BEE OLD QUESTION PAPERS

Q.P Code: EE1104ES   Hall Ticket No.: ☐☐☐☐☐☐☐☐☐☐

NARSIMHAREDDY ENGINEERING COLLEGE
(UGC AUTONOMOUS)

I B.Tech I Semester (NR21) Supplementary Examination, January/February 2024

BASIC ELECTRICAL ENGINEERING
(Common to ECE, CSE (CS), CSE (AI&ML), CSE (DS))

Time : 3 hours   Maximum marks: 70

Note:
- This question paper contains two parts, A and B
- Part A is compulsory which carries 20 marks (10 sub questions are two from each unit carry 2 Marks). Answer all questions in Part A
- Part B Consists of 5 Units. Answer one question from each unit. Each question carries 10 Marks and may have a, b sub questions

Part-A   (20 Marks)
Answer all questions

Q.No		Question	M	CO	BL
1)	a.	State Kirchhoff's current law.	2	CO1	L1
	b.	What are the limitations of Ohm's law?	2	CO1	L1
	c.	Define real power and reactive power	2	CO2	L2
	d.	What is resonance?	2	CO2	L1
	e.	What is auto transformer?	2	CO3	L1
	f.	What is hysteresis loss in transformer?	2	CO3	L1
	g.	Define voltage regulation of alternator.	2	CO4	L1
	h.	Draw the equivalent circuit of induction motor.	2	CO4	L2
	i.	Why fuse is used in a circuit?	2	CO5	L1
	j.	What is the main objective of earthing?	2	CO5	L1

Part-B   (50 Marks)
Answer all the Units
All Questions carry equal Marks

Q.No		Question	M	CO	BL
		UNIT–I			
2)	a	State and explain Thevenin's theorem?	5	CO1	L2
	b	Discuss resistor, inductor, capacitor with relevant expression?	5	CO1	L3
		OR			
3)	a.	Write about difference between Voltage source & Current source?	5	CO1	L2
	b.	Using the Thevenin's theorem calculate the current in 5ohm resistor?	5	CO1	L3
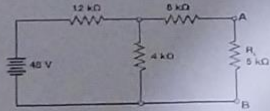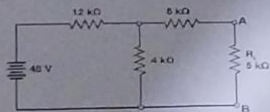
		UNIT–II			
4)	a.	A voltage of 50v with 50HZ frequency is applied to a series RLC circuit with R=100 ohm, L=0.5H and C=40microfarad. Determine i) impedance ii) current iii) power factor iv) phase angle between voltage and current	5	CO2	L4
	b.	Explain behavior of series RLC circuit?	5	CO2	L3
		OR			
5)	a.	Explain about series RC circuit and derive expression for voltage, current, power and draw phasor diagram.	5	CO2	L3
	b.	A current of 250 mA flows through a perfect inductor, when it is connected to a 5khz supply. Determine the inductance value	5	CO2	L2
		UNIT–III			
6)	a.	Derive EMF Equation Of Single Phase Transformer?	5	CO3	L3
	b.	A 125 KVA transformer having primary voltage of 2000V at 50 Hz has 182 primary and 40 secondary turns. Neglecting losses, Calculate (i)The full load primary and secondary currents.(ii)The no load secondary induced EMF (iii)Maximum flux in the core	5	CO3	L3
		OR			
7)	a.	Obtain Conditions For Maximum Efficiency of a Single-Phase Transformer?	5	CO3	L3
	b.	Explain Losses in Single Phase Transformer?	5	CO3	L3
		UNIT–IV			
8)	a.	State starting methods of three phase induction motor and explain any of them in details.	5	CO4	L2
	b.	Derive the EMF equation for the alternator?	5	CO4	L3
		OR			
9)	a.	Explain the construction, working principle of single phase Induction motor.	5	CO4	L3
	b.	Explain speed control of induction motor	5	CO4	L2
		UNIT–V			
10)	a.	Compare MCB with MCCB?	5	CO5	L2
	b.	A consumer uses 10 KW geezer, 6 KW electric furnace &five 100 W bulbs for 15 hours How many units (KWHr) of electrical energy have been used?	5	CO5	L3
		OR			
11)	a.	What are the different types of wires and cables? Explain	5	CO5	L2
	b.	State various types of batteries and their applications?	5	CO5	L3

