



Paper id: 252795

Printed Page: 1 of 2
Subject Code: KEE402

Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

BTECH
(SEM IV) THEORY EXAMINATION 2024-25
ELECTRICAL MACHINES-I

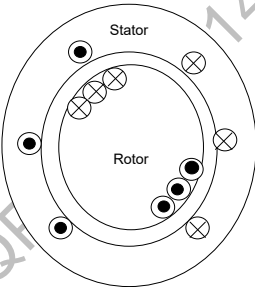
TIME: 3 HRS

M.MARKS: 100

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A1. Attempt *all* questions in brief.

2 x 10 = 20

Q No.	Question	CO	Level
a.	Illustrate the significance of co-energy?	1	K4
b.	How the armature reaction can be neutralized?	2	K2
c.	What is the shape of induced emf in DC machine?	2	K4
d.	Which method of DC motor speed controlling provides constant torque?	3	K4
e.	What is ratio of no load to full load current in single phase transformer?	4	K4
f.	What is the harmonic order of inrush current in single phase transformer?	4	K4
g.	What type of connection in three phase transformer is used for step down purpose?	5	K3
h.	How the flux responds for the air core type of rotating machines?	1	K4
i.	Draw and determine the direction of net flux of the rotating machine as shown below 	1	K4
j.	From which material, brushes connected at the commutator is made of?	2	K2

SECTION B2. Attempt any *three* of the following:

10 x 3 = 30

a.	Derive the expression of mechanical work done for the slow movement of armature with the relevant graph?	1	K4
b.	Explain the armature reaction of DC machine under different conditions	2	K2
c.	Explain Ward Leonard system for speed control of dc series?	3	K4
d.	Explain the paralleloperation of single-phase transformers?	4	K4
e.	Explain the excitation phenomenon in single phase transformers.	5	K4

SECTION C3. Attempt any *one* part of the following:

10 x 1 = 10

a.	Derive the expression of mechanical work done for the instantaneous movement of armature with the relevant graph?	1	K4
b.	Discuss the commutation process of DC machine?	2	K2

4. Attempt any *one* part of the following:

10 x 1 = 10

a.	Draw and explain three-point and four-point starters in detail.	2	K2
b.	Explain in detail field current control method for speed control of dc motors.	3	K4

5. Attempt any *one* part of the following:

10 x 1 = 10

a.	Discuss the internal and external characteristics of the DC shunt generator	2	K2
----	---	---	----



Paper id: 252795

Printed Page: 2 of 2
Subject Code: KEE402

Roll No:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

BTECH
(SEM IV) THEORY EXAMINATION 2024-25
ELECTRICAL MACHINES-I

TIME: 3 HRS

M.MARKS: 100

b.	Derive the condition of maximum efficiency in single phase transformer.	4	K4
6.	Attempt any <i>one</i> part of the following:	10 x 1 = 10	
a.	Discuss about the Sumpner's test with relevant circuit diagram?	4	K4
b.	Discuss about the three-phase to two-phase conversion using Scott connection?	5	K3
7.	Attempt any <i>one</i> part of the following:	10 x 1 = 10	
a.	Explain about the various phasor groups and their connections in three phase auto-transformer with relevant diagram?	5	K3
b.	Explain the working principle of DC Servo motors with relevant diagram?	2	K2

QP25EP1_143
| 26-Jul-2025 1:34:07 PM | 122.185.51.242