

# NADAR SARASWATHI COLLEGE OF ENGINEERING AND TECHNOLOGY, THENI.

Course/Branch :B.E/EEE	Year / Semester :III/V	Format No.	NAC/TLP-07a.13
Subject Code :EE8501	Subject Name :Power System Analysis	Rev. No.	02
Unit No :III	Unit Name :Symmetrical Fault Analysis	Date	30.09.2020

## OBJECTIVE TYPE QUESTION BANK

S. No.	Objective Questions (MCQ /True or False / Fill up with Choices )	BTL
1	Transient in synchronous generator is similar to which of the following circuit? a) Parallel RLC circuit b) Series RLC circuit <b>c) Series RL circuit</b> d) Parallel RL circuit	L2
2.	The maximum power delivered to the load for short transmission line is at a) $\beta = \alpha$ b) $\beta > \alpha$ <b>c) <math>\beta = \delta</math></b> d) $\beta > \delta$	L2
3.	When all three phases of a synchronous generator on no load are suddenly short circuited then symmetry of the short circuit current depends on which of the following? a) Position of fault b) Symmetry of fault <b>c) Instantaneous Voltage at which fault occurs</b> d) Resistance of armature winding	L2
4.	In a synchronous generator for how much time subtransient period of symmetrical short circuit current lasts? a) For 200 Cycles b) For 500 Cycles c) For 30 Cycles <b>d) For 2 Cycles</b>	L1
5.	What is the phase current in phase Y and in phase B out of R-Y-B when sudden short circuit to all three phases occurs at no load? It is given that after fault current in phase R is equal ( $V_m \sin \omega t$ ) a) $Y = V_m \sin(\omega t + 60^\circ)$ & $B = V_m \sin(\omega t + 120^\circ)$ <b>b) <math>Y = V_m \sin(\omega t + 120^\circ)</math> &amp; <math>B = V_m \sin(\omega t + 240^\circ)</math></b> c) $Y = V_m \sin(\omega t + 240^\circ)$ & $B = V_m \sin(\omega t + 120^\circ)$ d) $Y = V_m \sin(\omega t + 90^\circ)$ & $B = V_m \sin(\omega t - 90^\circ)$	L3
6.	If $X_l$ is leakage reactance, $X_f$ is reactance due to field winding, $X_{dw}$ is reactance due to damper winding and $X_a$ is armature winding reactance then reactance of synchronous generator in subtransient state is due to which of the following? a) $X_l, X_{dw}$ and $X_a$ b) $X_l$ and $X_a$ <b>c) <math>X_l, X_f, X_{dw}</math> and <math>X_a</math></b> d) $X_l$ and $X_{dw}$	L3

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7.	Which of the following reactance is eliminated first in synchronous generator just after the symmetrical fault? a) Leakage reactance <b>b) Damper winding reactance</b> c) Armature winding reactance d) Field winding reactance	L1
8.	Steady state direct axis reactance is greater than subtransient direct axis reactance and transient direct axis reactance. <b>a) True</b> b) False	L1
9.	For a given power system, its zero and maximum regulation will occur at the impedance angle of <b>a) 45</b> b) 90 c) 0 d) 60	L2
10.	The charging currents due to shunt admittance can be neglected for _____ transmission line? <b>a) short</b> b) long c) medium d) all of the mentioned	L1
11.	<div style="text-align: center;"> </div> <p>The transmission line equations are given by the below set of equations based on the line diagram as given. Identify the missing term marked as '?'.</p> $V_s = ? \cdot V_r + B \cdot I_r$ $I_s = C \cdot V_r + D \cdot I_r$ <p><b>a) 1+YZ</b>                  b) Z                  c) Y                  d) 1</p>	L3

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12.	<p>A three phase transformer has a name plate details of 30 MVA and voltage rating of 230Y kV/69Δ kV with a leakage reactance of 10% and the transformer connection via wye-delta. Taking a base of 230 kV on the high voltage side, turns ratio of the windings is</p> <p>_____</p> <p>a) <b>2</b> b) 1.5 c) 6 d) 4</p>	L2
13.	<p>A three phase transformer has a name plate details of 30 MVA and voltage rating of 230Y kV/69Δ kV with a leakage reactance of 10% and the transformer connection via wye-delta. Taking a base of 230 kV on the high voltage side, the transformer reactance on the LV side is</p> <p>_____</p> <p>a) <b>176.33 Ω</b> b) 1763.3 Ω c) 47.6 Ω d) 15.87 Ω</p>	L4
14.	<p>A three phase transformer has a name plate details of 30 MVA and voltage rating of 230Y kV/69Δ kV with a leakage reactance of 10% and the transformer connection via wye-delta. Taking a base of 230 kV on the high voltage side, the transformer reactance referred to the low voltage side in ohms is</p> <p>_____</p> <p>a) <b>0.1</b> b) 0.2 c) 0.198 d) 0.4</p>	L4
15.	<p>A given system to be analysed was found with the below phasor representation of the system voltages. Which of the symmetrical components will be present in the mentioned system?</p> <p>a) <b>Positive sequence components</b> b) Negative sequence components c) Zero sequence components d) All of the mentioned</p>	L2
16.	<p>A 400 V, 50 Hz three phase balanced source ripples to a star connected load whose rating is <math>S=(300+j400)</math> kVA. A delta connected capacitor bank needed to bring p.f. to 0.9 lagging. The operating power factor of the system is</p> <p>a) 0.6 b) 4/3 c) 3/4 d) <b>0.8</b></p>	L3

