

Common to M.Tech (INT) - Networking and Communication/Computational Intelligence/Data science and Business systems

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2021-22 (EVEN)**Test: CLAT-1**

Date: 22/04/2022

Course Code & Title: 21EES101T – Electrical and Electronics Engineering

Duration: 50 Mins

Year & Sem: I & II

Max. Marks: 25

Course Articulation Matrix:

[illegible]

Part - A

(3 x 4 Marks = 12 Marks)

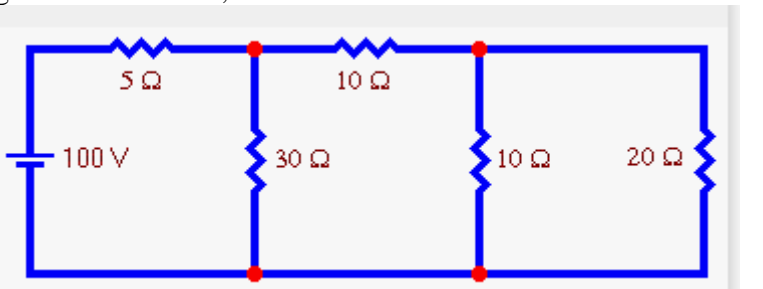
Instructions: Answer any three questions

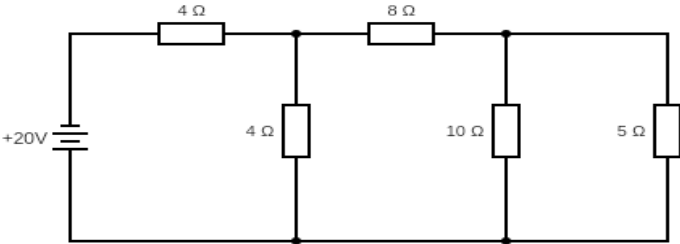
Q. No	Question	Marks	BL	CO	PO	PI Code
1	Define the following : a) Kirchhoff's Current law b) Superposition Theorem	4	2	1	1	1.6.1
2	Derive the equation for Voltage division rule, (Considering two resistors connected in series)	4	1	1	1	1.6.1
3	When a resistor is placed across a 230V supply, the current is 12A. What is the value of the resistor that must be placed in parallel, in order to increase the load to 16 A?	4	3	1	1,2	1.2.1, 2.5.1
4	Derive the Real power and Reactive power equation for R-L Series AC circuit.	4	2	1	1	1.6.1

Part – B

(1 x 13 Marks = 13 Marks)

Instructions: Answer all the questions

<p>5(a)</p>	<p>Find the Node voltage using the Nodal analysis technique for the given circuit below,</p> 	<p>13</p>	<p>2</p>	<p>1</p>	<p>1,2</p>	<p>1.6.1</p>
<p>(or)</p>						

5(b)	<p>Calculate the current through the load resistance (R_L) = 5 Ω. And power at the load resistance (R_L) = 5 Ω. Using Thévenin's theorem.</p> 	13	2	1	1,2	1.6.1
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CO1	H	M													
CO2	H	M													
CO3	H														
CO4	H														
CO5	H														
CO6															

Part - A

(3 x 4 Marks = 12 Marks)

Instructions: Answer any three questions

Q. No	Question	Marks	BL	CO	PO	PI Code
1	Define the following : a) Kirchhoff's Voltage law b) Thevenin's Theorem	4	2	1	1	1.6.1
2	Derive the equation for current division rule, (Considering two resistors connected in parallel)	4	1	1	1	1.6.1
3	A 50 Ω resistor is in parallel with a 100 Ω resistor. The current in 50 Ω resistor is 7.2 A. What is the value of third resistor to be added in parallel to make the line current as 12.1A?	4	3	1	1,2	1.2.1, 2.5.1
4	Derive the Real power and Reactive power equation for R-C Series AC circuit.	4	2	1	1	1.6.1

Part – B

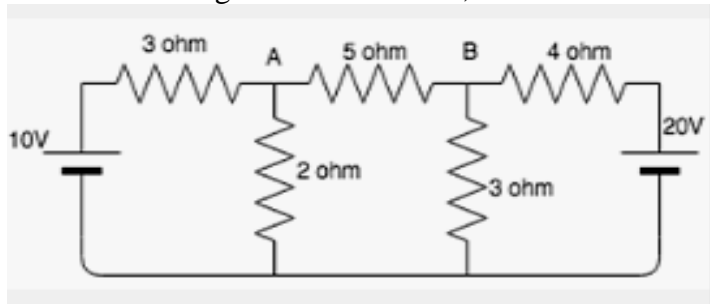
(1 x 13 Marks = 13 Marks)

