Program: BE

Curriculum Scheme: Revised 2016

Examination: First Year Semester I

Course Code: FEC105 **Course Name: Basic Electrical Engineering**

Time: 1 hour Max. Marks: 50

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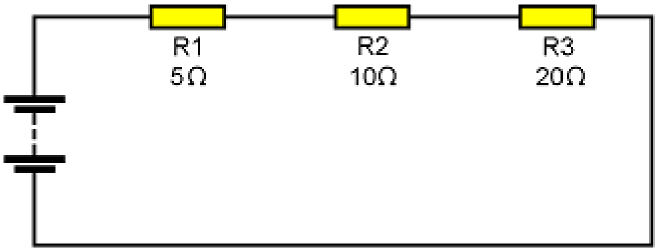
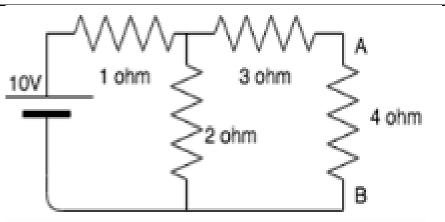
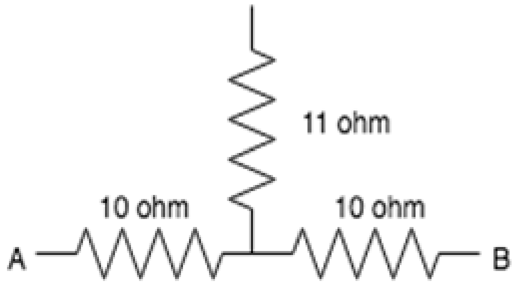
Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Kirchhoff's Voltage Law states that in any given circuit, the algebraic sum of the applied EMFs is equal to the:
Option A:	algebraic sum of the voltage drops
Option B:	algebraic difference between any two voltage drops
Option C:	value of the algebraic applied current
Option D:	sum of the algebraic resistance values
Q2.	Look at the following  diagram: The equivalent resistance to replace the three resistors in the series circuit shown above
Option A:	5
Option B:	10
Option C:	35
Option D:	40
Q3.	The voltage across any number of components connected in parallel will:
Option A:	be greater than the supply voltage
Option B:	always be the same
Option C:	equal to the sum, of the voltages across each component
Option D:	always be equal to 230 V
Q4.	 Find Thevenin's voltage across points A and B.

Option A:	5.54 V
Option B:	3.33 V
Option C:	6.67 V
Option D:	3.67 V
Q5.	Norton resistance is found by
Option A:	Shorting all voltage sources
Option B:	Opening all current sources
Option C:	Shorting all voltage sources and opening all current sources
Option D:	Opening all voltage sources and shorting all current sources
Q6.	A alternating current takes 3.375 ms to reach 15 A for the first time after becoming instantaneously zero. The frequency of the current is 40 Hz. Find the maximum value of alternating current.
Option A:	20A
Option B:	2.2 A
Option C:	200A
Option D:	1.2 A
Q7.	In a series RLC circuit, R=2 KΩ, L= 1 H, C=(1/400)µF. The resonant frequency is
Option A:	2*10^4 HZ
Option B:	(1/π) * 10^4 HZ
Option C:	10^4 HZ
Option D:	2 π * 10^4 HZ
Q8.	A capacitor has a capacitance of 30 microfarad which is connected across a 230 V, 50 Hz supply. Find capacitive reactance.
Option A:	100 Ω
Option B:	106 Ω
Option C:	110 Ω
Option D:	120 Ω
Q9.	In inductive circuit, when Inductance (L) or inductive reactance (X_L) increases, the circuit current
Option A:	Also Increases
Option B:	Decreases
Option C:	Remain Same
Option D:	None of the above
Q10.	A circuit with a resistor, inductor and capacitor in series is resonant of f_0 Hz.If all the component values are now doubled, the new resonant frequency is
Option A:	2 f_0
Option B:	f_0
Option C:	$f_0/4$
Option D:	$f_0/2$