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17.	<p>Complete the given phasor diagram by assuming that operator 'a' is unity magnitude and counter clockwise rotation of 120 degrees.</p> <div style="text-align: center;"> </div> <p>a) 1 b) a-1 c) 1-a d) -a<sup>3</sup></p>	L4
18.	<p>In the cylindrical rotor alternator, the sub transient and negative sequence reactances are same.</p> <p>a) True b) False</p>	L1
19.	<p>The instantaneous voltage wave in the long transmission line is a function of _____</p> <p>a) time and distance b) time c) distance d) time, distance and reactive inductance</p>	L2
20.	<p>When can an incident wave not distinguish between the termination and an infinite continuation of line?</p> <p>a) When line is terminated by its characteristic impedance b) When line is terminated by its surge impedance c) When line is open d) When line is terminated by its characteristic and surge impedance</p>	L2
21.	<p>The receiving end voltage at the no load will be _____</p> <p>a) <math>V_s(1 + w^2 CL^2)</math> b) <math>(1 + w^2 CL^2)</math> c) <math>V_s/(1 + w^2 CL^2)</math> d) <math>V_s</math></p>	L3
22.	<p>If a line is considered with negligible power losses, then the real power transmitted will be proportional to _____</p> <p>a) <math>\sin \delta</math> b) <math>\cos \delta</math> c) <math>\delta</math></p>	L2

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	d) $\sin^2\delta$	
23.	<p>If a line is considered with negligible power losses, then the real power transmitted will be proportional to _____ and the reactive power drop is proportional to _____</p> <p><b>a) <math>\sin\delta</math>, voltage drop across line</b>                  b) <math>\cos\delta</math>, voltage drop across line                  c) <math>\delta</math>, voltage drop across line                  d) voltage drop across line, <math>\sin\delta</math></p>	L3
24.	<p>Assume a 275 kV transmission line having the following line constants: <math>A = 0.8\angle 5^\circ</math> ; <math>B = 200\angle 75^\circ</math></p> <p>For obtaining 275 kV voltage at the receiving end obtaining unity power factor, the power transmitted will be _____</p> <p><b>a) 124 MW</b>                  b) 117.2 MW                  c) 116 MW                  d) 110 MW</p>	L4
25.	<p>Assume a 275 kV transmission line having the following line constants: <math>A = 0.8\angle 5^\circ</math> ; <math>B = 200\angle 75^\circ</math></p> <p>For obtaining 275 kV voltage at the receiving end obtaining unity power factor, the power angle required to be set as _____</p> <p><b>a) <math>26.23^\circ</math></b>                  b) <math>22^\circ</math>                  c) <math>25^\circ</math>                  d) <math>24^\circ</math></p>	L4
26.	<p>Fault level means</p> <p>a) Voltage at the point of fault                  b) Fault current                  c) Fault power factor  <b>d) Fault MVA</b></p>	L2
27.	<p>A three phase alternator can supply a maximum of 5000 KVA at 66 kV. The machine has internal resistance of 6%. The reactance per phase of the limiting reactor if the steady apparent power on the short circuit do not exceed 5 times full load is _____</p> <p><b>a) <math>1.22 \Omega</math></b>                  b) <math>2.44 \Omega</math>                  c) <math>5 \Omega</math>                  d) <math>1.84 \Omega</math></p>	L3
28.	<p>When a LG fault occurs, the current in a faulted phase is 100 A. The zero sequence current in this case will be</p> <p>a) 0                  b) 33.3A</p>	L2

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	c)66.6A d)100A	
29.	A generating station has a connected load of 43 MW. The unit generated having $61.5 \times 10^6$ per year. The load factor will be _____ <b>a) 0.35</b> b) 0.33 c) 0.5 d) 0.45	L2
30.	The symmetrical components are used in fault analysis because of _____ <b>a) sequence of network do not have mutual coupling</b> b) number of equations is smaller c) results are required in symmetrical components d) none of the mentioned	L1

