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Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 93404

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Third   Semester

Electronics and Communication Engineering

19UEC304 - Basic Electrical and Instrumentation Engineering

(Regulation 2019)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The unit for inductance is _____   CO1- U

    (a) Ohm   (b)Henry   (c) A/m   (d)A/s

2. Electric motor changes electrical energy into   CO2- U

    (a) potential energy   (b) thermal energy   (c) heat energy   (d) kinetic energy

3. The desirable static characteristics of a measuring system are   CO4- R

    (a) Accuracy and reproducibility   (b) Accuracy, sensitivity and reproducibility

    (c) Drift and dead zone   (d) Static error

4. The oscillator that is mostly used for generating signals of frequency of few   CO4- U
    'KHz' is

    (a) Armstrong oscillator   (b)Crystal oscillator

    (c) Wein bridge oscillator   (d) Colpitts oscillator

5.   CRO gives the visual representation of time varying signals. The display   CO5- R
    of the signal is

    (a) One dimensional   (b)Two dimensional   (c) Three dimensional   (d) Four dimensional

PART – B (5 x 3= 15 Marks)

6. A stereo receiver applies a peak AC voltage of 34V to the speaker. The speaker   CO5
    behaves approximately as if it had a resistance of 8Ω.   App

    Determine the

(a) rms voltage and

 (b) rms current

7. Mention the purpose of three main parts in stator of induction motor.. CO2 U

8. What is PMMC instrument and why it is so called? CO3 U

9. Classify the oscillator based on the frequency of the generated signal CO4 U

10. Draw the block diagram of CRO CO5 U

PART – C (5 x 16= 80 Marks)

11. (a) A 50Hz, alternating voltage of 150V (r.m.s) is applied independently to CO3- App (16)

   (i)Resistance of 10 Ω

   (ii) Inductance of 0.2H

   (iii) Capacitance of 50 μF.

   Find the expression for the instantaneous current in each case. Draw the phasor diagram in each case

Or

(b) A voltage e=200sin 100Πt is applied to a load having R = 200Ω in series with L=638mH. CO3- App (16)

   Estimate: i) Expression for current in i = I_m sin (wt+ø) or i = I_m sin (wt-ø) form. ii)Power consumed by the load iii) Reactive power of the load iv) voltage across R and L.

12. (a) Explain in detail the principle of operations of single phase induction motor. CO2- U (16)

Or

(b) Why single phase induction motor is not self-starting? Explain the methods available to start the motor CO2- U (16)

13. (a) In a moving coil galvanometer, the deflection of the coil θ is related to the electrical current i. Discuss about the relation and Mention the factors affecting the sensitivity of Galvanometer. CO3- U (16)

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Or

(b) Describe the working principle of voltmeter with neat diagram   CO3- U   (16)

14. (a) Explain the two operating modes employed in the working of   CO4- U   (16)
frequency synthesized signal generators with neat diagram.

Or

(b) Discuss the working principles of sweep frequency generator with   CO4- U   (16)
neat diagram.

15. (a) Explain the purpose of vertical and horizontal deflection systems in   CO5- U   (16)
CRO with necessary circuits

Or

(b) Compare and contrast Analog and Digital storage oscilloscopes.   CO5- U   (16)

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