H.T.No. | | | | | | | | | | |

Code No: EE1514 **GEC-R14**

II B. Tech I Semester Regular Examinations, November 2016

POWER SYSTEMS-I

(Electrical and Electronics Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
Answer any **FOUR** questions from **PART-B.** All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. List out different types of boilers used in thermal power plant.
2. Mention different types of Nuclear reactors.
3. What are the different components in a gas power plant?
4. Classify distribution systems.
5. Compare Indoor and Outdoor substations.
6. Define Demand and Load factors.

PART-B

4 × 12 = 48M

1. Explain the necessity of boiler, economizer, air preheater, super heater and condenser in a thermal power plant with the help of a block diagram? (12M)
2. What are the basic components of nuclear reactor, explain them briefly with a neat sketch? (12M)
3. a) Explain the working of a hydro electric power plant with the help a neat schematic diagram. (6M)
   b) Calculate the average power in KW that can be generated in a hydro-electric power station from the following data:
   Catchment area =$5x10^9$ m^2; Mean head = 30m; Annual rain fall=1.25m; Yield factor= 80%; Overall efficiency =70%; If the load factor is 40%, what is the rating of generators installed? (6M)
4. A 2 wire D.C. ring distributor is 300m long and is fed at 240V at point A. At point B 150m from A, a load of 120A is taken and at C, 100m in opposite direction, a load of 80A is taken. If the resistance per 100m of single conductor is 0.03Ω. Find
   i) Current in each section
   ii) Voltages at points B and C. (12M)
5. a) Explain the classification of substations based on
   (i) Service requirement (ii) Constructional features (8M)
   b) What are the advantages of Gas Insulated Substations? (4M)

6. A power station has daily load cycle as under:
   260 MW for 6 hours, 200 MW for 8 hours,100 MW for 6 hours. If the power station is equipped with 4 sets of 75 MW each,
   a) Draw the daily load curve.
   b) Calculate
      i) daily load factor
      ii) plant capacity factor
      iii) daily requirement if the calorific value of oil used were 10,000 KCal/Kg and the average heat rate of station were 2860 KCal/KWh. (12M)

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