

**SUBJECT CODE:- 495**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E.(EEP/EE/EEE) Examination Nov/Dec 2015**  
**Electrical Power Generation & its Economics**  
**(Revised)**

[Time: Three Hours]

[Max. Marks: 80]

“Please check whether you have got the right question paper.”

N.B

- i) Q.No.1 and Q.No.6 are compulsory.
- ii) Attempt any two questions from the remaining questions in each section.
- iii) Assume suitable data, if necessary.

**Section A**

- Q.1 Solve any five questions. 10
- a) Define steam generator and write the types of boiler.
  - b) What is the importance of coal crushing?
  - c) What is the function of pelton wheel turbine?
  - d) What are the main components of diesel power plant?
  - e) Write the function of nuclear reactor
  - f) What is the function of surge tank in hydroelectric power plant?
  - g) What are the factors considered while selecting a site for nuclear power plant?
  - h) What is the function of
  - i) Moderator ii) control rods.
- Q.2 a) Describe the schematic arrangement of a thermal power plant. Briefly explain the functions of each 10  
b) With a neat diagram explain water tube boiler. 05
- Q.3 a) Explain the site selection factors of hydro electric power plant 05  
b) With a neat diagram explain the operation of Kaplan turbine 05  
c) The mean monthly discharge for 12 months at a particular site of a river is given below. 05
- | Month                                | Jan  | Feb | March | April | May | June | July | Aug  | Sep  | Oct | Nov | Dec  |
|--------------------------------------|------|-----|-------|-------|-----|------|------|------|------|-----|-----|------|
| Discharge<br>(M <sup>3</sup> /month) | 1000 | 800 | 600   | 400   | 400 | 1200 | 2400 | 2400 | 1000 | 400 | 400 | 1000 |
- Draw hydrograph, find the average in flow and power developed at an effective head of 150 meter & a turbine generator set efficiency of 0.85.
- Q.4 a) What are the different fields where use of diesel power plant is essential? 05  
b) Draw a neat diagram of a diesel power plant showing all the systems. Briefly explain the function of each system. 10
- Q.5 Write a short notes on (any three) 15
- a) Selection of coal for thermal power plant
  - b) Nuclear reactor.
  - c) Choice & characteristics of diesel power plant
  - d) Water hammer.

**Section-B**

- Q.6 Solve any five questions. 10
- a) What is the principle of MHD power generation?
  - b) What is the function of regeneration?
  - c) What is the need of starting motor in gas power plant?
  - d) Write the components of gas turbine power plant
  - e) Define increment fuel cost curve
  - f) What is meant by base load plant?
  - g) What are the types of wind mills?
  - h) Define
  - i) Load factor    ii) Diversity factor.
- Q.7 a) With a neat diagram explain open cycle gas turbine power plant 07  
b) What are methods for improving thermal efficiency of gas turbine plant. Explain all methods in short? 08
- Q.8 a) Briefly explain horizontal axis wind turbine generator. 06  
b) Explain base load and peak load plants? 04  
c) Write the advantages of tidal power plant. 05
- Q.9 a) State limitations of using solar power 05  
b) Explain the comparison of all power plants. 10
- Q.10 Write a short notes on (any three) 15
- a) MHD plant
  - b) Solar energy
  - c) Incremental fuel rate curve
  - d) Fuels for gas turbine plants.