Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EE3013** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ENERGY ENGINEERING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Identify the major Coal Washeries and Refineries of crude oil in the country and present the trend in net import of petroleum products. | CO2 | 7 |
| b. | Evaluate on the methology used for energy commodity balance and WPI. | CO2 | 7 |
| c. | Discuss on the statistical data of foreign trade in energy products. | CO3 | 6 |
| (OR) | | | | |
| 2. | a. | Identify the grid interactive renewable power statistics of India with a graphical outline of the same. | CO2 | 10 |
| b. | Investigate on the formation of the fossil fuels during the Carboniferous Period and comment on the same. | CO3 | 10 |
| 3. | a. | Plan the various ways of extracting energy from biomass and outline their technologies in detail. | CO3 | 10 |
| b. | Illustrate the working of solar water heaters operation and its characteristics. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Criticize on the thermal performance of flat plate collectors using first law of thermodynamics. | CO2 | 10 |
| b. | Summarize on the power extraction from wind energy using betz model. | CO2 | 10 |
| 5. | a. | Name a device that converts chemical energy into electrical energy, water, and heat through electrochemical reactions with a schematic sketch of the same. | CO1 | 6 |
| b. | Criticize on the outcomes and performance of the Kyoto protocol implementation. | CO2 | 8 |
| c. | Illustrate the intrinsic differences between a fuel cell and a battery. | CO1 | 6 |
| (OR) | | | | |
| 6. | a. | Explain the construction and operation of the various types of fuel cells with their applications. | CO1 | 10 |
| b. | Plan the various ways of preventing air pollution and global warming. | CO3 | 10 |
| 7. |  | Assess the various physical and mechanical effects of degradation in wood,plastics and metals. | CO1 | 20 |
| (OR) | | | | |
| 8. | a. | Justify on the note elastomers can cause other plastics to corrode or melt due to prolonged contact. | CO3 | 10 |
| b. | List the various means of the occurance of electro-chemical corrosion in metals and write in brief on wet corrosion. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Evaluate on the functional domain selection in a cyber security for wireless networks. | CO2 | 8 |
| b. | Draw the main components of the SCADA system in distribution management systems. | CO1 | 5 |
| c. | Summarize on the transmission system of smart grids with relevant diagrams. | CO3 | 7 |