SVKM'S NMIMS

MUKESH PATEL SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING/ SCHOOL OF TECHNOLOGY MANAGEMENT & ENGINEERING

Program: MBA Tech (All Streams)

Year: I   Semester : I

Academic Year: 2018-2019

Subject: Basic Electrical Engineering

Marks: 70

Time: 2.00 pm to 5.00 pm

Date : 15 January 2019

Durations: 3 (hrs)

No. of Pages: 02

Re-examination (2017-18)

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover of the Answer Book, which is provided for their use.

1) Question No. 1 is compulsory.
2) Out of remaining questions, attempt any 4 questions.
3) **In all 5 questions to be attempted.**
4) All questions carry equal marks.
5) **Answer to each new question to be started on a fresh page.**
6) **Figures in brackets on the right hand side indicate full marks.**
7) **Assume suitable data if necessary.**

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Q.1	A)	State and Explain Superposition theorem.	[2]
	B)	Explain behavior of pure inductor in AC circuit with the help of neat phasor diagram.	[3]
	C)	Derive the relation between line and phase quantity in Star connected three phase system with neat phasor diagram.	[3]
	D)	Explain the constructional features of Transformer.	[2]
	E)	Compare series and parallel AC resonance circuit.	[2]
	F)	Give a detailed classification of DC Motors.	[2]

Q.2   A) Calculate the effective resistance R_{AB} of network of figure shown

[7]
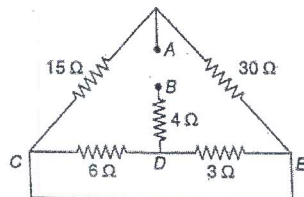
B) By Norton's theorem, find the current in 5 Ω resistor in the network shown in Fig.   [7]
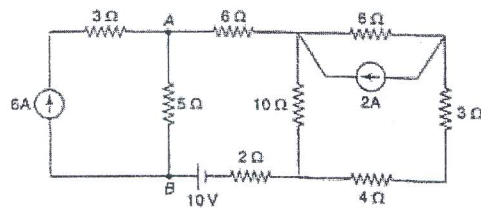
Q.3 A) State and Explain Thevenin's Theorem with the help of suitable example. [5]

B) By Mesh analysis Find current passing through 100 Ω resistance in the given circuit.

[5]
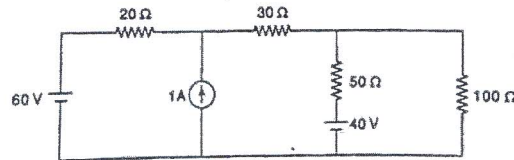
C) An alternating voltage of time period 0.02sec has maximum value of 12V. Write the equation for its instantaneous value. Calculate the instantaneous value of the voltage after 0.002sec, where reference is taken from the instant of zero voltage and is becoming positive, also calculate the time required for the voltage to reach 4V for the first time. [4]

Q.4 A) A full rectified wave is clipped at 70.7% of its maximum value as shown in figure. Find its average and rms value. [7]
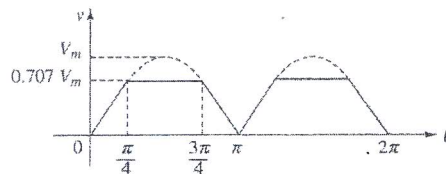
B) In series R-L-C circuit, with the help of phasor diagram show relation between voltage component and current, also show power triangle for following cases. [7]
i) $X_L < X_c$ ii) $X_L > X_c$ iii) $X_L = X_c$ also derive an expression for impedance and power factor.

Q.5 A) Three equal star connected inductors take 8 kW at a power factor 0.8 when connected across a 460 Volt, 3-phase, 3-wire supply. Find the circuit constants of the load per phase. [7]

B) With the help of neat circuit diagram explain two wattmeter method for the measurement of three phase power under balanced load condition. Draw the associated phasor diagram. [7]

Q.6) A) Explain in detail the working principle of single phase transformer, also derive the EMF equation. [7]

B) A 250 kVA, 50 Hz Single phase transformer has a ratio of secondary to primary turns as 0.1. the secondary voltage at no-load condition is 240 V calculate (i) Primary voltage (ii) full load primary and secondary currents. [7]

Q.7) A) Explain in detail, Construction and working of three phase Induction Motor. [7]

B) Write a note on working principle of DC motor. [7]

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