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10EE36

# Third Semester B.E. Degree Examination, Dec.2015/Jan.2016
## Electric Power Generation

Time: 3 hrs. Max. Marks:100

**Note:** *1. Answer any FIVE full questions, selecting atleast TWO questions from each part.*
*2. Missing data, if any, may be suitably assumed.*

### PART – A

1 a. With a neat schematic diagram, explain the essential elements of high head hydroelectric power plant. **(08 Marks)**

b. Explain working of wind energy conversion system with a block diagram. **(06 Marks)**

c. Mention any three merits and three demerits of wind energy. **(06 Marks)**

2 a. Write short notes on :
i) Air pre heater
ii) condenser
iii) super heater
iv) boiler
v) turbo alternator. **(10 Marks)**

b. Explain briefly why the overall efficiency of thermal or steam power plant is very low? **(05 Marks)**

c. Mention the factors to be considered for site selection of steam power plant. **(05 Marks)**

3 a. Explain the working of gas turbine power plant with a schematic diagram. **(08 Marks)**

b. With a neat diagram, briefly explain boiling water reactor. **(06 Marks)**

c. Mention the merits and demerits of tidal power plant. **(06 Marks)**

4 a. Mention the factors which go in favour of nuclear energy. **(05 Marks)**

b. Write briefly about nuclear waste disposal. **(07 Marks)**

c. Discuss some of the safety measures incorporated for nuclear power plant. **(08 Marks)**

### PART – B

5 a. Define the following terms as applied to power system.
i) Load factor
ii) diversity factor
iii) load curve
iv) load duration curve. **(08 Marks)**

b. The annual load duration curve of a certain power station can be considered as a straight line from 20 MW to 4 MW. To meet this load, three turbine generator units, two rated at 10 MW each and one rated at 5 MW are installed. Determine :
i) installed capacity
ii) plant factor
iii) units generated per annum
iv) load factor
v) utilization factor. **(06 Marks)**

c. A generating station has the following daily load cycle

| Time (Hrs) | 0 – 6 | 6 – 10 | 10 – 12 | 12 – 16 | 16 – 20 | 20 – 24 |
|---|---|---|---|---|---|---|
| Load (MW) | 40 | 50 | 60 | 50 | 70 | 40 |

Draw the load curve and find :
i) maximum demand
ii) units generated per day
iii) average load
iv) load factor. **(06 Marks)**

6 a. What are the disadvantages and causes of poor power factor? **(08 Marks)**

b. Describe the desirable characteristics of a tariff. **(06 Marks)**

c. Explain briefly two part tariff, p.f. tariff and maximum demand tariff. **(06 Marks)**

7 a. With a diagram, explain the inter connection of power stations. Also mention its merits. **(08 Marks)**

b. Write short note on :

i) Neutral grounding

ii) Earthing transformer. **(06 Marks)**

c. With neat sketches, explain the following :

i) Single bus bar system with bus sectionalizer

ii) Double bus bar system with single breaker. **(06 Marks)**

8 a. With neat sketches, explain the following :

i) Resistance grounding

ii) Reactance grounding. **(10 Marks)**

b. Discuss on the following :

i) Location of substation

ii) Substation equipment. **(10 Marks)**

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