16-03-2022_BEE_FE_Sem-I (R19)_TSEC

1. The question paper will have MCQs (for 20 marks) and subjective/descriptive questions (for 60 marks).

2. MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link given.

* Required

1. Enter your Name *

2. Enter your Exam Seat Number *

Questions

1. The question paper will have MCQs (for 20 marks) and subjective/descriptive questions (for 60 marks).

2. MCQ correct options and subjective questions answers to be written on papers. Scan all pages of answer papers of Q1 to Q4 and create single file in pdf format to upload in the link given.

3. paste the question

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	If each branch of a star network has resistance 3 Ohms, then each branch of the equivalent delta circuit will have a resistance of _____Ohm.
Option A:	1
Option B:	3
Option C:	6
Option D:	9
2.	The maximum power transferred to R_L in terms of Norton's equivalents is
Option A:	$(I_N)^2(R_N) / 4$
Option B:	$(I_N)^2 (R_N)/ 2$
Option C:	$(I_N)^2 (R_N)$
Option D:	$(I_N)^2(R_N) *2$
3.	In Thevenin's theorem, to find R_{TH}
Option A:	All independent voltage sources and current sources are short circuited.
Option B:	All independent current sources and voltage sources are open circuited.
Option C:	All independent voltage sources are short circuited and all independent current sources are open circuited.
Option D:	All independent voltage sources are open circuited and all independent current sources are short circuited.

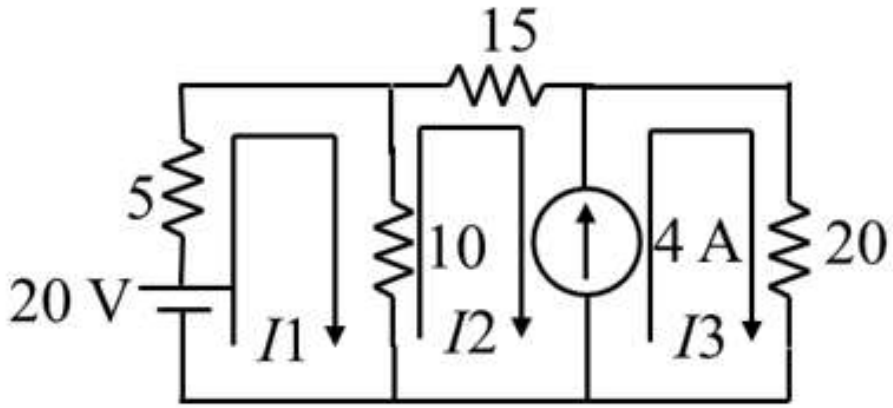
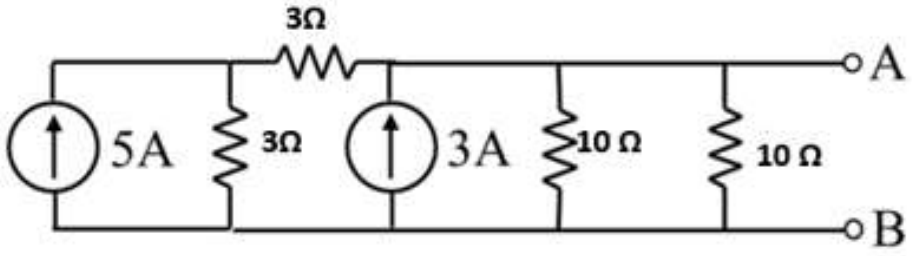
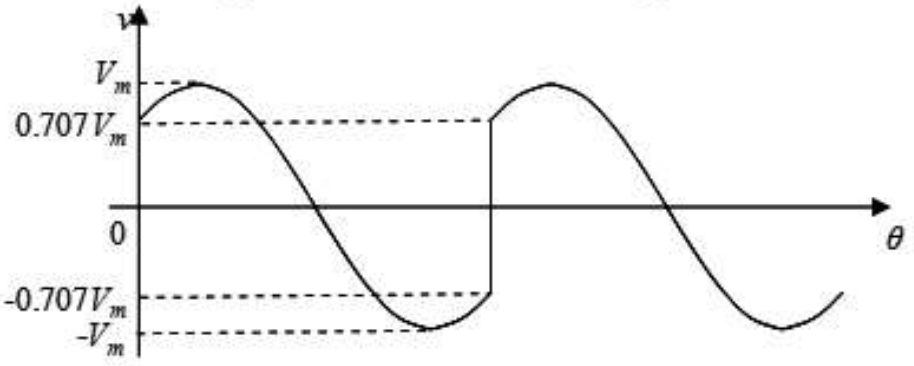
4. paste the question

