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Question Paper Code: U2404

B.E./B.Tech. DEGREE EXAMINATION, MAY 2024

Second Semester

Electronics and Communication Engineering

21UEC204- Basic Electrical and Instrumentation Engineering

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. The leakage flux in a transformer depends upon the value of CO1- U
(a) Frequency (b) Mutual Flux (c) Load current (d) Applied Voltage
2. A stepper motor may be considered as a converter. CO2- U
(a) dc to dc (b) ac to dc (c) dc to ac (d) digital-to-analog
3. The full-scale deflection current of an ammeter is 4 mA and its internal CO3- App
resistance is 400Ω . If this meter is to have a full deflection of 10 A,
what is the value of the shunt resistance to be used?
(a) $49.99\ \Omega$ (b) $0.16\ \Omega$ (c) $1.5\ \Omega$ (d) $2.6\ \Omega$
4. In a Wien-bridge oscillator for obtaining 160Hz frequency output what CO4- App
will be the capacitor value if resistance is selected as $1K\Omega$?
(a) $10\ \mu\text{F}$ (b) $1\ \mu\text{F}$ (c) $1\ \text{nF}$ (d) $10\ \text{nF}$
5. CRO gives the visual representation of time varying signals. The display of CO5- U
the signal is
(a) One dimensional (b) Two dimensional
(c) Three dimensional (d) Four dimensional

PART – B (5 x 3= 15 Marks)

6. What is the difference between ideal transformer and practical transformer? CO1- U
7. Mention the purpose of three main parts in stator of induction motor. CO2- U

8. Why the PMMC instrument is not used for a.c measurements? CO3- U
9. Define sweep CO5- U
10. What are the modes of operation in dual trace CRO with two channels A and B? CO5- U

PART – C (5 x 16= 80Marks)

11. (a) Explain the classification of Transformer and derive the emf equation of transformer CO1-U (16)
- Or
- (b) Discuss the working principle of Auto transformers and also explain its losses. CO1-U (16)
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) Discuss in detail about the types of ohmmeter with neat diagram. CO3-U (16)
- Or
- (b) Explain the working Principle of Permanent magnet moving coil mechanism CO3-U (16)
14. (a) Explain the two operating modes employed in the working of frequency synthesized signal generators with neat diagram. CO4-U (16)
- Or
- (b) Discuss the working principles of sweep frequency generator with neat diagram. CO4-U (16)
15. (a) Explain the purpose of vertical and horizontal deflection systems in CRO with necessary circuits. CO5-U (16)
- Or
- (b) Analyze the basic parameter of function selector and frequency synthesizer by comparing their operation CO5-Ana (16)