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PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM END TERM EXAMINATION - AUGUST 2024

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| **Semester: Summer End Semester Exam** | **Date: 05-08-2024** |
| **Course Code: PET216** | **Time: 1:00pm-4:00pm** |
| **Course Name: Enhanced Oil Recovery** | **Max Marks: 100** |
| **Program: B. Tech.** | **Weightage: 50%** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *The question paper consists of 3 parts.*
3. *Scientific and non-programmable calculators are permitted.*
4. *Do not write any information on the question paper besides Roll Number.*
5. *Use Graph Paper wherever needed. Write the Question No. on the graph paper with a pen.*

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| **PART A** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 2M=10M** | | | |
| 1 | Define "Miscible Flooding" in the context of enhanced oil recovery. | (CO 1) | [Knowledge] |
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| 2 | State the significance of Reservoir Heterogeneity in the application of EOR methods. | (CO 1) | [Knowledge] |
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| 3 | Compare and contrast Thermal and Chemical Enhanced Oil Recovery Methods. | (CO 2) | [Knowledge] |
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| 4 | List the concept of Reservoir Sweep Efficiency in Enhanced Oil Recovery. | (CO 3) | [Knowledge] |
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| 5 | Outline the advantages and limitations of using CO2 for Enhanced Oil Recovery. | (CO 3) | [Knowledge] |
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| 6 | Define the term "Immiscible Gas Flooding" in the context of Enhanced Oil Recovery. | (CO 4) | [Knowledge] |
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| 7 | Outline the concept of "Minimum Miscibility Pressure" in Gas Flooding operations. | (CO 4) | [Knowledge] |
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| **PART B** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** | | | |
| 8 | Summarize the aspects by which Enhanced Oil Recovery methods contribute to reducing greenhouse gas emissions from oil and gas production. | (CO 1) | [Comprehension] |
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| 9 | Discuss the potential societal impacts of the widespread adoption of Microbial-Enhanced Oil Recovery on local communities. | (CO 1) | [Comprehension] |
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| 10 | Classify the advancements in Nanotechnology to enhance the effectiveness of gas flooding techniques in EOR. | (CO 2) | [Comprehension] |
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| 11 | Evaluate the potential of integrating renewable energy sources into EOR processes to reduce carbon intensity. | (CO 2) | [Comprehension] |
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| 12 | Develop the economic viability of scaling up Microbial Enhanced Oil Recovery techniques for commercial application. | (CO 2) | [Comprehension] |
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| 13 | Identify the extent to which enhanced oil recovery techniques can contribute to bridging the gap between current oil reserves and future energy demand projections. | (CO 3) | [Comprehension] |
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| 14 | Interpret the potential for cross-sectoral collaboration between the oil and gas industry and academia to drive innovation in EOR technologies. | (CO 3) | [Comprehension] |
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| **PART C** | | | |
| **ANSWER ANY 2 QUESTIONS 2Q X 20M=40M** | | | |
| 15 | Formulate the criterion of a Petroleum Engineer tasked with designing an Immiscible Gas Flooding project for a heavy oil reservoir in a remote location, overcoming logistical challenges and technical complexities. | (CO 3) | [Application] |
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| 16 | Design the process of an Oil Company facing declining production in a mature oil field and their decision to implement Miscible Gas Flooding as an Enhanced Oil Recovery solution. | (CO 3) | [Application] |
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| 17 | Formulate the process of a Petroleum Engineer overcoming technical challenges to successfully implement Foam-Assisted Gas Flooding in a fractured reservoir, revolutionizing oil recovery strategies in challenging geological environments. | (CO 4) | [Application] |
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