| Name:<br>Enrolment No: | UPES |
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**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**
**End Semester Examination, May 2019**

**Course: Petrochemical Processes** **Semester: VI**
**Program: B. Tech (Chemical Eng. R&PC)VI** **Time : 03 Hrs.**
**Course code: CHEG 432** **Max. Marks: 100**

**Instructions: All questions are to be answered. Question No: 9 and 11 have a choice in form of OR. One part is to be answered.**

**SECTION A**

| S. No. | | Marks | CO |
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| | **Write short notes for question No: 1 to 3.** | | |
| Q 1 | Oxidative & non-oxidative activation of Methane. | **4** | **CO2** |
| Q 2 | Value chain examples using various feedstock's to olefins. | **4** | **CO1** |
| Q 3 | Philips Olefins Conversion Technology ( POCT) | **4** | **CO2** |
| Q 4 | **Calculate** how much propylene approximately would be available from a Naphtha cracker producing 0.6 Million tons Per annum of ethylene? | **4** | **CO3** |
| Q 5 | **Calculate** how much light naphtha is required to produce one ton of ethylene by steam cracking with normal severity? | **4** | **CO3** |
| | **SECTION B** | | |
| Q 6 | What are different Fluidization Regime in a fluidized bed reactor? Explain with the help of diagram. | **10** | **CO3** |
| Q 7 | What is the difference between Partial combustion and complete combustion mode in fluidized Bed Catalytic cracking? | **10** | **CO3** |
| Q 8 | Describe in brief mechanism, kinetics & thermodynamic aspects of ammonia synthesis. Provide briefings of technology & essential phases involved in its manufacture. | **10** | **CO3** |
| Q 9 | What are the key processes for the manufacture of light olefins? Describe the process parameters and process flow diagram of Steam Cracking process using Naphtha as feed- stock.<br>0R<br>What are the various processes for the manufacture of Formaldehyde and current technology status in India and technology gaps? Give its various applications, as intermediate and direct application areas.. | **10** | **CO3**<br><br>**CO3** |

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| | **SECTION-C** | | |
| Q 10 | Describe the thermodynamics and process technology for dehydrogenation of normal paraffin's, especially that of C3-C4 to maximize corresponding olefins. How oxidative dehydrogenation helps in improving the process? | **20** | **CO3** |
| Q 11 | Describe the configuration of integrated UOP aromatic complex as part of a petrochemical plant. Name various process units, their objectives and importance while explaining the flow scheme especially keeping in mind the cyclic nature of the product demand.<br><br>**OR**<br><br>As a technical manager of a newly commissioned Indian petrochemical plant, mention in detail why and what kind of technologies you would foresee & propose for the production of key/ core petrochemicals and their trade globally for profitably? Give reasons to justify your proposal so that the country becomes globally competitive quality leader and a low cost petrochemical manufacturing hub. | **20** | **CO4**<br><br>**CO1 &CO5** |