



Regulation R17

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 1P6BA

B.Tech III Year II Semester Supplementary Examinations, January 2023
POWER SYSTEM ANALYSIS

(EEE)

Maximum Marks: 70

07/01/2023

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.
 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 Give the application Z_{bus} building algorithm
- 2 Write about Basic Loop matrix.
- 3 Write the limitation of LFS.
- 4 Comparing of Gs method Nr method
- 5 Assumption for FDLF
- 6 Write the power flow study equations.
- 7 Write formula I_{base} , Z_{base} , I_{sc} in power system.
- 8 Write a formula $Z_{p.u}$ new in pur unit system
- 9 Define inertia constant
- 10 Write swing equation formula

Answer All the following questions.

(10M X 5=50Marks)

- 11 Form the Y_{bus} for a given network by using singular transformer method. As shown fig. 10

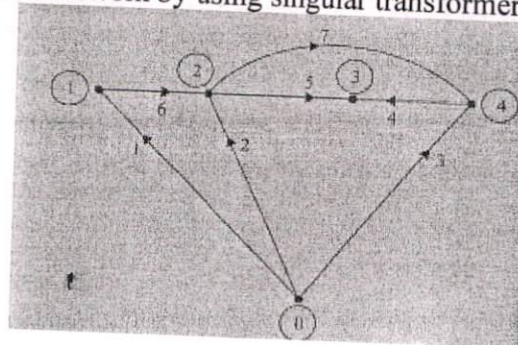


Fig
OR

- 12 Form the Y_{bus} for a given network by singular transformer method . As shown Table:1

Element	impedance
1-2	$2+3j$
1-3	$1+4j$
2-3	$3+5j$
2-4	$6+7j$
3-4	$12+5j$

10

Table:1

- 13 Flow chart GS method with control voltage bus

10

OR

- 14 Flow chart GS method with control voltage bus.

10

- 15 With $P_2=0.4$ p.u, $Q_2=-0.1$ p.u, $P_3=0.5$, $Q_3=0.3$ bus-1 as slack bus and bus-2 and bus-3 pq bus. As shown figure $V_1=1.05$ v. Determine FDLF method at first iteration, as shown fig.

10

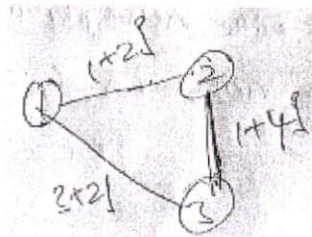


Fig.

OR

- 16 Discuss about fast decoupled load flow method.

10

- 17 In a 3-phase ,4-wire system, the current R,Y,B lines under abnormal condition of loading are as under $I_r=10+J25$, $I_y=15+22j$, $I_b=10+15j$ Amperes. Calculate positive, negative and zero sequence in Y line and return current in neutral wire

10

OR

- 18 In an unbalanced three phase system, phase current $I_a=1 \angle -90^\circ$ P.U, The negative sequence current $I_{b2}=4 \angle -150^\circ$ P.U., Zero sequence current $I_{c0}=3 \angle 90^\circ$ P.U. The magnitudes of phase currents I_b and I_c are ?

10

- 19 Two synchronous generators having identical ratings connected to a common bus bar. The rating of each generator is 50MVA, 6.6KV, 3-Phase, 50Hz. Sequence reactance are $X_1=X_2=j0.1$ and $X_0=j0.05$. A line to ground fault taking place at bus bar.

10

(i) Voltage of neutral with respect to ground in volts when both neutrals of generators are grounded by reactance of $j0.05$.

OR

- 20 Derive Swing equation with assumptions.

10