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Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R2404

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

Second Semester

Electronics and Communication Engineering

R21UEC204 BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. The unit for inductance is___ CO1-U

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

2. If field current is decreased in shunt dc motor, the speed of the motor. CO1-U

   (a) remains same. (b) Increases. (c) Decreases. (d) None of the above.

3. The desirable static characteristics of a measuring system are CO1-U

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

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

4. The full range of audibility in audio frequency oscillator is CO2-U

   (a) 0to20Hz (b) 20 Hz to 2 kHz (c) 20 Hz to 20 kHz (d) 20 Hz to 20 MHz

5. The cathode of a C.R.O.is usually coated with CO2-U

   (a) Alkalimetals (b) Tungsten or thorium oxide

   (c) Copper oxide (d) Barium or strontium oxide

PART – B (5 x 3= 15 Marks)

6. Define RMS value and Amplitude. CO1-U

7. What are the Advantages of Transformer? CO1-U

8. When a volt meter ammeter d is applied for the measurement of resistance, the voltmeter reads a value of 8.28 V and the ammeter reading is 4.14mA. find its resistance. CO3-App

9. Classify the oscillator based on the frequency of the generated signal. CO2-U

10. Why aquadag is used in CRT? CO2-U

PART – C (5 x 16= 80 Marks)

11.	(a)	Derive the expression for the instantaneous current and power and draw the phasor diagram in each case for RL and RC Circuits	CO3-App	(16)
		Or		
	(b)	Prove that the voltage applied is in phase with the current running through pure Capacitance.	CO3-App	(16)
12.	(a)	Explain in detail the principle of operations of 1 ϕ induction motor.	CO1 -U	(16)
		Or		
	(b)	Describe the principle of operation of Universal Motor with necessary diagrams.	CO1 -U	(16)
13.	(a)	Design a multi range DC Ammeter having a resistance 75Ω and full scale deflection for the current of 2mA. The required ranges are 0- 10mA, 0-50mAand0-100mA.	CO3 -App	(16)
		Or		
	(b)	What happens to a moving coil ammeter when current flows through it? How can it be changed to read current supply like an ammeter?	CO3 -App	(16)
14.	(a)	Describe about the working of function generator in detail.	CO2-U	(16)
		Or		
	(b)	With a neat block diagram discuss about an AFO sine wave generator	CO2-U	(16)
15.	(a)	How does an analog oscilloscope differ from a digital oscilloscope in terms of operation?	CO6-Ana	(16)
		Or		
	(b)	Examine how can Lissajous pattern and RMS value used to visually represent the relationship between two different frequencies in waveforms?	CO6 -Ana	(16)