d). Volcanic brines
5. Which of the following best defines a 'complex refinery' ? [U] / [CO3]
- a). A refinery that distills crude oil without further processing
 - b). A refinery that includes catalytic cracking and reforming units
 - c). A refinery that produces only lubricating oil
 - d). A refinery that specializes in bitumen emulsification
6. Relate from the following the importance of sweetening process in refinery operations. [U] / [CO4]
- a). To increase the boiling point of crude oil
 - b). To remove sulfur compounds and improve fuel quality
 - c). To separate heavier hydrocarbons
 - d). To enhance lubricating oil viscosity
7. A plant requires a heat exchanger for a high-pressure system with temperatures exceeding 260°C. Which exchanger is most suitable? [U] / [CO5]
- a). Plate heat exchanger
 - b). Spiral heat exchanger
 - c). Shell and tube heat exchanger
 - d). Double-pipe heat exchanger
8. Identify the natural method of oil recovery. [U] / [CO1]
- a). Gas flood method b). Water flood method
 - c). Dissolved gas drive d). Chemical injection

9. How would you use the viscosity test to assess the performance of lubricants and oils in practical applications? [K] / [CO6]
- a). The temperature at which the fluid freezes
 - b). The resistance of the fluid to flow
 - c). The ability of the fluid to vaporize
 - d). The concentration of dissolved gases
10. The standard method used to determine the cloud point: [U] / [CO6]
- a). ASTM D97
 - b). ASTM D86
 - c). ASTM D2500
 - d). ASTM D445

[1x10 = 10]

Part B

Short Answer Questions

Answer any **4** questions

Each question carries **3** marks

11. Outline the difference between offshore and onshore drilling. [K] / [CO1]
12. Discuss the applications of nitrogen blanketing. [U] / [CO2]
13. How does the presence of sulfur analyze the quality and usability of petroleum products? [An] / [CO4]
14. Describe the differences between LAN (Low Aromatic Naphtha) and HAN (High Aromatic Naphtha) based on composition and applications. [U] / [CO4]
15. Describe how water circulation influence hydrocarbon migration. [U] / [CO1]
16. Illustrate the softening point test of bitumen. [An] / [CO6]

[3x4 = 12]

Part C

Short Essay Questions

Answer any **4** questions

Each question carries **7** marks

17. Illustrate the environmental concerns associated with extracting petroleum from alternative sources. [A] / [CO1]
18. Describe the advantages and disadvantages of transporting oil and gas by pipeline, and railway. [U] / [CO2]

19. Give an account on composition of different distillates -Kerosene, Diesel, Fuel oil, Bitumen. [U] / [CO4]
20. Compare and contrast Natural Rubber Modified Bitumen and Bitumen Emulsion in terms of performance, durability, and environmental impact. [An] / [CO4]
21. Discuss in detail about PMC method of analysis. [U] / [CO6]
22. Examine the significance of density measurement in industrial applications. [An] / [CO6]

[7x4 = 28]