Regulation R18 *Subject code:2P5BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B. Tech V Semester Supplementary Examinations, June/July 2023

Power Systems-I

Maximum Marks: 70 Date:23.06.2023 Duration: 3 hours

Note:
1. **This question paper contains two parts A and B.**
2. **Part A is compulsory which carries 20 marks. Answer all questions in Part A.**
3. **Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.**
4. **Each question carries 10 marks and may have a, b, c, d as sub questions.**

Part-A

All the following questions carry equal marks **(10x2M=20 Marks)**

1 The function of condenser.
2 What are the types of boilers?
3 What is solar cell efficiency formula?
4 What is fuel cell?
5 Define Ring Main distribution system
6 What are the classifications of distribution system
7 What are the types of insulating materials?
8 What is indoor substation
9 Define (a) load factor and (b) maximum demand.
10 What is running cost.

Part-B

Answer All the following questions. **(10MX 5=50Marks)**

11 Draw the schematic diagram of a nuclear power station and explain the functions of various components. [10]

OR

12 Draw the schematic diagram of Diesel power station and explain its operation. [10]

13 A. Write short note on following: [3+2]
   i) Stand-alone PV system
   ii) Grid connected system
   B. Explain briefly about wind power generation [5]

OR

14 A. Explain briefly about hybrid power system. [5]
   B. Explain working operation of solar cell power generation. [5]

15 A. Write short note on following [6]
   i) Radial distributor
   ii) Ring main distributor
   iii) Inter connected
   B. A single-phase a.c distributor AB 300 meters long is fed from end A and is loaded under as: [4]
   i) 100A at 0.707 p.f. lagging 200m from point A ii) 200A at 0.8 p.f. lagging

OR

16 In a A.C distribution system, calculate power factor referred to receiving end voltage. [10]

17 A. Write short note on following: [3+3]
   i) Soil Resistivity
   ii) Ground mat
   B. Explain briefly about Air insulated substation. [4]

OR

18 A. Explain briefly about capacitances grading? [5]
   B. A single -core cable has a conductor diameter of 1cm and insulation thickness of 0.4cm. if the specific resistances of insulation is 5X10^14 ohm-cm, calculate the insulation resistances for a 2km length of the cable. [5]

19 A. Discuss the effect of load factor and diversity on the cost of electrical energy generated. [5]
   B. A 100MW power station delivers 100MW for 2 hours, 50MW for 6 hours and is shut down for the rest of the day. It is also shut down for maintenances for 45days each year. Calculate its annual load factor. [5]

OR

20 A. What are the objectives and requirements of tariff? [5]
   B. Classify the various types of tariffs and explain any two tariffs. [5]