DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Winter Semester Examination – December - 2019

Branch: B. Tech **Sem.:- I/II**
Subject:-Basic Electrical Engineering [EE 104/EE204] **Marks: 60**
Date:-04/12/2019 **Time:- 3 Hr.**

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt **any five** questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly

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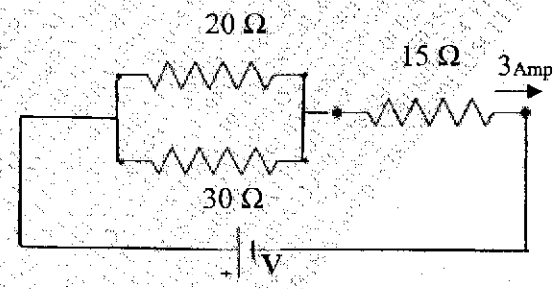
Q1.) **a)** Define the term resistance with its unit. Explain in detail factors on which resistance of metal conductor depends. **6M**

b) The resistance of a wire increases from 18 Ω at 20°C to 20 Ω at 50°C. Find i) The temperature coefficient of resistance at 0°C.ii) The resistance at 65°C. **6M**

Q2.) **a)** State and Explain Kirchhoff's laws. **6M**

b) In the given circuit current flowing through 15 ohm is 3 Amp. **6M**
i) Find the current flowing through 20 ohm and 30 ohm resistor.
ii) Find voltage V.



Q3.) **a)** Explain the R-L series circuit with phasor diagram, when connected to single phase ac supply. **6M**

b) Define the following terms.
1) RMS Value
2) Average Value
3) Form Factor
4) Peak Factor

OR

b) A pure inductor of 0.2 H connected across 230 Volt,50 Hz. .i) Find inductive reactance X_L ii) Maximum value of current iii) Find the Expression for current which will flow through inductor. **6M**

Q4.) **a)** Explain the following terms for AC circuit with power triangle. **6M**
i)Apparent power
ii)Active power
iii)Reactive power

b) What is mean by resonance? Explain the RLC series resonance phenomenon in detail. **6M**

OR

b) In a 3 phase Delta connection find the relation between line and phase value of current & voltage. Hence derive equation for power. **6M**

Q5.) **a)** Write Comparison Between Magnetic and Electric Circuits. **6M**

b) A rectangular iron core has a mean length of magnetic path of 100 cm, area of cross-section of 4 cm^2, relative permeability of 1400 and an air-gap of 5 mm cut in the core. The coil has number of turns, N= 600 and carries the current of 4 A. Find the flux in the air-gap. **6M**

OR

b) Define the terms Dynamically, Statically, Self and Mutual induced emf. **6M**

Q6.) **a)** State the working principle of a single-phase transformer and derive the EMF equation. **6M**

b) A single-phase transformer of 800 primary turns and 1300 secondary turns. The primary is connected across 400 volt, 50 Hz. AC supply. Find i) The voltage induced in secondary winding. ii) The maximum value of flux density if the area of cross section is 50 cm^2. **6M**

OR

b) Draw the circuit diagram and derive the equation for charging voltage of a capacitor. **6M**

Paper End