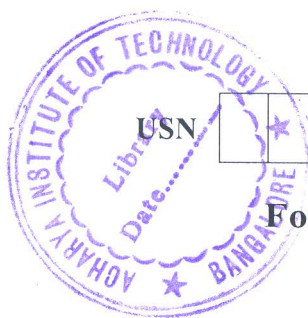


CBCS SCHEME



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18EE42

Fourth Semester B.E. Degree Examination, July/August 2021 Power Generation and Economics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

1. a. Define: i) Precipitation ii) Run-off (06 Marks)
b. With a neat sketch, explain the working of high head Hydro electric power plant. (08 Marks)
c. Discuss the factors considered for selection of site for hydro electric power plant. (06 Marks)
2. a. Explain the essential elements of hydro electric power plant with neat schematic diagram. (08 Marks)
b. With a neat sketch, explain the working of pumped storage power plant. (08 Marks)
c. Discuss the merits and demerits of hydro electric power plant. (04 Marks)
3. a. With a neat schematic diagram, explain the working of steam power plant. (08 Marks)
b. What are the main considerations for selection of site for a thermal power plant? (08 Marks)
c. Discuss the merits and demerits of steam power plant. (04 Marks)
4. a. With a neat schematic diagram, explain the working of closed cycle gas turbine power plant. (08 Marks)
b. Explain the layout of typical diesel electric power plant with a diagram. (06 Marks)
c. Explain the functions of i) Reheater ii) Condenser. (06 Marks)
5. a. With a neat diagram, explain main parts and their functions of nuclear reactor. (08 Marks)
b. Discuss merits and demerits of nuclear power plant. (04 Marks)
c. With a neat diagram, explain boiling water reactor and list its advantages and disadvantages. (08 Marks)
6. a. Explain the working of nuclear power plant with a neat diagram. (08 Marks)
b. Explain with respect to nuclear power plant i) Nuclear waste disposal ii) Shielding. (06 Marks)
c. Discuss about the classification of nuclear reactor and explain them. (06 Marks)
7. a. Discuss about the classification of substations. (06 Marks)
b. Explain resonant grounding with a neat diagram and list the advantages and disadvantages. (08 Marks)
c. With a neat circuit diagram, explain about the one and half breaker bus system. (06 Marks)
8. a. List out the advantages and disadvantages of outdoor substation over indoor substation. (06 Marks)
b. Draw the line diagram of 66/11 KV substation. (08 Marks)
c. A 230KV, 3- ϕ , 50Hz, 200km transmission line has a C to earth of $0.02\mu\text{F}$ per km per ph. Calculate 'L' and KVA rating of the P-coil used for earthing the above system. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

9 a. Define the following terms applied to power system:

- i) Load factor
- ii) Diversity factor
- iii) Plant use factor.

(06 Marks)

b. A generating station has the following daily load cycle.

Time (hours)	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	40	50	60	50	70	40

Draw the load curve and load duration curve and find:

- i) Maximum demand
- ii) Units generated per day
- iii) Average load
- iv) Load factor.

(08 Marks)

c. Discuss various methods of power factor improvement.

(06 Marks)

10 a. Define the following:

- i) Cold reserve
- ii) Hot reserve
- iii) Operating reserve
- iv) Spinning reserve.

(06 Marks)

b. Explain the disadvantages of low power factor.

(06 Marks)

c. The maximum demand of a power plant is 80MW. The capacity factor is 0.5 and the utilization factor is 0.8. Find:

- i) Load factor
- ii) Plant capacity
- iii) Reserve capacity
- iv) Annual energy.

(08 Marks)
