Faculty of Engineering & Technology

Eighth Semester B.E. (Mech. Engg.) /Eighth Semester B.E. (P.T.) (Mech.) Examination

POWER PLANT ENGINEERING

Elective—III

Sections—A & B

Time—Three Hours] [Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Answer **THREE** questions from Section A and **THREE** questions from Section B.

(3) Due credit will be given to neatness.

(4) Assume suitable data wherever necessary.

(5) Diagrams and Chemical equations should be given wherever necessary.

(6) Illustrate your answers wherever necessary with the help of neat sketches.

(7) Use of non programmable calculator is permitted.

SECTION—A

1. (a) Explain the concept of fission with the help of binding energy. 6

   (b) Draw a neat diagram of CANDU type nuclear reactor. Explain its working along with the materials used for its various components. 7

2. (a) Draw a neat sketch of hydroelectric power plant. Explain the importance and working of each component. 6

(b) How are the hydroelectric power plant governed ? Explain with neat diagram. 7

3. (a) What are the various fuel firing methods in coal based thermal power plant ? 6

(b) State various boiler accessories. Mention their functions and importance. 7

4. (a) What is meant by high pressure boiler ? Why they are preferred ? Mention various high pressure boilers. 6

(b) Draw a neat diagram of Velox Boiler. Explain its working. 7

5. Write short motes on any **THREE** of following :

(a) Effects of nuclear waste on environment.

(b) Present and Proposed nuclear plants in India.

(c) Advantages of hydroelectric power plants over other sources of power.

(d) Models and Models testing.

(e) Boiling Water Reactor (BWR).

(f) Site selection for hydroelectric power plant. 14

SECTION—B

6. (a) Classify gas turbine power plant based on various criteria. What are the various components of gas turbine power plant. 6

(b) Explain various methods to improve the thermal efficiency of gas turbine power plant. 7

7. (a) Draw a layout of diesel electric power plant. Explain the working of each component. 6

(b) What are the various waste heat recovery systems ? 7

8. (a) What are the various energy storage systems ? Explain each of them in brief. 6

(b) Explain the instrument and method of measurement of water purity in power plants. 7

9. (a) Draw load curves for various types of load. State the reasons for variation in the different load curves. 6

(b) Define following terms (Any **two**) : 7

(i) Plant capacity factor

(ii) Load factor

(iii) Demand factor.

10. Write short notes on any **THREE** of the following :

(a) Solor Energy & its applications

(b) Tidal power plants

(c) Geothermal Energy Power Generation Types.

(d) Fluctuating load

(e) Tariffs of Electrical Energy. 14