Instructions: Answer all the questions

5(a)	<p>Using mesh analysis, Find the current in 5 Ω resistor in the circuit shown.</p>	13	2	1	1,2	1.6.1
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(or)

5(b) Find the current through 5 ohm Resistor using superposition theorem in the given circuit below,



13

2

1

1,2

1.6.1



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Academic Year: 2021-22 (EVEN)

Test: CLAT-II

Date: 03/06/2022

Course Code & Title: 21EES101T – Electrical and Electronics Engineering

Duration: 2 Periods

Year & Sem: I & II

Max. Marks: 50

Course Articulation Matrix:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	H	M													
CO2	H	M													
CO3	H														
CO4	H														
CO5	H														
CO6															

Part- A (10 x 1 Marks = 10 Marks)

Instructions: (Answer ALL questions)

Q. No	Question	Marks	BL	CO	PO	PI Code
1	A PN junction diode conducts in-----directions only. A. forward B. reverse C. has low resistance in forward as well as reverse D. has High	1	2	2	1	1.6.1
2	Which of the following is not a terminal of BJT? A. Gate B. Base C. Emitter D. Collector	1	2	2	2	1.6.1
3	Which of the following device used to convert AC to DC supply? A. Chopper B. Cycloconverter C. Rectifier D. Inverter	1	2	2	2	3.1.6
4	The logical expression $Y=AB+AC+BC$ is known as----- A. Standard Sum of Product form B. Sum of Product form C. standard Product of Sum form D. Product of Sum form	1	2	2	1	1.6.1
5	The number of cells in 4 variable K-map is----- A. 4 B. 16 C. 8 D. 32	1	2	2	2	1.6.1
6	The material used for yoke of a dc machines is iron to perform --- A. To provide current path B. To provide flux path C. To provide mechanical support D. To provide both current and flux path.	1	2	3	2	3.1.6
7	The function of commutator in dc generators is----- A. To convert the ac to dc current B. To convert the dc to ac current C. To amplify voltage D. To convert ac to dc and dc to ac current	1	2	3	2	1.6.1
8	Construction of brushless DC motor is similar to that of _____ (a) Conventional DC motor (b) Induction motor (c) Permanent magnet synchronous (d) Universal motor	1	2	3	1	1.6.1
9	Which of the following is not a type of servo motor? A. Positional Rotation B. Continuous Rotation C. Reversing Rotation D. Linear Rotation	1	2	3	2	3.1.6
10	In electrical drive, which converter is needed when available source is AC source and DC motor? A. Chopper B. Cycloconverter C. Rectifier D. Inverter	1	2	3	1	1.6.1

Part – B (4 x 10 Marks = 40 Marks) Instructions: Answer any four questions						
11	Explain the construction and working principle of SCR with VI characteristics.	10	2	2	1	1.6.1
12	Illustrate the concept of SMPS with neat sketch.	10	2	2	1	1.6.1
13	Simplify the following using K-MAP (a) $Y(A,B,C,D)=\sum m(0,1,2,4,5,7,8,9,10,12,13)$ (b) $F(A,B,C,D)=\sum m(0,4,5,7,8,11,12,15)$	10	2	2	1	1.6.1
14	With neat diagram, explain the constructional details of DC motor.	10	2	3	2	3.1.6
15	Describe the construction and working principle of induction motor with neat diagram.	10	2	3	2	3.1.6
16	With neat block diagram, explain the operation of electrical drives with various components.	10	2	3	2	3.1.6



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Year & Sem: I & II

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Course Articulation Matrix:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	H	M													
CO2	H	M													
CO3	H														
CO4	H														
CO5	H														
CO6															

Part- A (10 x 1 Marks = 10 Marks)

Instructions: (Answer ALL questions)

