

Vivekananda College of Engineering & Technology, Puttur

[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]

Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08

Rev 1.9

EC

10/12/19

CONTINUOUS INTERNAL EVALUATION - 3

Dept:EC	Sem / Div: Ist A/B/C	Sub:Basic Electrical Engineering	S Code:18ELE13
Date:17/12/19	Time: 3:00-4:30	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

QN	Questions	Marks	RBT	CO's
PART A				
1 a	Define Back e.m.f and derive the Torque equation for a DC motor.	10	L2	CO3
b	Explain the necessity of starter and explain star delta starter	7	L2	CO2
c	A 6 pole 3 phase star connected alternator has an armature with 90 slots and 12 conductors per slots. If it revolves at 1000 rpm, the flux per pole being 0.5Wb. Calculate the emf generated, if the winding factor is 0.97 and all the conductors in phase are in series. The coil is full pitched..	8	L3	CO3
OR				
2 a	Explain the characteristics of a DC shunt motor with figure	10	L2	CO3
b	Discuss the different type of rotor used in alternator	6	L2	CO3
c	Define slip speed and slip.	4	L2	CO2
d	A 3 phase 6 pole 50Hz Induction motor has a slip of 1% on no load and 3% at full load. Determine i) synchronous speed ii) No load speed iii) full load speed iv) frequency of rotor current at stand still v) frequency of rotor current an full load.	5	L3	CO2

PART B

3	a	Find the useful flux per pole of a 250V, 6 pole DC shunt motor having a two circuit armature winding with 220 conductors. At normal working temperature, the overall armature resistance including brushes is 0.2Ω . The armature current is 13.3A at the no load speed of 908 rpm	9	L3	CO3
	b	Explain with neat diagram the concept of rotating magnetic field.	8	L2	CO2
	c	3 phase star connected synchronous generator driven at 900 rpm is required to generate a line voltage of 460V at 60Hz on open circuit. The stator has 2 slots per pole per phase and 4 conductors per slot. Calculate i) the number of poles, ii) the useful flux per pole	8	L3	CO3

OR

4	a	Why series motor is never started on no load?	9	L2	CO3
	b	Derive the emf equation in an alternator. What is the necessity of considering pitch and distribution factor	8	L2	CO3
	c	A 240V 4 pole shunt motor running at 1000 rpm gives 15HP with an armature current of 50A and a field current of 1A. The armature winding is wave connected and has 540 conductors. Its resistance is 0.1Ω and drop at each brush is 1V i) find useful torque ii) total torque, iii) useful Torque, iv) Useful flux per pole v) Rotational losses	8	L3	CO3

Sowmya Anil

Prepared by: Mrs SOWMYA ANIL

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HOD