4.	For a square wave with peak value Imax, the R.M.S. value is _____
Option A:	0.5 Imax
Option B:	0.707 Imax
Option C:	Imax
Option D:	1.414 Imax
5.	An alternating voltage is given by v = 141·4 sin 377t find (i) max-value (ii) frequency in Hertz.
Option A:	Vm=100.14 Volts, f= 60.03 Hertz
Option B:	Vm=141.4 Volts, f= 60.03 Hertz
Option C:	Vm= 100.14 Volts, f= 377 Hertz
Option D:	Vm=141.4 Volts, f= 377 Hertz
6.	For a purely inductive circuit, current _____the voltage by _____.
Option A:	lags, 180 degrees
Option B:	leads, 180 degrees
Option C:	lags, 90 degrees
Option D:	leads, 90 degrees
7.	The voltage and current relations in a balanced delta connected load is _____
Option A:	$V_L=V_{PH}$, $I_L=I_{PH}$
Option B:	$V_L=\sqrt{3}\times V_{PH}$, $I_L=I_{PH}$
Option C:	$V_L=V_{PH}$, $I_L=\sqrt{3}\times I_{PH}$
Option D:	$V_L=\sqrt{3}\times V_{PH}$, $I_L=\sqrt{3}\times I_{PH}$

5. paste the question

8.	For a three phase, three wire system, the two Wattmeter's read 4000 Watts and 2000 Watts respectively. The power factor when both meters give direct reading is _____
Option A:	1
Option B:	0.5
Option C:	0.6
Option D:	0.866
9.	A Motor is a machine that converts _____energy to produce energy.
Option A:	Mechanical, Sound
Option B:	Solar , Mechanical
Option C:	Mechanical, Electrical
Option D:	Electrical, Mechanical
10.	The function of a commutator in a dc machine is_____.
Option A:	to change dc current to dc current
Option B:	to change ac current to dc current
Option C:	to change ac voltage to ac voltage
Option D:	to change dc voltage to ac voltage

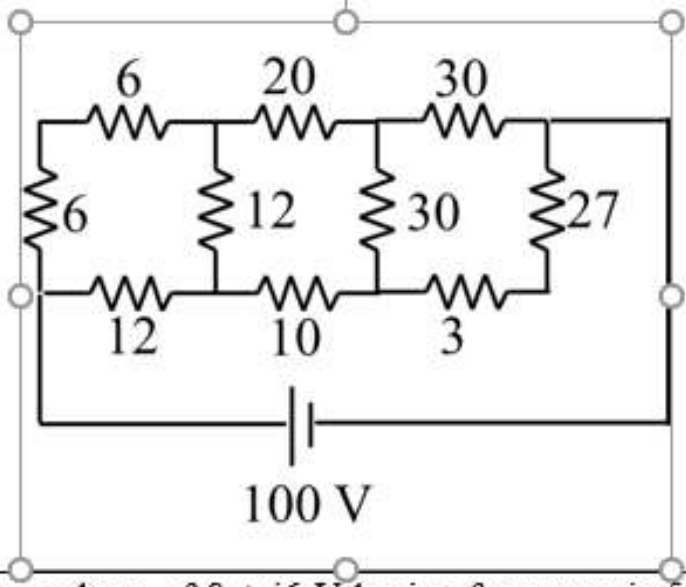
6. paste the question

Q2 (20 Marks)	Solve any Four out of Six (5 marks each)
A	Find the current through 10 Ω resistor by mesh analysis. **Resistances are given in Ohm.** 
B	Use source conversions to reduce the given circuit to a single voltage source in series with a single resistor between A and B. 
C	Find the average value for the following waveform. 

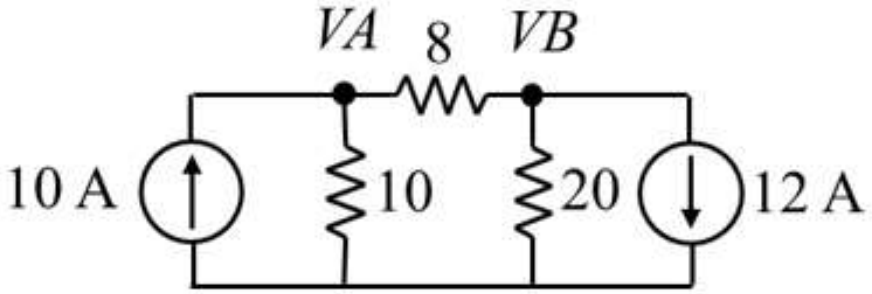
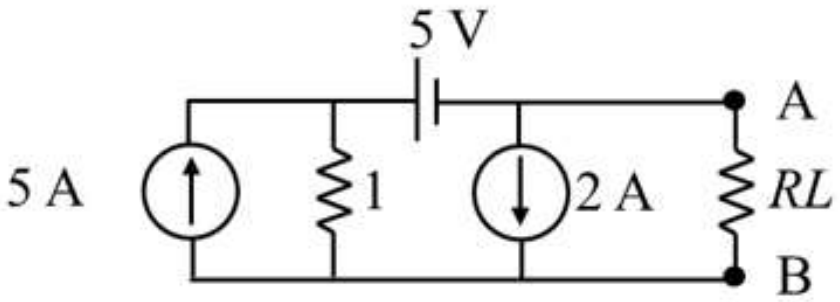
7. Q2 Contd.

