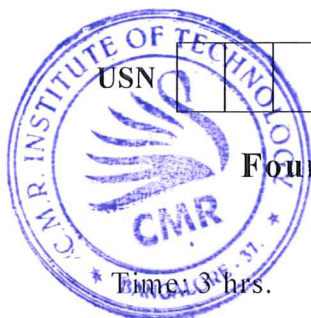USN ☐☐☐☐☐☐☐☐☐☐

15EE42

Fourth Semester B.E. Degree Examination, June/July 2019
Power Generation and Economics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1. a. Define the following:
   i) Hydrograph
   ii) Mass curve
   iii) Flow duration curve (08 Marks)
   b. Explain the classification of hydroelectric power plants. (08 Marks)

OR

2. a. Explain the working of hydroelectric power plant with neat layout. (08 Marks)
   b. With the neat sketch explain the working of Pelton wheel turbine. (08 Marks)

Module-2

3. a. Explain the factors to be considered for selection site of a steam power plant. (08 Marks)
   b. With the sketch explain the block diagram of diesel power plant. (08 Marks)

OR

4. a. With the sketch explain working of closed cycle gas turbine power plants. (08 Marks)
   b. List the merits and demerits of steam power plant. (08 Marks)

Module-3

5. a. Explain the function of the following in a nuclear reactor:
   i) Control rod
   ii) Moderator
   iii) Reflector
   iv) Biological shield (10 Marks)
   b. Mention the advantages and disadvantages of a Nuclear power plant. (06 Marks)

OR

6. a. With the neat layout diagram, explain the working of nuclear power plant. (10 Marks)
   b. Explain the methods of nuclear waste disposal. (06 Marks)

Module-4

7. a. Write short notes on:
   i) High voltage fuses
   ii) High voltage circuit breakers (08 Marks)
   b. Explain the factors are to be considered for substation site selection. (08 Marks)

OR

8 a. Explain the advantages of gas insulated substation. (06 Marks)
   b. Write a note on:
       i) Resistance grounding
       ii) Reactance grounding (10 Marks)

Module-5

9 a. List the principal factors affecting framing of Tariff. (08 Marks)
   b. A 300 KVA distribution transformer costs Rs.20000 and has a salvage value of Rs.1000 at the end of 20 years. Determine the depreciated value of the plant at the end of 10 years on the following method of assessment:
       i) Straight line depreciation
       ii) Sinking fund depreciation of 8% compounded annually (08 Marks)

OR

10 a. Explain the methods of power factor improvement. (10 Marks)
   b. A consumer takes a steady load of 250 KW at a power factor of 0.8 lagging for 10 hour per day and 300 days per annum. Estimate the annual payment under each of the following tariff:
       i) Rs.1.20 per KWh + Rs.1200 per KVA per annum
       ii) Rs.1.20 per KWh + Rs.1200 per KW per annum + 25 paise per KVARh. (06 Marks)

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