CODE No.:16BT30241 SVEC-16

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

II B.Tech I Semester (SVEC-16) Regular/Supplementary Examinations November - 2018

ELECTRICAL TECHNOLOGY

[Electronics and Communication Engineering, Electronics and Instrumentation Engineering]

Time: 3 hours **Max. Marks: 70**

Answer One Question from each Unit
All questions carry equal marks

UNIT-I

1	a)	Why brushes and commutator are necessary for operation of DC machine.	CO2	4 Marks
	b)	The armature of 6 pole DC generator has a wave winding containing 664 conductors. Compute the generator emf when flux per pole is 0.06 Weber and the speed is 250 r.p.m. At what speed must be the armature an emf of 250V if the flux per pole is reduced to 0.058 Weber.	CO4	10 Marks
		(OR)		
2	a)	Explain the working of a 3-point starter for a DC machine.	CO1	7 Marks
	b)	Explain the process to predetermine the efficiency of DC motor by using Swinburne's test.	CO2	7 Marks

UNIT-II

3		A 7kVA 200/1000V, 50Hz, single-phase transformer gave the following test results: O.C Test (L.V. Side): 2000V, 1.2A, 90W S.C Test (H.V. Side): 50V, 5A, 110W i) Calculate the parameters of the equivalent circuit referred to the L.V side. ii) Calculate the output secondary voltage when delivering 3kW at 0.8p.f. lagging, the input primary voltage being 200V and also find the percentage regulation.	CO4	14 Marks
		(OR)		
4	a)	Describe the tests to be performed on a single phase transformer to determine the equivalent circuit parameters.	CO2	7 Marks
	b)	The following results were obtained from tests on 30KVA, 3000/110V, and transformer. O.C. test: 3000V, 0.5A, 350W S.C. test: 150V, 10A, 500W Estimate the efficiency of the transformer at full load with 0.8 lagging power factor.	CO4	7 Marks

UNIT-III

5	a)	Derive the expressions of phase and line quantities in star connected network.	CO2	7 Marks
	b)	A balanced delta connected load of $(2+j3)\Omega$ per phase is connected to a balance 3-phase 440V supply. The phase current is 10A. Find the; i) total active power. ii) reactive power. iii) apparent power in the circuit.	CO4	7 Marks
		(OR)		

6	a)	A 3-phase, balanced delta connected load of (4+j8)Ω is connected across a 400V 3-phase balanced supply. Determine the phase currents and line currents. Also calculate the power drawn by the source.	CO4	7 Marks
	b)	The two wattmeter method is used to measure the power in a three phase load. The wattmeter readings are 400W and -35W. Calculate: i) The total active power. ii) Reactive power. iii) Power factor.	CO4	7 Marks

UNIT-IV

7	a)	Obtain the condition for maximum torque under running condition in Induction motor.	CO1	7 Marks
	b)	Draw and explain the slip-torque characteristics of a 3-phase induction motor.	CO1	7 Marks

(OR)

8	a)	Explain how rotating magnetic field in developed in 3-phase induction motors.	CO1	7 Marks
	b)	Derive the expression for induced EMF in an alternator.	CO2	7 Marks

UNIT-V

9		Explain the construction features and principle of operation of a shaded pole induction motor.	CO1	14 Marks

(OR)

10	a)	Explain with a neat diagram the working of a universal motor.	CO1	7 Marks
	b)	List the differences between single phase induction motor and 3-phase induction motor.	CO2	7 Marks