Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth semester B.Tech examinations (S), September 2020

Course Code: EE216

Course Name: ELECTRICAL ENGINEERING (AE)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions. Each question carries 15 marks

1	a)	Explain, with diagrams the procedure to find the equivalent circuit parameters of a given single phase transformer with respect to the h v side.	10
	b)	A 200 kVA, 6600/400 V, 50 Hz, single phase transformer has 80 turns on the secondary. Calculate (i) The approximate number of primary turns and (ii) the maximum value of flux in the core	5
2	a)	Derive the EMF equation of a DC generator.	5
	b)	Explain armature reaction and its effects on the performance of a DC generator.	10
3	a)	Compare autotransformers with ordinary transformers.	4
	b)	Draw & explain the no load phasor diagram of a single phase transformer.	4
	c)	Explain inter poles in dc machines with diagram? Why they are needed in a DC machine?	7

PART B

Answer any two full questions. Each question carries 15 marks

4	a)	What is the significance of back EMF in the working of a DC motor?	5
	b)	Explain the working of a three point starter with necessary diagram.	10
5	a)	Explain any two starting methods of a three phase squirrel cage induction motor.	10
	b)	Derive the EMF equation of an alternator with derivations of pitch factor and distribution factor	5
6	a)	Explain Swinburne's test on DC shunt motor. Write expression to find constant loss and list the advantages of the test.	7
	b)	A three phase star connected induction motor has 2 poles and is connected to 400V, 50Hz supply. Calculate i) synchronous speed ii) the actual rotor speed iii) rotor	8

frequency when the slip is 4 % and iv) rotor current at 4%slip if rotor has resistance and stand still reactance of of 1Ω/phase and 4Ω/phase respectively.

PART C

Answer any two full questions. Each question carries 20 marks

7	a)	Sketch & explain the torque –slip characteristics of three phase Induction motors.	5
	b)	Explain the working of (i) Split phase (ii) capacitor start and (iii) capacitor start run induction motors.	10
	c)	Explain the power flow diagram of an induction motor.	5
8	a)	Explain the working of MI instruments.	10
	b)	Calculate the active & reactive powers consumed by the three phase load& the power factor of it when the two watt meters connected to it gave the following readings W 1= 1500 W ,W 2 = -500 W	5
	c)	How can you distinguish between an (i) MI and MC meter by looking at the scale of the instrument (ii) The current coil & pressure coil of a wattmeter just by inspection?	5
9	a)	Explain the working of induction Type Energy meter with diagrams.	10
	b)	With neat diagram explain working of shaded pole induction motor.	5
	c)	Compare DC & AC servomotors	5