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Paper 1

Q.P Code: 23EE105   Hall Ticket No. `2 3 X 0 1 A 0 5 H S`

NARSIMHAREDDY ENGINEERING COLLEGE
(UGC AUTONOMOUS)

I B.Tech I Semester (NR23) Regular Examination, January/February 2024

BASIC ELECTRICAL ENGINEERING

(Common to CSE, IT)

Time : 3 hours   Maximum marks: 60

Note: • This question paper contains two parts, A and B
- Part A is compulsory which carries 10 marks (10 sub questions are two from each unit carry 1 Marks). Answer all questions in Part A
- Part B Consists of 5 Units. Answer one question from each unit. Each question carries 10 Marks and may have a, b sub questions

Part-A
Answer all questions   (10 Marks)

Q.No		Question	M	CO	BL
1)	a	What is ideal voltage source?	1	CO1	L1
	b	State Thevenin's theorem.	1	CO1	L1
	c	Define average value of sinusoidal quantity?	1	CO2	L2
	d	What is meant by apparent power?	1	CO2	L1
	e	What is a step up Transformer?	1	CO3	L1
	f	What is the difference between ideal transformer and practical transformer?	1	CO3	L1
	g	How many windings are present at the time of staring a single phase Induction motor?	1	CO4	L2
	h	What is necessity of rotating magnetic field in the induction motor?	1	CO4	L1
	i	What is the full form of M C B?	1	CO5	L1
	j	Write the characteristics of batteries for longer life?	1	CO5	L1

Part-B   (50 Marks)
Answer all the Units
All Questions carry equal Marks

Q.No		Question	M	CO	BL
		UNIT–I			
2)	a	State and explain Thevenin's theorem.	5	CO1	L2
	b	Calculate the power absorbed by each component in the circuit shown in figure	5	CO1	L3

		OR			
3)	a	Derive an expression for transient current in R-L series circuit excited by a D C source.	5	CO1	L3

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	b	In the circuit shown in figure, determine 'V' using Thevenin's theorem.	5	CO1	L3

		UNIT–II			
	a	Derive an expression for resonance frequency of R-L-C series circuit connected to an alternating supply of variable frequency.	5	CO2	L3
	b	Derive the relation between phase voltage and line voltage of a balanced three phase star connected system	5	CO2	L2
		OR			
	a	Explain how the sinusoidal waveform is represented as phasor quantity with example.	5	CO2	L3
	b	A coil is connected in series with a capacitor of 20 µF to a 200 V variable frequency supply. The current is a maximum at 50 A, when the frequency is set to 50 Hz. Determine the resistance and inductance of the coil.	5	CO2	L4
		UNIT–III			
	a	A 4500 V/225 V, 50 Hz single-phase transformer is to have an approximate E.M.F. per turn of 15 V and operate with a maximum flux of 1.4 T. Calculate (i) the number of primary and secondary turns and (ii) the cross-sectional area of the core.	5	CO3	L4
	b	Derive an EMF equation of a single phase transformer.	5	CO3	L3
		OR			
	a	What is an Auto transformer? Give its advantages and state its applications.	5	CO3	L2
	b	Explain about hysteresis and eddy current losses occur in a transformer.	5	CO3	L3
		UNIT–IV			
	a	Explain the constructional details of a D.C machine. Explain the working of a D C generator.	5	CO4	L3
	b	Explain the torque speed characteristics of 3-phase Induction motor.	5	CO4	L3
		OR			
	a	Explain the working of a 3-phase Induction motor with a neat sketch.	5	CO4	L3
	b	Describe briefly construction details of three phase synchronous generator?	5	CO4	L2
		UNIT–V			
0)	a	Explain the working of SFU.	5	CO5	L3
	b	What are the drawbacks of low power factor, describe how it is improved?	5	CO5	L2
		OR			
1)	a	What are the differences between primary cells and secondary batteries?	5	CO5	L2
	b	Calculate total energy consumed per day by the use of following loads: i) 5 number of 40 W lights operated 5 hours per day ii) 1 h p. motor is operated 2 hours per day iii) 1 k.W heater is operated 1 hour per day iv) 1 computer is used for 6 hours per day with printer about 30 minutes.	5	CO5	L3

