Estd. in 2001

Laxdia Singh Charitable Trust's (Regd.)
THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Website : www.tcetmumbai.in
Autonomous College Affiliated to University of Mumbai
Approved by All India Council for Technical Education(AICTE) and Government of Maharashtra(GoM)
Conferred Autonomous Status by University Grants Commission (UGC) for 10 years w.e.f. A.Y 2019-20
Amongst Top 200 Colleges in the Country, Ranked 193rd in NIRF India Ranking 2019 in Engineering College category
• ISO 9001:2015 Certified • Programmes Accredited by National Board of Accreditation (NBA), New Delhi
• Institute Accredited by National Assessment and Accreditation Council (NAAC), Bangalore

IN-SEMESTER EXAMINATION (ISE-I) DECEMBER 2022

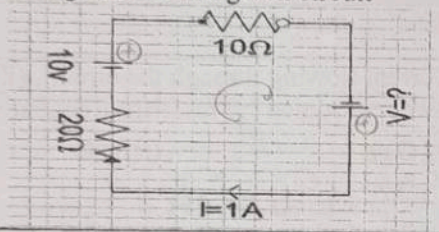
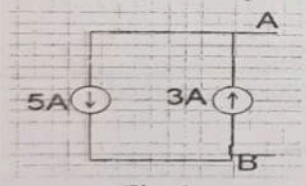
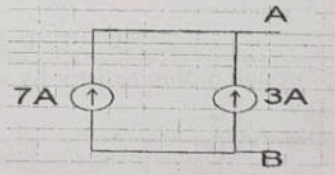
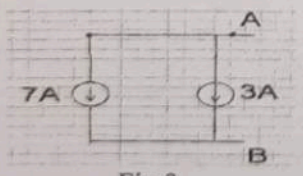
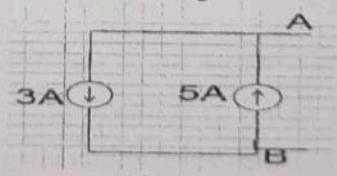
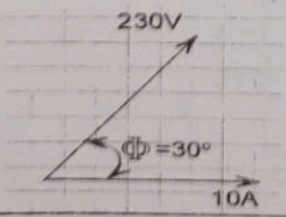
F.E/F.T (Semester-I)

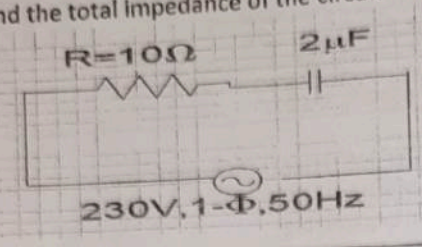
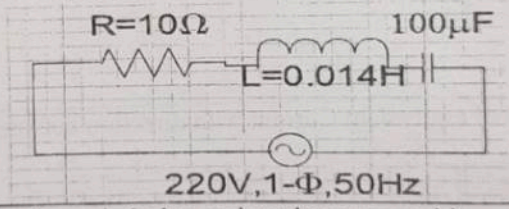
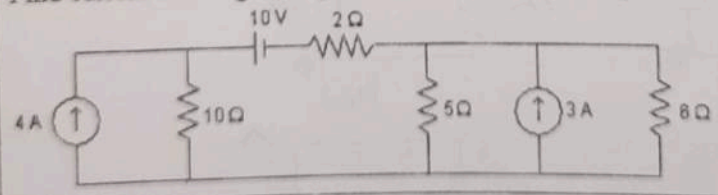
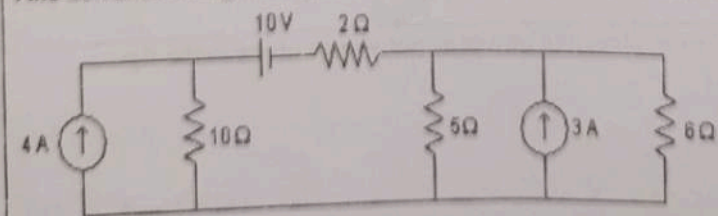
Basic Electrical Engineering

Branch: AI&DS, COMP, CIVIL, IOT & CSE, E&CS
Division: A, B & C
Duration: 60 Minutes
Instructions –

