

310604/310504

Roll No. _____

Total No. of Pages: **3**

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B. Tech. III - Sem. (Main) Exam., (Academic Session 2021- 2022)

Electrical Engineering

3EE3 – 04 Power Generation Process

Common EE/EEE

Time: 2 Hours

Maximum Marks: 80

Min. Passing Marks:

Instructions to Candidates:

*Part – A: Short answer questions (up to 25 words) 2×3 marks = 6 marks.
Candidates have to answer **two** questions out of **five**.*

*Part – B: Analytical/Problem solving questions 3×15 marks = 45 marks.
Candidates have to answer **three** questions out of **six**.*

*Part – C: Descriptive/Analytical/Problem Solving questions 1×29 marks = 29 marks.
Candidates have to answer **one** questions out of **three**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing may 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

PART – A

Q.1 What is Nuclear fission?

Q.2 Define in brief Green House effect.

Q.3 What is Maximum demand and load factor?

~~Q.4~~ List the advantages of power factor improvement.

~~Q.5~~ What is tariff?

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PART – B

- ✓ Q.1 Discuss the principle, construction and working of closed cycle gas turbine plant?
- Q.2 List different ways of converting solar energy into electrical energy and explain any one of them.
- Q.3 A generation station of 1MW supplied a region which has the following demands –

From	To	Demand (kW)
midnight	5 am	100
5 am	6 pm	No – load
6 pm	7 pm	800
7 pm	9 pm	900
9 pm	midnight	400

Neglect transmission line losses and find the following –

- (a) Plot the daily load curve and the load duration curve.
- (b) Find the load factor, the reserve capacity, plant capacity factor, the hours that the plant has been off?
- ✓ Q.4 Define low power factor. Also explain in detail the causes and effect of low power factor.
- Q.5 Discuss the following with respect to power plant economics –
- (a) Role of load diversity in power system economics.
- (b) Effect of load factor on unit energy cost.
- ✓ Q.6 Discuss the importance of tariff. What is the general form of tariff? Describe the block meter rate and straight meter rate.

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PART – C

Q.1 (a) Draw the schematic diagram of thermal power plant and explain superheat steam, economizer, pulverising plant and air-preheater?

(b) Differentiate between: fissile and fertile material, fusion and fission.

~~Q.2~~ In detail, explain the impact of thermal and nuclear power stations on environment. Also, explain how renewable energy can be used in power generation in enhancement of environment condition.

Q.3 Explain and answer the following –

(a) Explain two part tariff, Power factor dependent tariff and three part tariff.

(b) An industrial consumer has an annual energy consumption of 201500 kWh at a load factor of 0.35. The tariff is Rs. (4000 + 1200 kW of maximum demand + 2.20 per kWh).

Find-

(i) Annual Bill

(ii) If total energy consumption is same but load factor improved to 0.55, then what is the Bill amount?

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