

[06 – 3220]

III/IV B.E. DEGREE EXAMINATION.

Second Semester

Electrical and Electronics Engineering
ELECTRICAL POWER GENERATION AND
UTILIZATION

(Effective from the admitted batch of 2006–2007)

Time : Three hours

Maximum : 70 marks

Question No. 1 is compulsory.

Answer any FOUR from the remaining.

All questions carry equal marks.

1. (a) Why is steam preheated in thermal power stations? Explain.
- (b) Distinguish between peak load and base load type hydro-power plants.
- (c) What are the functions of moderator and control rods in a nuclear power reactor?
- (d) Differentiate between open cycle and closed cycle MHD system.

8. Write short notes on the following:

- (a) Comparison of different sources of energy
 - (b) Different power reactors
 - (c) Different Tariffs.
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- (e) Explain, how do the load factor and diversity factor effect the economics of power plant.
 - (f) Define lux and luminous efficiency.
 - (g) What is the fundamental difference between electric arc welding and resistance welding?
- 2.
- (a) What is a condenser in thermal power stations? Describe the operation of
 - (i) Surface condenser and
 - (ii) Jet condenser.
 - (b) Write a brief note on "Cooling towers". Comment on the shape of the towers.
 - (c) Why is Pulverized coal used in thermal power plants?
- 3.
- (a) What are the different factors to be considered while selecting the site for a hydro-electric plants?
 - (b) Discuss the classification of hydro-electric plants.
- 4.
- (a) Draw the schematic diagram of a nuclear reactor and explain the function of each part.
 - (b) Explain the terms - fission, chain reaction and fast breeder reactor.

5. (a) Explain the combined cycle operation of gas turbine plant. Give the applications of this type of power plant.
- (b) Mention the advantages and limitations of MHD generation.
- (c) Explain flat rate tariff and power factor tariff.
6. (a) Describe the construction and principle of operation of fluorescent lamp with the circuit diagram.
- (b) Define the terms:
- (i) Solid angle
 - (ii) Lux
 - (iii) MSCP, MHCP and
 - (iv) Brightness
- (c) What is polar curve? What is its significance?
7. (a) Explain briefly the different welding Processes under resistance welding. Why is it necessary to use welding transformer?
- (b) A laminated Wooden board $0.5\text{m} \times 0.25\text{ m} \times 0.1\text{ m}$ is to be heated to 160°C in 10 minutes by dielectric heating employing a frequency of 30 MHZ. The Wood has a specific heat of 0.35; a weight of 0.05 Kg/cu.m., a permittivity of 5 and power factor of 0.05. Determine the power required, the voltage across the work and the current through it during the heating process.