Q. No	Question	Marks	BL	CO	PO	PI Code
1	The width of depletion layer in a forward biased PN junction diode----- A. Increases B. decreases C. remains constant D. first increases then decreases	1	2	2	1	1.6.1
2	Which among the following is a current controlled semiconductor device? A. BJT B. JFET C. PN junction diode D. MOSFET	1	2	2	2	1.6.1
3	Which of the following device used to convert DC to DC supply? A. Chopper B. Cycloconverter C. Rectifier D. Inverter	1	2	2	2	3.1.6
4	In K-Map, grouping the 0s produces A. SoP expression B. PoS expression C. a don't care condition D. AND-OR expression	1	2	2	1	1.6.1
5	The output of a logic gate is '1' when all its input is at logic 0. The gate is either A. NAND or an EX OR gate B. NOR or an EX-NOR gate C. an OR or an EX NOR gate D. an AND or an EX-OR gate	1	2	2	2	1.6.1
6	The function of brushes in a DC generator is A. To increase the voltage B. To increase the current C. To collect current & connected to the load D. To provide flux density in air gap	1	2	3	2	3.1.6
7	Which of the following is not an advantage of a synchronous motor? A. requires a separate dc source B. constant speed C. speed independent of load D. can function as a synchronous generator	1	2	3	2	1.6.1
8	Which of the following motor used for constant speed applications? A. Synchronous motor B. Stepper Motor C. Induction motor D. Servo motor	1	2	3	1	1.6.1

9	Which of the following is not a component of a stepper motor? A. Winding B. Rotor C. Commutator D. Stator	1	2	3	2	3.1.6
10	Which device used to track maximum power from solar panel? A. Inverter B. MPPT C. Battery D. Charger	1	2	3	1	1.6.1
<p style="text-align: center;">Part – B (4 x 10 Marks = 40 Marks)</p> <p>Instructions: Answer any four questions</p>						
11	Explain the construction and working principle of BJT with neat diagram.	10	2	2	1	1.6.1
12	Illustrate the concept of voltage regulator with neat sketch.	10	2	2	1	1.6.1
13	Simplify the following using K-MAP (a) $Y(A,B,C,D)=\Sigma m(0,1,3,7,8,9,10,11,13,15)$ (b) $F(A,B,C,D)=\Sigma m(0,2,5,7,8,10,13,15)$	10	2	2	1	1.6.1
14	With neat diagram, explain the constructional details of DC Generator.	10	2	3	2	3.1.6
15	Discuss in detail about construction and working principle of single phase transformer.	10	2	3	2	3.1.6
16	Describe the construction and operation of stepper motor with neat diagrams.	10	2	3	2	3.1.6



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Academic Year: 2021-22 (EVEN)

Test: CLAT-III

Date: 23/06/2022

Course Code & Title: 21EES101T – Electrical and Electronics Engineering

Duration: 8.00-9.40AM

Year & Sem: I & II

Max. Marks: 50

Course Articulation Matrix:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	H	M													
CO2	H	M													
CO3	H														
CO4	H														
CO5	H														
CO6															

Part- A (10 x 1 Marks = 10 Marks)

Instructions: (Answer ALL questions)

Q. No	Question	Marks	BL	CO	PO	PI Code
1	-----also known as self-generating type transducer which develop their own voltage or current as the output signal. a) Active transducers b) Sensors c) strain gauge d) Passive transducers	1	2	4	1	1.6.1
2	LVDT can be used in all applications where displacements ranging from fraction of a ---- to a few ---- have to be measured. a)mm & cm b)mm to km c) cm to mm d) mm to mm	1	2	4	2	1.6.1
3	----- is to predict change in electrical resistance of some materials with changing temperature. a) TTD b) RTD c) DDR d) BTD	1	2	4	2	3.1.6
4	----- diode is an electronic device, which converts electrical energy into light energy to produce high-intensity coherent light. a)PN b) laser c) power d) Zener	1	2	4	1	1.6.1
5	Many solar cells joins together is said to be-----. a)Batteries b) fuel cell c) Solar Panel d) EV	1	2	4	2	1.6.1
6	The potential stress on the insulator of DC transmission system is about-----% of same voltage AC transmission system. a) 10 b) 70 c) 100 d) 0.5	1	2	5	2	3.1.6
7	----- is an electrical safety device that has the capability to Protect an electric circuit from excessive electric current. a) Fuse b) switch c) tester d) bulb holder	1	2	5	2	1.6.1
8	-----is to connect any electrical equipment to earth with a very low resistance wire, making it to attain earth's potential. a) Earthing b) measuring c) transmitting d) distributing	1	2	5	1	1.6.1
9	A solar cell is basically a ----- a) JFET b) p-n junction diode c) Zener diode d) BJT	1	2	5	2	3.1.6
10	----- are a collection of one or more cells whose chemical reactions create a flow of electrons in a circuit. a) Batteries b) power diode c) bio gas d) Grid	1	2	5	1	1.6.1

