Registration No : | | | | | | | | | | |

Total Number of Pages : 02

B.Tech
RBE2B001

2nd Semester Regular Examination 2018-19
BASIC ELECTRICAL ENGINEERING
BRANCH : AEIE, AG, AUTO, BIOMED,
BIOTECH, CHEM, CIVIL, CSE, ECE, EEE, EIE, ELECTRICAL,
ETC, IT, MECH, METTA, MINING, MME, PE, PT
Max Marks : 100
Time : 3 Hours
Q.CODE : F357

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 Only Short Answer Type Questions (Answer All-10) **(2 x 10)**

a) What is the approximate resistance of a rheostat if the voltage source is 12 V and the current is 220 mA?

b) A certain circuit is composed of two parallel resistors. The total resistance is 1,403Ω One of the resistor is 2 kΩ. The other resistor value is?

c) State the venin's theorem.

d) Define RMS voltage.

e) Represent the vector 5+j10

f) State Biotsavart slaw.

g) If the cross-sectional area of a magnetic field increases, but the flux remains the same, the flux density _____.

h) The voltage across a coil when *di/dt* = 20 mA/ μ s and *L* = 8 μ H is _____.

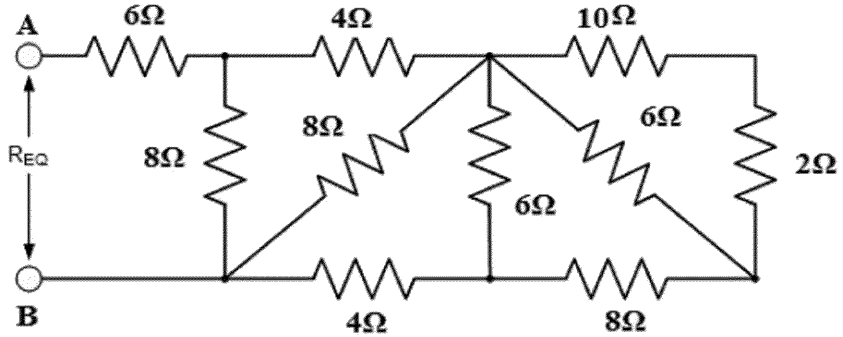
i) Why the efficiency of the transformer is maximum among all electrical machines/Devices.

j) Write the EMF equation of D.C generator.

Part- II

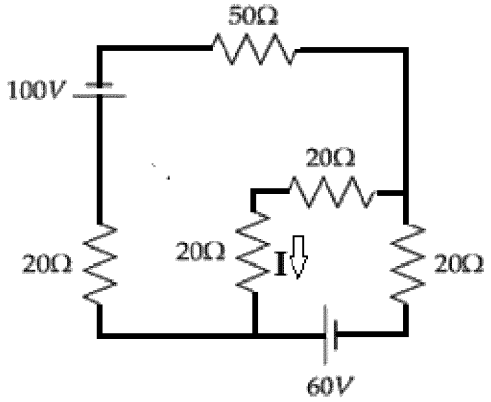
Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) **(6 x 8)**

a) Find the R_{AB} in the circuit.

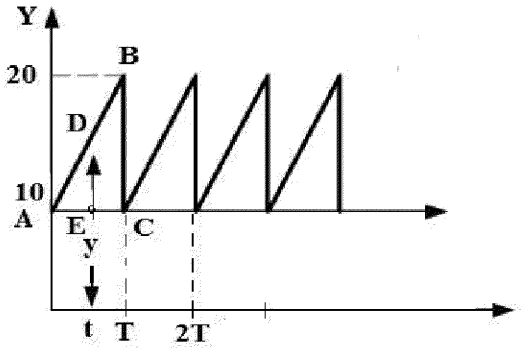


b) Explain B-H curve for magnetic and formulate hysteresis.

c) Find the value of I using superposition theorem.



d) Determine R.M.S and average value of the wave form shown?



e) A square wave has frequency of 50Hz and peak value of 12 Amp. Calculatethe Average value, Peak factor and form factor.

f) State and explain Norton's theorem with suitable example.

g) An iron ring wound with 550 turn's solenoid produces a flux density of 0.94 tesla in the ring carrying a current of 2.4 Amp. The mean length of iron path is 80 cm and that of air gap is 1 mm. Determinethe relative permeability of iron and self-inductance.

h) An alternating current is given by i = 14.14 sin 377 t. Find R.M.S Value, frequency and sketch the waveform.

i) Write the principle of DC Generator and derive the EMF equation.

j) Give the comparison between Electric and magnetic Circuit.

k) Explain the construction and principle of three phase induction motor.

l) The armature of a 6-pole,600 RPM lap-wound generator has 90 slots .If each coil has 4 turns, calculate the flux per pole required to generate an EMF of 288 Volts.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Explain the conversion process of star network to a delta network and vice versa and write the voltage and current relations in star and delta network. **(16)**

Q4 Discus the principle of operation and testing of single phase transformer. Draw the Phasor diagram. **(16)**

Q5 With a neat circuit and Phasor diagram explain the three phase power measurement by two wattmeter method and also derive the expression for Power Factor. **(16)**

Q6 A series RLC circuit has R=20 ohm, L=0.005H and C = 0.2 x 10^{-6}F. It is fed from a 100V variable frequency source. Find **(16)**
a) frequency at which current is maximum
b) Impedance at this frequency and
c) Voltage across inductance at this frequency.