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Paper 2

Q.P Code: 23EE105   Hall Ticket No. ☐☐☐☐☐☐☐☐☐☐

NARSIMHAREDDY ENGINEERING COLLEGE
(UGC AUTONOMOUS)

I B.Tech I Semester (NR23) Supplementary Examination, July 2024

BASIC ELECTRICAL ENGINEERING

(Common to CSE, IT)

Time : 3 hours   Maximum marks: 60

Note: • This question paper contains two parts, A and B
- Part A is compulsory which carries 10 marks (10 sub questions are two from each unit carry 1 Marks). Answer all questions in Part A
- Part B Consists of 5 Units. Answer one question from each unit. Each question carries 10 Marks and may have a, b sub questions

Part-A   (10 Marks)
Answer all questions

Q.No		Question	M	CO	BL
1)	a	Define KVL.	1	CO1	L1
	b	Define linear and non linear elements.	1	CO1	L2
	c	What is active power?	1	CO2	L1
	d	What is complex power?	1	CO2	L1
	e	Define regulation of a transformer.	1	CO3	L1
	f	Why the copper losses are more in a transformer?	1	CO3	L2
	g	What type of material is used for brushes of a d.c machine?	1	CO4	L1
	h	What are the advantages of armature winding placing in its stator?	1	CO5	L1
	i	What is the energy consumed by 1000 watts heater in 3 hours?	1	CO5	L1
	j	What is the difference between fuse unit and switch fuse unit?			

Part-B   (50 Marks)
Answer all the Units
All Questions carry equal Marks

Q.No		Question	M	CO	BL
		UNIT–I			
2)	a	For the bridge network shown in figure below, find the current in the 5 resistor, and its direction, by using Thevenin's theorem.	5	CO1	L3

	b	Explain about different types of sources	5	CO1	L3
		OR			

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3)	a	Explain the V-I relation of R, L and C elements.	5	CO1	L3
	b	State and explain Norton theorem.	5	CO1	L2
		UNIT–II			
4)		The following table gives the corresponding values of current and time for a half cycle of alternating current.	10	CO2	L4

Time t (msec)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Current i (A)	0	7	14	23	40	56	68	76	60	5	0

Assuming the negative half cycle is identical in shape to the positive half cycle, plot the waveform and find (a) the frequency of the supply, (b) the instantaneous values of current after 1.25 ms and 3.8 ms, (c) the peak or maximum value, (d) the mean or average value, and (e) the r.m.s value of the waveform.

		OR			
5)	a	A coil has an inductance of 40 mH and negligible resistance. Calculate its inductive reactance and the resulting current if connected to a 240 V, 50 Hz supply.	5	CO2	L3
	b	Analyze the series RL circuit with a neat sketch and also draw the phasor diagram.	5	CO2	L4
		UNIT–III			
6)	a	What are the advantages of 3-phase transformers? Draw various schemes of 3-phase transformer connections.	5	CO3	L2
	b	Explain the operation of a transformer under no load and load conditions with the help of phasor diagrams.	5	CO3	L3
		OR			
7)	a	Derive an E.M.F equation of a single phase transformer.	5	CO3	L3
	b	Explain the losses in a Transformer also derive the maximum efficiency condition of a transformer.	5	CO3	L3
		UNIT–IV			
8)	a	Draw the various characteristics of a D.C shunt motor.	5	CO4	L2
	b	Give the constructional details of 3-phase Induction motor.	5	CO4	L3
		OR			
9)	a	The stator of a 3-phase, 4-pole induction motor is connected to a 50 Hz supply. The rotor runs at 1455 rev/min at full load. Determine (i) the synchronous speed and (ii) the slip at full load.	5	CO4	L3
	b	Describe briefly the construction and working of any single phase induction motor.	5	CO4	L3
		UNIT–V			
10)	a	What are the advantages of improving the power factor of a system?	5	CO5	L2
	b	Explain the different types of batteries in detail.	5	CO5	L3
		OR			
11)	a	Explain different types of wires used in domestic as well as commercial buildings.	5	CO5	L3
	b	Define earthing also explain the purpose of earthing	5	CO5	L2