Date: 27/12 /2022
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		**Solve any 5 Questions.**	Marks
	a.	Find the voltage of the in a given circuit 	02
	b.	Find the value of equivalent Current with direction between A & B all four cases  Fig. 1  Fig.2  Fig.3  Fig.4	02
	c.	Find the Active Power, Reactive power as per values given in the figure. 	02

	d.	Find the total impedance of the circuit  	02
	e.	List out the Non Renewable Energy source (at least 4)	02
	f.	What are the advantage and disadvantage of Solar Energy (two for each)	02
	g.	Draw the block diagram of electric power generation system	02
Q.2.	a.	A voltage of 125 V at 50 Hz is applied across a non-inductive resistor connected in series with an inductor with a current of 2.2 A the power loss in the resistor is 96.8 W. Calculate (i)Resistance (ii) Inductance (iii) Power factor (iv) Active Power (v) Draw power triangle	05
		OR	
	b.	Determine (i) impedance, (ii) Current flowing through the circuit, (iii) voltage drop across each element and (iv) power consumed (v) resonant frequency  	05
Q.3	a.	Find current flowing through 6-ohm resistor by superposition method.  	05
		OR	
	b.	Find Current flowing through 6 ohm resistor using Norton's Theorem.  	05

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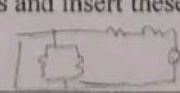
IN-SEMESTER ASSESSMENT (ISE-II) JANUARY-2023
FE / FT (Semester-I) CBCGS-HME 2020
Basic Electrical Engineering

Branch: AI&DS, COMP, CIVIL, IOT & CSE
Division: A, B & C
Duration: 60 Minutes
Instructions –

Date: 24/01/2023
Timing: 10:00 AM to 11:00 AM
Maximum Marks: 20

CIVIL

1. All questions are compulsory.
2. Assume suitable data wherever necessary and state the assumptions made.
3. Diagrams / sketches should be given wherever necessary.
4. Use of logarithmic table, drawing instruments and non-programable calculators is permitted.
5. Figures to the right indicate full marks.

Q.1		Solve any 5 Questions.	Marks
	a.	What are the characteristics of Practical transformer.	02
	b.	Draw torque slip characteristics of Induction Motor.	02
	c.	Name all types of Stepper motor and Induction Motor.	02
	d.	Draw the resistive Load/Output waveform for full wave Inverter.	02
	e.	A 1-ø, 50 Hz transformer has 500 turns on primary and 1000 turns on secondary. The voltage per turn in the primary winding is 0.2 Volts. Calculate the area of the core when maximum flux density is 0.045 Wb/m2	02
	f.	Name speed control methods of induction motor.	02
	g.	Draw Only the circuit diagram for full wave controlled rectifier.	02
Q.2.	a.	Draw and explain V-I characteristics of SCR.	05
		OR	
	b.	Explain the concept of rotating magnetic field.	05
Q.3	a.	Draw the phasor diagram of single phase transformer for Inductive Load.	05
		OR	
	b.	A 5 kVA, 250/500 V, 1-Φ transformer gave the following test results: No load test (L.V side) 250 V, 0.85 A, 60 W → OC Short circuit test (H.V side) 9 V, 6 A, 121.6 W → SC Calculate: a) the equivalent circuit constants and insert these on the equivalent circuit diagram refer to secondary side. 	05

END SEMESTER EXAMINATION, (FEBRUARY 2023)

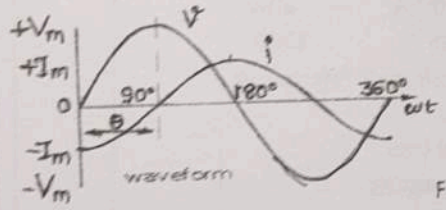
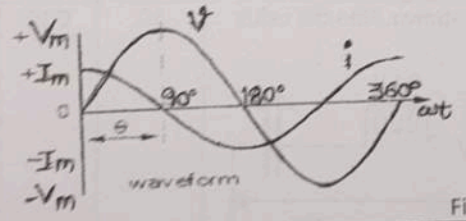
(For Regular Students)

F.E/F.T. SEMESTER I (CBCGS-HME 2020)

Branch:	COMP, CIVIL, E&CS, CSE, AI&DS, IoT	Q.P. Code:	R1G10031
Subject:	Basic Electrical Engineering	Duration:	2 hours
Subject Code:	ESC101	Max. Marks:	60

Instructions: 1. All sections are compulsory
2. Figures to the right indicate full marks.
3. Assume suitable data if necessary and state the assumptions clearly.

