

CBCS SCHEME - Make-Up Exam

BEE304

Third Semester B.E/B.Tech. Degree Examination, June/July 2025 Transformers and Generators

Max. Marks:100

Time: 3 hrs.

- Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1			M	L	C
1	a.	With neat diagram, explain the types of transformer.	6	L2	CO1
	b.	With the help of phasor diagram explain the operation of practical transformers ON Load.	8	L2	CO1
	c.	The maximum efficiency at full load and unity power factor of a 1 - ϕ , 25 KVA, 50 Hz transformer is 98%. Determine the efficiency at i) 75% load, 0.9 pf ii) 50% load 0.8 pf.	6	L3	CO1
OR					
2	a.	With neat circuit diagram, explain the necessity and procedure of Sumpner's test on transformers.	6	L2	CO1
	b.	5 KVA, 500 / 250 V, 50Hz single phase transformer gave the following readings: O.C. test : 500V, 1A, 50W (LV side open) S.C. test : 25 V, 10A, 60W (LV side shorted) Determine: i) the efficiency on full load 0.8 lagging power factor ii) the voltage regulation on full load, 0.8 leading pf. iii) Draw the equivalent circuit referred to primary side and insert all the values in it.	8	L3	CO1
	c.	With usual notations derive the EMF equation of transformer.	6	L3	CO1
Module – 2					
3	a.	What is the need of parallel operation and mention the conditions to satisfied parallel operation of two single phase transformers.	6	L2	CO2
	b.	Obtain the expression for load sharing during parallel operation of two transformers having same voltage ratios.	8	L2	CO2
	c.	With a neat sketch, describe the constructional features of 3 - ϕ transformer.	6	L2	CO2
OR					
4	a.	Derive the expression for saving of copper in auto- transformer compared to two winding transformer.	6	L2	CO2
	b.	Two transformers are connected in parallel to a load of $(2 + j 1.5) \Omega$ their impedances in secondary terms are, $z_1 = (0.15 + j 0.5) \Omega$ and $z_2 = (0.1 + j 0.6) \Omega$ their no load terminal voltages are $E_1 = 207 \angle 0^\circ \text{ V}$ and $E_2 = 205 \angle 0^\circ \text{ V}$. Find the power output and power factor of each transformer.	8	L3	CO2
	c.	What is necessity of tap changing? Explain the process of on load tap changing in auto- transformer	6	L2	CO2

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