4463

BOARD DIPLOMA EXAMINATION, (C-14)
OCT / NOV-2017
DEEE-FOURTH SEMESTER EXAMINATION
POWER SYSTEMS – I (GENERATION)

Time : 3 Hours]   [Total Marks : 80

PART - A   3x 10 = 30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1.   State any three benefits of energy conservation.

2.   State any three advantages of thermal power station.

3.   State any three requirements for site selection of a thermal power plant.

4.   What is a hydrograph?

5.   State the function of spill gates in hydroelectric power station.

6.   What is a chain reaction?

7.   State the properties of uranium.

8.   State the equation for power available in the wind.

9.   Define the following:
i) Diversity factor   ii) Load factor.

10.   State the causes of low power factor.

PART - B   10 x 5= 50

Instructions : (1) Answer any **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criteria for valuation is the content but not the length of the answer.

11. a) Explain the construction and working of tidal power plant.

b) State the need of cooling towers in thermal power plant. List the types of cooling towers.

12. a) Explain the methods to improve the efficiency of thermal power plant.

b) State the need and methods of energy auditing.

13. a) A hydroelectric power plant operates under an effective head of 50 metres and a discharge of 94m³/sec. Determine the power developed. (Assume overall efficiency = 80%)

b) Explain the working of high-head hydroelectric plant with a neat layout diagram.

14. Explain the working of a reactor in nuclear power plant with a neat sketch.

15. a) Explain the method of converting solar radiation into heat.

b) Explain the working principle of photo voltaic cell with a neat sketch.

16. Explain the types of concentrating collectors with neat sketches.

17. a) Explain the process of integrated operation.

b) The load on a power plant on a particular day is as follows :

Time	12 – 5 a.m	5 – 8 a.m	8 a.m – 12 noon	6 – 8 p.m	8 – 10 p.m	10 p.m – 12 mid night
Load(MW)	20	60	100	120	80	20

Plot the load curve and load duration curve. Determine the following:

i) Energy generated per day.
ii) Load factor
iii) Diversity factor of the plant.

18. a) Explain the various types of consumer tariffs.

b) The tariff in force is Rs. 200 per KVA of maximum demand plus 10 paise per unit consumed. If the load factor is 60%, find the cost per unit at 0.8 p.f lagging.

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