5E3126

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5E3126

B. Tech. V Sem. (Old Back) Exam., Nov.-Dec.-2016

Electrical Engineering

5EE4 (O) Generation of Electrical Power

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

*Attempt any **five questions,** selecting **one question** from **each unit.** All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT – I

Q.1 (a) Distinguish between a breeder reactor and a converter reactor. Derive an expression for maximum conversion of fertile material in a converter reactor. [8]

(b) How can hydro plants be classified according to following? [8]

(i) Water flow regulation

(ii) Head & Load

OR

Q.1 (a) Briefly discuss the functions of following equipments in a steam station - [8]

(i) Condenser

(ii) Cooling towers

(iii) Economizer

(iv) Feed water heater

(b) Explain the basic schemes and working principle of Gas Power Plant with open cycle. [8]

UNIT – II

Q.2 (a) Explain the impact of thermal and hydro power station on environment. [8]

(b) How can solar energy be converted into electrical energy? Give a diagram showing the elements of such a plant. [8]

OR

Q.2 (a) Give a brief classification of various energy resources. What is the future of non – conventional energy sources in India? [8]

(b) What do you mean by Global Warming? What will happen due to it? [8]

UNIT – III

Q.3 (a) What are the disadvantages of low power factor? Explain the methods of power factor improvement. [8]

(b) Define the following terms for a power station: [8]

(i) Diversity factor
(ii) Load factor
(iii) Utilization factor
(iv) Annual plant capacity factor

OR

Q.3 (a) What is the difference between chronological curve and load duration curve? Explain the difference between base load and peak load also. [8]

(b) The maximum demand of power plant is 80 MW. The capacity factor is 0.5 and the utilization factor is 0.8. Find – [8]

(i) Load factor
(ii) Plant capacity
(iii) Reserve capacity
(iv) Annual energy production

UNIT – IV

Q.4 (a) Calculate the most economical power factor when KW demand is constant. [8]

(b) Explain the role of load diversity in power system economics. [8]

OR

Q.4 (a) Explain the concept of co- generation and energy conservation in terms of power plant economics. [8]

(b) Explain the capital cost, annual fixed and operating costs of plants. [8]

UNIT – V

Q.5 (a) Distinguish between operating reserve and spinning reserve. Explain why the size of power plant units have been continuously increasing for the past many years. [8]

(b) How do demand factor, load factor and diversity factor in a power system affect the fixation of tariffs? [8]

OR

Q.5 (a) Explain flat demand rate and straight meter rate in terms of Electrical tariff. [8]

(b) Describe in detail methods of selection and location of various power plants. [8]
