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II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

GENERATION OF ELECTRIC POWER

(Electrical & Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 What are the factors to be considered for the selection of site of a nuclear power station?

2 Write a short note on types of concentrating collectors.

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

4 Discuss the advantages and disadvantages of wind energy.

5 Discuss the status of biomass conversion technologies.

6 Discuss the technology of Ocean Thermal Energy Conversion (OTEC).

7 Estimate the generating cost per kWh delivered from a generating station from the following data:
Plant capacity = 50 MW
Annual load factor = 40%
Capital cost – 1.2 crores; annual cost of wages, taxation etc = Rs 4 lakhs; cost of fuel, lubrication, maintenance etc = 1.0 paise/kWh generated. Interest 5% per annum, 6 % per annum of initial value.

8 (a) What are the principal factors involve in fixing of a tariff?
(b) An industrial consumer has maximum demand of 120 kW and maintains a load factor of 80%. The tariff in force is Rs. 60 per kVA of maximum demand plus 8 paise per unit. If the average p.f. is 0.8 lagging, calculate the total energy consumed per annum and the annual bill

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II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

GENERATION OF ELECTRIC POWER

(Electrical & Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
*****

1 What do you mean by preventive maintenance of hydro plant?

2 What are the main components of a flat plate solar collector? Explain the function of each.

3 What are the types of steam turbine? Briefly discuss about their use and characteristics.

4 Explain with a real diagram a wind electric generating power plant.

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: (a) The average power loss of the feeder
(b) The total annual loss of the feeder
Also calculate the demand factor of the feeder if the connected demand is 2500 kW.

8 What are the factors which influence the tariff design in an electric supply system?

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II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

GENERATION OF ELECTRIC POWER

(Electrical & Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
*****

1 Discuss the advantages of nuclear power plant compared to thermal power plant.

2 What are the factors affecting the performance of flat plate collector?

3 What is “feed water”? What are the problems due to impurities in fuel water? How they can be eliminated?

4 Explain wind power battery chargers.

5 What are the advantages and disadvantages of floating drum plant?

6 Describe the working of closed cycle OTEC system. Discuss its advantages and disadvantages. What modifications can be carried out to the open cycle OTEC system to make it economically feasible?

7 What do you understand by power plant economics? Explain the fixed costs and operating cost of a power station.

8 What is meant by tariff? What are the various types of tariffs in common use? Explain the two part tariff.

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II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

GENERATION OF ELECTRIC POWER

(Electrical & Electronics Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
*****

1 What do you mean by fission of nuclear fuel?

2 Describe in brief the different energy storage methods used in solar energy systems.

3 Explain the various steps in coal handling.

4 What are the advantages and disadvantages of wind energy? What are the environmental factors associated with wind energy?

5 (a) How biomass conversion takes place?
(b) What is the difference between biomass and biogas?

6 What are the main types of OTEC power plants? Describe their working in brief.

7 A generating station has the following date :
Installed capacity = 300 MW
Annual load factor = 60%
Annual cost of fuel, oil etc = Rs $9X10^7$; capital cost = Rs 10^9; annual interest and depreciation = 10%. Calculate:- (i) the maximum reserve capacity of the station and (ii) the cost per kWh generated.

8 List the types of tariff used in practice. Distinguish by suitable examples between,
(i) two-part tariff and
(ii) maximum demand tariff.

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