BEET- 101

Roll No. | | | | | | | | | | |

Odd Semester Examination, 2019-20

B. Tech (Semester: 1st)

Basics of Electrical and Electronics Engineering

Time: 3:00 hrs. **Max. Marks: 100**

Total no. of printed pages: 2

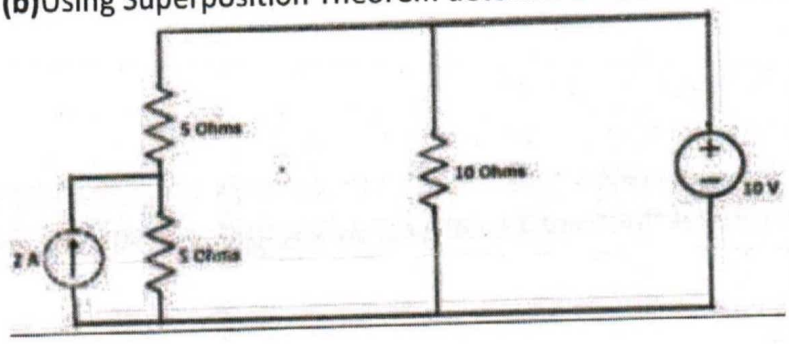
Note : (i) All questions are compulsory.
(ii) In case of numerical problems assume data whenever not provided.

Q1. Attempt **any four** of the following **4X5=20**

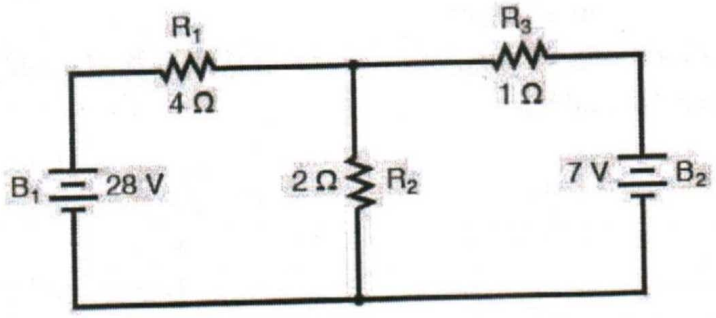
(a) Define

i. Linear network ii. Bilateral network iii. Active network iv. Passive Network

(b) Using Superposition Theorem determine current in 10 Ω resistance



(c) Find current across 2ohm resistance by thevenin theorem.



(d) Derive expression for star to delta conversion.

(e) What do you understand by power triangle? What does the different side of triangle denote?

(f) Explain Peak factor , Form factor and power factor.

Q2. Attempt **any four** of the following **4X5=20**

(a) Explain Resonance with resonance curve in series circuit.

(b) Derive relationship between phase voltages and line voltages of a 3-phase star connected system.

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(c) Voltage across and current through a circuit are given as $V=250\sin(314t-10^0)$ and $i=10\sin(314t+50^0)$ respectively. Calculate impedance, resistance and reactance.

(d) A resistance of 8 ohm and capacitive reactance of 12 ohm is connected in parallel with series combination of 15 ohm resistance and 5 ohm inductive reactance to 220V, 50 Hz A.C supply. Calculate Total current and individual branch current.

(e) Compare Electrical and magnetic Circuit.

(f) An impedance of 3+4j is connected across each phase of three phase star connected 440V system calculate line and phase current.

Q3. Attempt **any two** of the following **2x10=20**

(a) Derive the expression for magnetic field due to current carrying conductor.

(b) Derive the expression of power and power factor in three phase ac Circuit.

(c) A laminated iron ring has relative permeability of 1000, mean circumference of 800mm and cross sectional area of 500mm2. A redial air gap of 1mm is cut in the ring which is bend with 1000 turns .calculate the current required to produce the air gap flux of .5mwb. if stacking factor is .9.

Q4. Attempt **any two** of the following **2x10=20**

(a) i) Explain shell type and core type transformer.
ii) Draw the phasor diagram of transformer for inductive load.

(b) Derive the Emf Equation of DC generator. A 4 pole 750 rpm dc generator is working at .05 wb flux .calculate the emf generated if there are 24 slots and 12 conductors per slot.

(c) Explain construction and working of 3 phase induction motor with diagram.

Q5. Attempt **any two** of the following **2x10=20**

(a) Explain. i) Intrinsic and extrinsic semiconductor.
ii) Characteristics of PN diode

(b) Explain working of npn transistor in all region.

(c) The current gain in common emitter configuration is 100. If the value of emitter current is 10mA Determine the value of collector and Base current.
