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No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIFTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019

**Course Code: CH361**

**Course Name: ENERGY ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks.*

Marks

- |   |  |      |
|---|--|------|
| 1 | a) List out and explain any five world energy resources and its consumption.   | (10) |
|   | b) Enumerate and describe any five possible solutions for energy crisis.   | (5)  |
| 2 | With a neat schematic diagram, explain the components and working of a hydro-electric power plant. Also enumerate the merits and demerits of hydroelectric power plants. | (15) |
| 3 | a) Describe nuclear fuel cycle with a neat flow sheet.   | (7)  |
|   | b) Differentiate and explain the following terms with suitable examples  |      |
|   | i. Primary energy sources and secondary energy sources   |      |
|   | ii. Conventional energy sources and non-conventional energy sources  | (8)  |
|   | iii. Commercial energy sources and non-commercial energy sources   |      |
|   | iv. Renewable energy sources and non-renewable energy sources  |      |

**PART B**

*Answer any two full questions, each carries 15 marks.*

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|---|--|------|
| 4 | a) Explain the working and components of a wind electric power generation unit with a neat schematic figure. | (10) |
|   | b) With a neat sketch explain the process of solar distillation.   | (5)  |
| 5 | a) Explain the principle and working of open cycle ocean thermal energy conversion with a neat figure.       | (10) |
|   | b) List out and explain different ocean energy conversion techniques.  | (5)  |
| 6 | a) Explain the working of solar pond with a neat schematic diagram.  | (7)  |
|   | b) Classify biomass energy resources with examples and list out any four techniques for biomass conversion.  | (8)  |

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) Explain any four types of fuel cells with a neat sketch, clearly mentioning the anode, cathode and electrode reactions. (20)
- 8 a) Explain the principle of magnetohydrodynamic power generation with a neat sketch. List out the different components. (10)
- b) Describe the environmental aspects of energy use highlighting the pollution caused by use of energy. (10)
- 9 a) Substantiate any three energy conservation opportunities (ECOs) in chemical process industry. (15)
- b) Define energy audit. List out the objectives of energy audit. (5)

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