Code: 9A02403

SS

B.Tech III Year I Semester (R09) Supplementary Examinations December 2015

GENERATION OF ELECTRIC POWER

(Electrical and Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 Explain the principle of operation of nuclear reactor.

2 Write short notes on concentrating collectors and explain various types of concentrating collectors.

3 What are the factors to be considered for selection of the site for a thermal power station?

4 What is the basic principle of wind energy conversion? Derive the expression for power developed due to wind.

5 What is biomass? What are the different sources used to extract biomass energy?

6 What are possible environmental effects as a result of an operation of an OTEC plant?

7 Loads on a feeder during 24 hours of a day are given below:

Time	Load(kW)	Time	Load(kW)	Time	Load(kW)
12 am	400	8 am	900	16 pm	1400
1 am	380	9 am	1200	17 pm	1300
2 am	350	10 am	1350	18 pm	1500
3 am	300	11 am	1200	19 pm	1800
4 am	350	12 pm	1000	20 pm	2333
5 am	500	13 pm	950	21 pm	1950
6 am	700	14 pm	1250	22 pm	1000
7 am	750	15 pm	1300	23 pm	800

Calculate the maximum demand, average demand and load factor of the feeder. If the feeder has the peak loss of 108 kW at peak load and annual loss factor of 0.14, find the following: (i) The average power loss of the feeder. (ii) The total annual loss of the feeder. Also calculate the demand factor of the feeder if the connected demand is 2500 kW.

8 An industrial load can be supplied from the following alternative tariffs:
(i) High voltage supply at Rs. 65 per kW annum plus 3 paise per kWh
(ii) Low voltage supply at Rs. 65 per kW per annum plus 3.3 paise per kWh
The high voltage equipment costs Rs. 50 per kW and the losses can be taken as 3%. Interest and depreciation charges are 15% per annum. If there are 40 working weeks in a year, find working hours per week above which high voltage supply is cheaper.

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