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**INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal-500043, Hyderabad

**B.Tech IV SEMESTER END EXAMINATIONS (REGULAR) - JULY 2022**

Regulation:UG20

**ELECTRICAL POWER GENERATION SYSTEMS****Time: 3 Hours (ELECTRICAL AND ELECTRONICS ENGINEERING) Max Marks: 70****Answer ALL questions in Module I and II****Answer ONE out of two questions in Modules III, IV and V**

(NOTE: Provision is given to answer TWO questions from among one of the Modules III / IV / V)

**All Questions Carry Equal Marks****All parts of the question must be answered in one place only****MODULE – I**

1. (a) With a neat sketch describe the operation of a gas power station and show the importance of each section. [BL: Understand| CO: 1|Marks: 7]
- (b) Illustrate the role of super heaters, condensers and cooling towers in thermal power station. List its advantages and disadvantages. [BL: Understand| CO: 1|Marks: 7]

**MODULE – II**

2. (a) Explain the superiority of hydro power generation over fossil fuel-based power generations [BL: Understand| CO: 2|Marks: 7]
- (b) How do the rate of water flow, head and overall efficiency of operation influence the power output of a hydropower station? [BL: Understand| CO: 2|Marks: 7]

**MODULE – III**

3. (a) Explain the impact of the direction of solar radiation and shading on the output of a solar panel. [BL: Understand| CO: 3|Marks: 7]
- (b) Describe the process of calculation of solar radiation on the tilted surface with the help of a neat sketch. [BL: Understand| CO: 3|Marks: 7]
4. (a) With a neat sketch, describe each component of a standalone PV system. [BL: Understand| CO: 4|Marks: 7]
- (b) What is the role of Solar radiation data, solar concentrators and solar collectors in solar power plant? Explain in detail. [BL: Understand| CO: 4|Marks: 7]

**MODULE – IV**

5. (a) Describe each component of a wind energy conversion System with the help of a neat diagram. [BL: Understand| CO: 5|Marks: 7]
- (b) Briefly explain about offshore and onshore wind generation. Give comparison with advantages and disadvantages. [BL: Understand| CO: 5|Marks: 7]
6. (a) List the major advantage of doubly-fed induction generators over permanent magnet generators and DC generators. [BL: Understand| CO: 5|Marks: 7]

- (b) Illustrate the suitability of induction generators in wind energy conversions.

[BL: Understand| CO: 5|Marks: 7]

### MODULE – V

7. (a) What is load curve? List and explain its importance of it in the generation of electrical power.

[BL: Understand| CO: 6|Marks: 7]

- (b) Explain daily industrial load curve and residential load curve with the help of a case study.

[BL: Understand| CO: 6|Marks: 7]

8. (a) Discuss the objectives of tariffs. Briefly explain about different types of tariffs in power sector.

[BL: Understand| CO: 6|Marks: 7]

- (b) Calculate the load factor when

i) Monthly energy consumption is 36000 units and maximum demand is 100 kW.

ii) Monthly energy consumption is 36000 units and maximum demand is reduced to 70 kW.

[BL: Apply| CO: 6|Marks: 7]

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