

**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

17/01/24

**Additional test**

Dept:EC	Sem / Div:1 <sup>st</sup> CS & EC	Sub:Introduction to Electrical Engineering	S Code: BESCK104B
Date:04/01/24	Time: 10:00-11:30	Max Marks: 50	Elective:Y

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

QN	Questions	Marks
<b>PART A</b>		
1	Define Back e.m.f and derive the Torque equation for a DC motor.	10
2	Explain the working principle, of single phase transformer. The primary winding of a 25KVA transformer has 200 turns and is connected to 230V, 50Hz supply. The secondary turns are 50. Calculate i) no load secondary emf ii) full load primary and secondary current, iii) the flux density in the core if the cross section of the core is 60cm <sup>2</sup>	10
3	Explain the concept of rotating magnetic field with neat vector diagrams.	10
4	With neat diagram, explain the working principle of fuse Define Electric shock. What are the safety precaution to be taken against to avoid electric shock?	10
5	Explain the characteristics of a DC shunt motor with figure	10
6	Discuss the different type of rotor used in alternator Define slip speed and slip	10
7	The field current in a dc shunt machine is 2A and the line current is 20A at 200 V. Calculate (i) The generated emf when working as generator. (ii) Torque in Nm when running at 1500 rpm as motor. Take the armature resistance as 0.5 ohm.	10
8	Draw a labeled diagram of the cross section of a DC generator. What are the essential functions of the field coils, armature, commutator and brushes ?	10
9	Derive the condition for maximum efficiency and the load at which the efficiency is maximum	10
10	In a 50KVA, 11KV/400V single phase transformer , the iron and copper losses are 500W and 600W respectively. Calculate i)efficiency at full load UPF ii) the load for maximum efficiency iii) maximum efficiency iv) efficiency at 0.9 power factor and 0.75 load	10