Part – B (4 x 10 Marks = 40 Marks) Instructions: Answer any four questions						
11	Describe in detail about the operation of Capacitive Transducer with a neat diagram.	10	2	4	1	1.6.1
12	With a neat sketch, write short notes on: i) Thermocouple ii) Thermistor.	10	2	4	1	1.6.1
13	Illustrate in detail about the construction and working of permanent magnet moving coil instrument with a neat construction diagram.	10	2	4	1	1.6.1
14	With a neat sketch, explain in detail about the concept of Single line representation of power system and 11kV/400V Indoor Substation.	10	2	5	2	3.1.6
15	Define earthing, and write the needs of earthing, with clear explanation of any one of its types.	10	2	5	2	3.1.6
16	Explain the following with a neat diagram i) Battery Electric Vehicle ii) Hybrid Electric Vehicle	10	2	5	2	3.1.6



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Test: CLAT-III

Date: 23/06/2022

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Year & Sem: I & II

Max. Marks: 50

Course Articulation Matrix:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	H	M													
CO2	H	M													
CO3	H														
CO4	H														
CO5	H														
CO6															

Part- A (10 x 1 Marks = 10 Marks)

Instructions: (Answer ALL questions)

Q. No	Question	Marks	BL	CO	PO	PI Code
1	-----also known as externally powered transducers, derive the power required for energy conversion from an external power source. a)Active transducers b) Passive transducers c) Piezo effect transducer d) thermocouple	1	2	4	1	1.6.1
2	Inductive transducers work on the principle of the ----- a)Reluctance b) conduction c) see back effect d) electromagnetic induction	1	2	4	2	1.6.1
3	The sensitivity of a strain gauge is described in terms of a characteristic called the ----- a)Peak factor b) form factor c) gauge factor d) load factor	1	2	4	2	3.1.6
4	Optocouplers is a ----- pin device and can have any number of photo detectors. a)10 b) 7 c) 15 d) 6	1	2	4	1	1.6.1
5	Best example for the Integrating Instruments is ----- a)Voltmeter b) ECG c) EMG d) Energy Meters	1	2	4	2	1.6.1
6	-----are devices that protect circuits from overload current conditions, but they are not destroyed when activated. a)Fuse b) Circuit breakers c) indicator d) voltmeter	1	2	5	2	3.1.6
7	The potential of the earth is considered to be at -----for all Practical purposes. a)1 b) 10 c) 100 d) 0	1	2	5	2	1.6.1
8	A solar cell is defined as an electrical device that converts light energy into electrical energy through the -----effect. a)Photovoltaic b)See back c) skin d) proximity	1	2	5	1	1.6.1
9	solar cells are photodiodes made of semiconductor material like - ----- a)Copper b) gold c) silicon d) silver	1	2	5	2	3.1.6
10	The byproduct obtained during the fuel cell technology is ----- a)Carbon b) lead c) water d) hydrogen	1	2	5	1	1.6.1

Part – B (4 x 10 Marks = 40 Marks) Instructions: Answer any four questions						
11	Describe in detail about the operation of LVDT- Inductive Transducer with a neat diagram.	10	2	4	1	1.6.1
12	With a neat sketch, write short notes on : i) Photo Diode ii) Photo resistor (LDR)	10	2	4	1	1.6.1
13	Illustrate in detail about the construction and working of repulsion type moving Iron instrument with a neat construction diagram.	10	2	4	1	1.6.1
14	With a neat sketch, explain in detail about the construction and operation of different types of Earthing.	10	2	5	2	3.1.6
15	Describe the construction and working of solar photovoltaic system, with a relevant diagram.	10	2	5	2	3.1.6
16	Explain the following with a neat diagram i) Plug in Hybrid Electric Vehicle ii) EV Charging station	10	2	5	2	3.1.6