Regulation R18 *Subject code:2P6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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

POWER SYSTEM ANALYSIS

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Maximum Marks: 70 Date:27.06.2023 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 Define tree.
2 Define primitive net work
3 Define PQ bus.
4 Define slack bus
5 Why line- line fault zero sequence current is absent?
6 Draw the 1-phase positive sequence network.
7 Draw the power angle curve.
8 Define transfer reactance.
9 Expression for critical clearing angle .
10 Expression for critical time.

Part-B

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

11 Form the Y_{bus} for a given network by using direct inspection method. As shown Table 10M

Element	Positive sequence reactance
1-2	0.05j
1-3	0.3j
1-4	0.5j
2-3	0.6j
2-4	0.4j
3-4	0.5j

OR

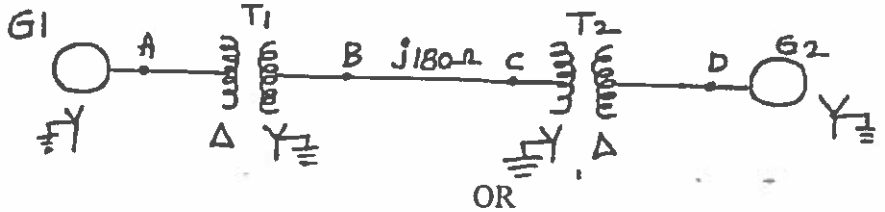
12 Derive an Expression for adding BRANCH element beet wean two buses in the Z_{bus} building algorithm 10M

13 Derivation of static load flow equation of load flow studies with assumption. 10M

OR

14 A. Briefly Explain GS method in WITH PQ bus. 5M
B. What are the advantages and dis advantage of GS method. 5M

15 Draw the positive sequence, Negative sequence and Zero sequence for given power system. 10M



OR

16 The phase voltages across a certain load given as follows
V_a=176-132j V,
V_b=-128-96j V,
V_c=-160+100j V
Compute the positive, negative and zero sequence components of voltage. 10M

17 Brief discuss about the method to improve steady state stability 10M

OR

18 Different bet wean Study state stability, Transient stability and Dynamic stability. 10M

19 Two turbo alternator with rating given below are connection via short line.Macine-1: 4-pole, 50hz, 80MW, 0.8 P.F Lagging. Moment of inertia 30,000Kg-m^2
Macine-2: 2-pole, 50hz, 80MW, 0.85 P.F Lagging. Moment of inertia 10,000 Kg-m^2Calculate the inertia constant of single equation machine on base of 300MVA 10M

OR

20 Explain and give the applications of Equal area criterion 10M