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Question Paper Code: AEE003



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech III Semester End Examinations (Regular) - November, 2018

Regulation: IARE – R16

## POWER GENERATION SYSTEMS

Time: 3 Hours

(EEE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

### UNIT – I

- (a) Draw the general layout of modern thermal power plant and explain the working of different parts in thermal power plant. [7M]

(b) Write any five advantages and disadvantages of thermal Power plant and mention the important thermal power plants existing in India. [7M]
- (a) Demonstrate the performance of any two types of boilers used in thermal power plants. [7M]

(b) Explain briefly the functions of turbines, condensers and chimney. [7M]

### UNIT – II

- (a) Sketch the layout of hydroelectric power plant and explain the functions of each component in it. [7M]

(b) List out the important considerations in site selections of hydro power plant in modern electrical system. Discuss the advantages and limitations of this plant. [7M]
- (a) Differentiate Pelton wheel turbine with Francis turbine. [7M]

(b) Explain briefly the concept of pumped storage plants, storage requirements and mass curve. [7M]

### UNIT – III

- (a) Explain briefly about the solar constant, extra-terrestrial and terrestrial solar radiation. [7M]

(b) Discuss about the types of solar collectors used to collect the solar energy. [7M]
- (a) What is solar Photovoltaic effect and also explain the general block diagram for standalone solar PV System. [7M]

(b) Draw the I-V characteristics curve of solar PV system and explain about the Output power, efficiency and fill factor of solar PV system. [7M]

#### UNIT – IV

7. (a) Describe with a neat sketch the working of a Wind Energy Conversion System (WECS) with main components. [7M]
- (b) Compare induction generators and synchronous generators used in power generating systems. [7M]
8. (a) Discuss in detail about the various types of electrical generator used in wind energy systems. [7M]
- (b) Discuss in detail about the wind velocity and its directions are taken in wind energy systems. [7M]

#### UNIT – V

9. (a) Draw and explain the block diagram of Nuclear power station. [7M]
- (b) Explain the typical pressurized water reactor along with advantages and disadvantages. [7M]
10. (a) Discuss the difference between a pressurized water reactor nuclear power plant and boiling water reactor nuclear power plant? [7M]
- (b) Explain briefly about radiation hazards and nuclear waste disposal. [7M]

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