D	In a circuit four currents meet at a point. Find the resultant current. $i_1 = 5\sin \omega t$ $i_2 = \sin(\omega t - 30°)$ $i_3 = \cos(\omega t - 30°)$ $i_4 = -2\sin(\omega t + 45°)$
E	Two Watt meters are connected to measure the input to a balanced 3 phase circuit using the two wattmeter method. They indicate 5000 W and 1000 W respectively. Find the total power supplied and power factor of the circuit when i) Both the readings are positive ii) The latter reading is obtained after reversing the connections of the current coil.
F	Explain rotating magnetic field produced by three phase ac machines.

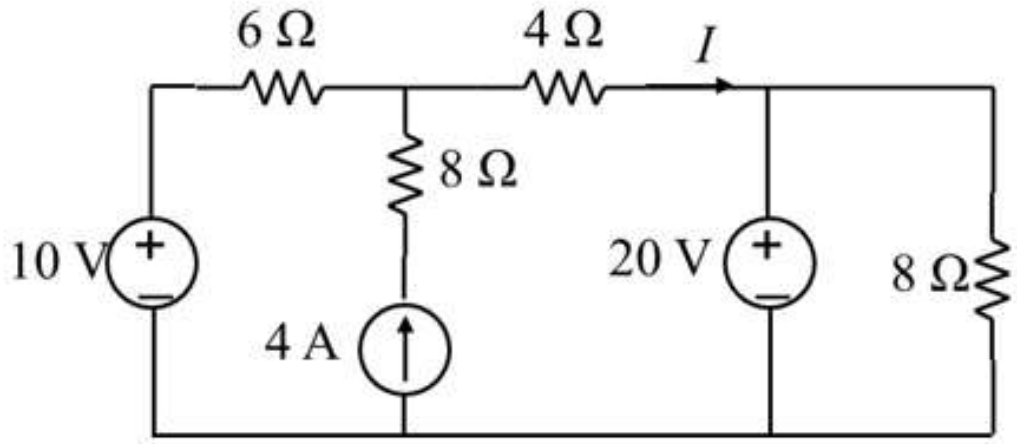
8. paste the question

Q3 (20 Marks)	Solve any Two Questions out of Three (10 marks each)
A	Find the current flowing through the 10 Ω resistor. **Resistances are given in Ohm.** 
B	An alternating voltage of 8 + j6 V having frequency is 50 Hz is applied to a circuit and the current flowing is found to be 4 – j2 A. Write down the equations for voltage and current in both the polar and standard form. Find i) impedance, ii) reactance, iii) resistance, iv) phase difference, v) power factor and vi) power loss. Considering a simple series circuit of two elements find the values of both the elements. Draw the phasor diagram.
C	3 identical coils having resistance of 15 Ω and inductance of 0.03 H are connected in star across a 3 phase, 400 V, 50 Hz supply. Calculate the phase voltage, phase current, line current and total power absorbed. Draw the phasor diagram.

9. paste the question

Q4. (20 Marks)	
A	**Solve any Two** **(5 marks each)**
i.	Find *VA* and *VB* by nodal analysis and hence the current in the 8 Ω resistor. Resistances are in ohms. 
ii.	Find the value of RL for maximum power transfer. Also calculate the maximum power dissipated through RL. **Resistances are given in Ohm.** 
iii.	Explain the working of permanent magnet stepper motor.

10. paste the question

B	Solve any One (10 marks each)
i.	Using Superposition principle, find I. (Do not use source transformation while solving the problem) 
ii.	Three impedances are placed in parallel across 200 V, 50 Hz supply. The impedances are $10\angle -30$, $20\angle 60$ and $40\angle 0$. Determine i) admittance of each branch ii) total admittance iii) equivalent impedance iv) current flowing through each branch v) total current vi) total power consumed and vii) total power factor.

11. Upload all your answers as a single pdf file *

Files submitted:

12. Have you uploaded the required correct files *

Mark only one oval.

- ◯ Yes