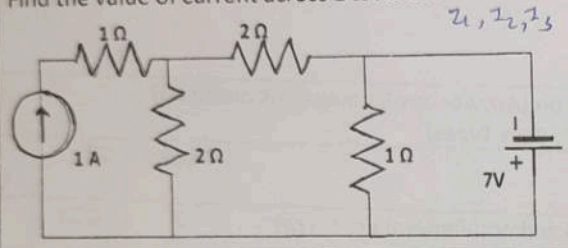
Section-I Short Answer Question (Answer any 05 questions out of 06) (10 Marks)
(Fundamental , Core Types)

Q. No.		Marks	CO	RBT Level	PI
1	Difference between Renewable and non-Renewable energy sources	2	CO3	R	1.1.1
2	Write the characteristics of ideal and Practical Transformer	2	CO4	R	1.1.1
3	Write the equation of current and draw phasor diagram for figure (a) and (b), where v = Vm Sinωt  Fig. (a)  Fig. (b)	2	CO2	U	1.3.1
4	How to convert Voltage source into Current Source and Current Source into Voltage Source. (Take any example)	2	CO1	A	2.1.3

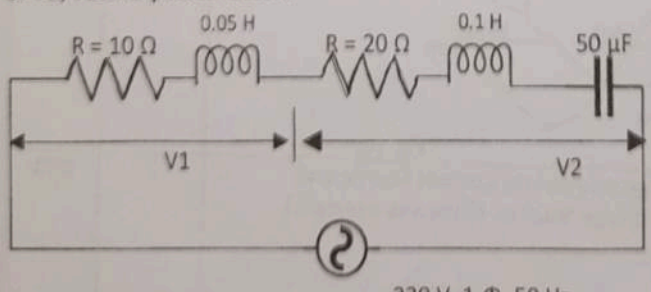
P.T.O

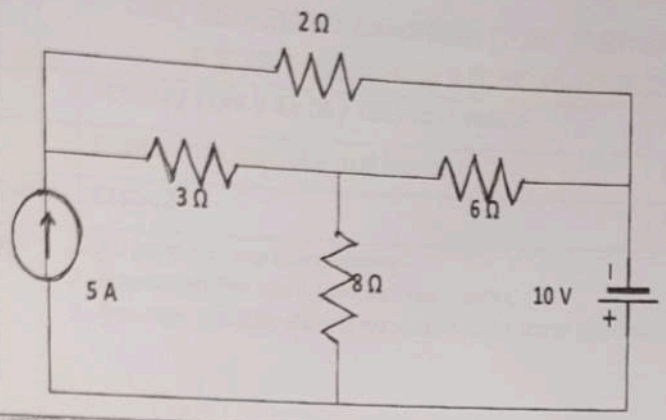
5	Write the advantage & Disadvantage of Solar Energy.	2	CO3	R	
6	Draw the basic block diagram of Power Generation Unit System.	2	CO3	U	

Section-II **Descriptive Answer Questions(Answer any 04 out of 06)** **(20 Marks)**
(Descriptive ,Comprehension Types)

1	Describe and draw the characteristics of SCR.	5	CO6	U	1.3.1
2	Explain the Torque-Slip/Speed characteristics of Induction motor	5	CO5	U	1.3.1
3	Draw the phasor diagram of transformer on inductive load	5	CO4	U	1.3.1
4	Draw the constructional diagram of variable reluctance, permanent magnet.	5	CO4	U	1.3.1
5	Explain the solar Power Generation.	5	CO3	U	1.3.1
6	Find the value of current across 1 Ω resistor. 	5	CO1	A	2.1.3

Section-III **Long Answer Question (Answer any 03 out of 05)** **(30 Marks)**
(Application, Analytical, Evaluation, Design Type)

1	3. A 5KVA 400/800V, 50Hz, single phase transformer gave the following test results. O.C. test (L.V. Side): 400V 0.7 A 60W S.C. test (H.V. Side): 32V 16 A 120W i) Draw the equivalent circuit of the transformer referred to L.V. side and insert all parameter values. ii) Efficiency and at 0.9 P.F. lagging at rated load. iii) Calculate maximum efficiency at 0.9 p.f lagging	10	CO4	A	2.1.3
2	Draw the vector diagram for the circuit shown. Find the value of V1, V2 and power factor. 	10	CO2	A	2.1.3

3	Find the current across 8 Ω Resistor by using superposition theorem.  	10	CO1	A	2.1.3
4	Describe the working of half bridge and full bridge Inverter with the waveform.	10	CO6	U	1.3.1
5	Explain the generation of Rotating Magnetic field in 3 Phase induction motor.	10	CO5	U	1.3.1