Q11.	In three phase systems, voltages differ in phase by
Option A:	30^0
Option B:	60^0
Option C:	90^0
Option D:	120^0
Q12.	Power in a Three Phase Circuit
Option A:	$P = 3\ V_{Ph}\ I_{Ph}\ Cos\Phi$
Option B:	$P = \sqrt{3}\ V_{Ph}\ I_{Ph}\ Cos\Phi$
Option C:	$P = 3\ V_L\ I_L\ Cos\Phi$
Option D:	$P = 3\ Iph\ I_L\ Cos\Phi$
Q13.	If three impedances are connected in star are connected to 440 V supply. Calculate phase voltage.
Option A:	254 V
Option B:	340 V
Option C:	290 V
Option D:	300 V
Q14.	A balanced delta connected load impedance (8-j6) ohms per phase is connected to a three phase , 230 V, 50Hz supply. Calculate (i) power factor
Option A:	0.8 (lagging)
Option B:	0.8 (leading)
Option C:	0.9 (lagging)
Option D:	0.9 (leading)
Q15.	In star connection
Option A:	IL = Iph
Option B:	VL = Vph
Option C:	IL= √3Iph
Option D:	IL= 2Iph
Q16.	What will be the secondary voltage at no load if the primary of a 5 KVA, 220/110V, 50 Hz transformer is fed at 110 V, 50Hz.
Option A:	50 V
Option B:	55 V
Option C:	60 V
Option D:	65 V
Q17.	A single phase 50 Hz transformer has 80 turns on the primary windings and 280 turns in the secondary windings. The voltage applied across the primary winding

	is 240 V at 50 Hz. Calculate maximum flux density in the core
Option A:	0.68 Wb/m^2
Option B:	0.78 Wb/m^2
Option C:	68 Wb/m^2
Option D:	78 Wb/m^2
Q18.	A 100 KVA, single phase transformer has iron loss of 600 W and copper loss of 1.5 KW at full load current. Calculate efficiency at full load
Option A:	92.77%
Option B:	94.77%
Option C:	98.99%
Option D:	97.44 %
Q19.	In a transformer, the primary and secondary voltages are
Option A:	60^0 out of phase
Option B:	90^0 out of phase
Option C:	180^0 out of phase
Option D:	Always in phase
Q20.	Rating of transformer is expressed in
Option A:	KVA
Option B:	KW
Option C:	KA
Option D:	KΩ
Q21.	If each branch of a delta circuit has resistance √3 R, then each branch of the equivalent wye circuit has resistance
Option A:	R/√3
Option B:	3R
Option C:	3√3 R
Option D:	R/3
Q22.	The speed of a dc motor is
Option A:	directly proportional to back emf and flux.
Option B:	directly proportional to its back emf and inversely proportional to flux.
Option C:	inversely proportional to both hack emf and flux.
Option D:	directly proportional to flux and inversely proportional to back emf.
Q23.	Maximum torque in a DC machine is limited by _______________
Option A:	Commutation
Option B:	Heating
Option C:	Losses other than heating
Option D:	Stability
Q24.	In superposition theorem, when we consider the effect of one voltage source, all the other voltage sources are _____________

Option A:	shorted
Option B:	opened
Option C:	removed
Option D:	undisturebed
Q25.	
Option A:	29 Ω
Option B:	25 Ω
Option C:	92 Ω
Option D:	52 Ω

Answer Key	
Q 1	A
Q 2	C
Q 3	B
Q 4	C
Q 5	C
Q 6	A
Q 7	B
Q 8	B
Q 9	B
Q 10	D
Q 11	D
Q 12	A
Q 13	A
Q 14	B
Q 15	A
Q 16	B
Q 17	A
Q 18	D
Q 19	C
Q 20	A
Q 21	A
Q 22	B
Q 23	A
Q 24	A
Q 25	A