UNITED COLLEGE OF ENGINEERING & RESEARCH		Department of Electrical Engineering	
2ND SESSIONAL EXAM	SEMESTER: 1ST	SECTION : H I J K L M	Feb- 2021
TIME: 1Hrs	SUBJECT: ELECTRICAL	Paper code: KEE 101	MM. 30
READ ALL INSTRUCTIONS AND QUESTIONS VERY CAREFULLY			

		SECTION A (Attempt ALL questions) Short answer	[6]	CO	Bloom's Level
1	a	**Enlist** two differences between a transformer and an autotransformer	[1]	3	L1
1	b	**Differentiate** between Dia-magnetic and Para-magnetic materials.	[1]	3	L1
1	c	Can a Series DC motor be operated at No-Load? **Justify** your answer.	[1]	4	L4
1	d	The full load copper-loss and iron-loss of a transformer are 6400 W and 5000 W respectively. **Estimate** the same losses at half load, taking supply voltage and frequency as constant.	[1]	3	L3
1	e	**Define** Slip Speed and Slip.	[1]	4	L1
1	f	**Enumerate** different types of Earthing.	[1]	5	L1
		SECTION B (Attempt ANY THREE questions) Medium answer	[9]		
2		**Draw** the winding connections of a Delta-Star transformer and hence **relate** the Line voltages and currents at the primary and secondary having N1 turns in Primary and N2 turns in Secondary.	[3]	3	L4
3		A 4 pole shunt generator with lap connected armature has field and armature resistance of 50 Ω and 0.1 Ω respectively. If supplying power to 1000W lamp load at 100 V. **Calculate** the generated emf and the armature current. Consider a contact drop of 1 V per brush.	[3]	4	L3
4		A 3-phase, 50 Hz induction motor has 6 poles and operates at a slip of 5% at a certain load. **Determine** i) Frequency of rotor emf ii) Speed of rotor with respect to stator iii) Speed of rotor magnetic field with respect to stator	[3]	4	L3
5		**Describe** electrical characteristics of lead acid battery.	[3]	5	L2
		SECTION C (Attempt ANY THREE question) Long answer	[15]		
6		a) **Examine** the condition for maximum efficiency for single phase two winding transformer [3] b) **Explain** what happens if dc supply is given to a transformer? [2]	[5]	3	L4+L2
7		**Discuss** the principle of operation of 3-phase synchronous motor. Also **write** its applications	[5]	4	L2
8		**Illustrate** a Molded Case Circuit Breaker and **discuss** how it is different from Miniature Circuit Breaker?	[5]	5	L2
9		**Explain** the term Backup as applicable to batteries. [2] A battery has taken a charging current of 5.2 Amp for 24 hours at 2.25 Volt, while discharging it gave a current of 4.5 Amp for 24 hours at an average voltage of 1.85 Volt. **Evaluate** the A-H efficiency and the energy efficiency of the battery. [3]	[5]	5	L2+L3