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech I Year I Semester Examinations, March/April - 2023
BASIC ELECTRICAL ENGINEERING
(Common to CSE, IT, CSIT, CE(SE), CSE(CS), CSE(DS), CSD)

Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 60

Note:　This question paper contains two parts A and B.
　　　　i) **Part- A** for 10 marks, ii) **Part - B** for 50 marks.
- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of **ten questions** (numbered from 2 to 11) **carrying 10 marks each**. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A
(10 Marks)

1.a)	What is ideal voltage source?	[1]
b)	Define KVL.	[1]
c)	What is active power?	[1]
d)	Define average value of sinusoidal quantity?	[1]
e)	What is a step up Transformer?	[1]
f)	Define regulation of a transformer.	[1]
g)	What type of material is used for brushes of a d.c machine?	[1]
h)	How many windings are present at the time of staring a single phase Induction motor?	[1]
i)	What is the full form of M.C.C.B?	[1]
j)	What is the energy consumed by 1000 watts heater in 3 hours?	[1]

PART-B
(50 Marks)

2.a) State and explain Thevenin's theorem.
　b) For the bridge network shown in figure below, find the current in the 5 resistor, and its direction, by using Thevenin's theorem.　　　　　　　　　　[5+5]
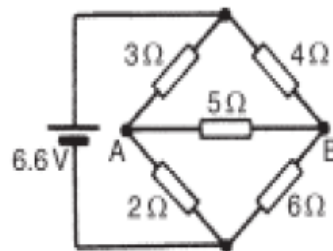
OR

3.a) Derive an expression for transient current in R-L series circuit excited by a d.c source.
  b) Explain the V-I relation of R, L and C elements. [6+4]

4. The following table gives the corresponding values of current and time for a half cycle of alternating current.

Time t (msec)	0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Current i (A)	0	7	14	23	40	56	68	76	60	5	0

Assuming the negative half cycle is identical in shape to the positive half cycle, plot the waveform and find (a) the frequency of the supply, (b) the instantaneous values of current after 1.25 ms and 3.8 ms, (c) the peak or maximum value, (d) the mean or average value, and (e) the r.m.s value of the waveform. [10]

OR

5.a) Derive an expression for resonance frequency of R-L-C series circuit connected to an alternating supply of variable frequency.
  b) A coil has an inductance of 40 mH and negligible resistance. Calculate its inductive reactance and the resulting current if connected to a 240 V, 50 Hz supply. [6+4]

6.a) Derive an e.m.f equation of a single phase transformer.
  b) A 4500 V/225 V, 50 Hz single-phase transformer is to have an approximate e.m.f. per turn of 15 V and operate with a maximum flux of 1.4 T. Calculate (i) the number of primary and secondary turns and (ii) the cross-sectional area of the core. [6+4]

OR

7.a) What is an Auto transformer? Give its advantages and state its applications.
  b) What are the advantages of 3-phase transformers? Draw various schemes of 3-phase transformer connections. [5+5]

8.a) Explain the constructional details of a d.c machine. Explain the working of a d.c generator.
  b) Draw the various characteristics of a d.c shunt motor. [6+4]

