USN [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   **15EE42**

Fourth Semester B.E. Degree Examination, Dec.2017/Jan. 2018
Power Generation and Economics

Time: 3 hrs.   Max. Marks: 80

Note: *1.* Answer any FIVE full questions,
choosing ONE full question from each module.
2. Missing data, if any, may be suitably assumed.

Module-1

1   a.   With a neat schematic diagram explain the working hydro-electric power plant.   **(06 Marks)**
    b.   Explain hydrograph and hydrological cycle.   **(06 Marks)**
    c.   Mention the merits and demerits of hydroelectric power plant.   **(04 Marks)**

OR

2   a.   What are the types of turbines? With a neat diagram explain the working of reaction turbine.
        (06 Marks)
    b.   With a neat diagram explain the working of turbine governing.   **(06 Marks)**
    c.   Mention the factors to be consider for the selection of site for hydro-electric power plant.
        (04 Marks)

Module-2

3   a.   With a schematic diagram (layout) explain the working of steam power plant.   **(06 Marks)**
    b.   Explain any three methods used for the disposal of ash in steam power plant.   **(06 Marks)**
    c.   Mention the advantages and disadvantages of diesel power plant.   **(04 Marks)**

OR

4   a.   Explain how the use of regemerator, and reheater in gas turbine plants help in improvement in thermal efficiency.   **(08 Marks)**
    b.   Describe the auxilliary equipment of diesel engine power plant.   **(08 Marks)**

Module-3

5   a.   With a neat diagram explain the working of main parts of nuclear reactor.   **(08 Marks)**
    b.   What are the classification of nuclear reactors? Explain the operation of fast breeder reactor.
        (08 Marks)

OR

6   a.   Explain the various methods of nuclear waste disposal.   **(06 Marks)**
    b.   Mention the advantages and disadvantages of nuclear power plant.   **(06 Marks)**
    c.   Mention the factors to be considered for the selection of site for nuclear power plant.
        (04 Marks)

Module-4

7   a.   What is a protective relay? Explain its function in an electrical system.   **(06 Marks)**
    b.   With a neat diagram explain the working of HRC (High Rupturing Capacity) fuse.   **(06 Marks)**
    c.   Explain the working of rod gap arrester.   **(04 Marks)**

OR

8 a. Draw the line diagram of 66/11 kV sub –station. (06 Marks)
   b. With a neat sketch, explain ungrounded system in power system. (06 Marks)
   c. Mention the advantages of neutral – grounding. (04 Marks

Module-5

9 a. Define the following terms as applied to power system :
      i)   Load factor
      ii) Demand factor
      iii) Diversity factor
      iv) Plant capacity factor. (08 Marks)
   b. A power station is to supply three region of load whose peak loads are 20MW, 15MW and 25MW. The annual load factor is 50% and the diversity factor of the load at the station is 1.5. Determine the following :
      i)   Maximum demand on the station
      ii) Installed capacity suggesting number of units
      iii) Annual energy supplied. (08 Marks)

OR

10 a. What is power factor? Explain any one method of improving power factor. (06 Marks)
   b. A power station has to supply load as follows.

Time (hours)	0 – 6	6 – 12	12 – 14	14 – 18	18 – 24
Load (MW)	30	90	60	100	50

      i)   Draw the load curve
      ii) Draw load – duration curve
      iii) Calculate the load factor. (06 Marks)
   c. Define tariff. Explain :
      i)   Block rate tariff
      ii) Two – part tariff. (04 Marks

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