OR

9.a) Explain the working of a 3-phase Induction motor with a neat sketch.
  b) The stator of a 3-phase, 4-pole induction motor is connected to a 50 Hz supply. The rotor runs at 1455 rev/min at full load. Determine (i) the synchronous speed and (ii) the slip at full load. [6+4]

10.a) Explain the working of (i) SFU (Switch Fuse Unit) (ii) ELCB.
  b) What are the advantages of improving the power factor of a system? [6+4]

OR

11.a) What are the differences between primary cells and secondary batteries?
  b) Explain different types of wires used in domestic as well as commercial buildings. [4+6]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year I Semester Examinations, June - 2022
BASIC ELECTRICAL ENGINEERING
(Common to EEE, CSE, IT, CSIT, ITE, CE(SE), CSE(CS), CSE(DS), CSE(Networks), CSED)

Time: 3 Hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Explain in detail the passive elements and active elements.
 b) By using Thevenin's theorem shown in figure 1, find the current in 6Ω resistor.   [8+7]
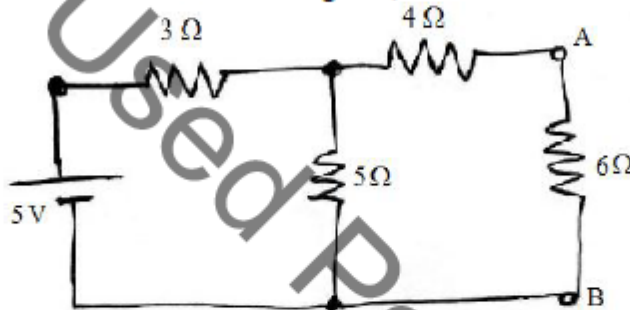
Figure 1

2.a) State Kirchhoff's voltage and current laws, Explain in detail.
 b) By using superposition theorem, find the current flowing through 2 ohms resistor. (Figure 2)   [8+7]
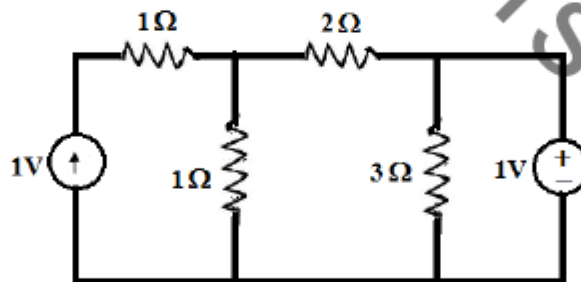
Figure 2

3.a) Explain the following terms of AC circuits
  (i) rms value   (ii) average value   (iii) peak value
  (iv) formfactor   (v) phasor   (vi) phase difference
 b) Analyze the series RL circuit with a neat sketch and also draw the phasor diagram. [8+7]

4.a) Derive the relation between phase voltage and line voltage of a balanced three phase star connected system.
 b) A circuit consisting of three branches, Z_2 is in parallel with Z_3 the combination is in series with Z_1 having the values $Z_1=5+j15$, $Z_2 =2.5+j5$ and $Z_3=2-j8$ connected across single phase, 100 V, 50 Hz supply. Find i) I_1, I_2 and I_3 ii) V_1 and V_2.   [8+7]

5.a) The emf per turn of a 1-φ, 2200/220 V, 50 Hz transformer is approximately 12V. Calculate
   i) The number of primary and secondary turns, and
   ii) The net cross-sectional area of core for a maximum flux density of 1.5 T?
b) Explain the losses in a Transformer; also derive the maximum efficiency condition of a transformer. [8+7]

6.a) Explain the significance of torque-slip and characteristics of 3-phase induction motor.
b) Why three phase induction motor not rotating at synchronous speed, explain. [8+7]

7.a) Explain the types of batteries and its important characteristics.
b) Define earthing also explain the purpose of earthing. [7+8]

8.a) Explain the constructional details of synchronous generators.
b) Why single phase induction motors are not self starting motors? Explain. [7+8]

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