

B.E. DEGREE EXAMINATIONS: APRIL / MAY 2010

Fourth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U07EI402: Electronic Instrumentation

Time: Three Hours

Maximum Marks: 100

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Electrostatic type instruments are primarily used as
 - (a) ohm meters
 - (b) watt meters
 - (c) volt meters
 - (d) ammeters
2. Moving iron type instrument can be used as
 - (a) Standard instruments for calibration of their instruments
 - (b) Transfer type instruments
 - (c) Indicator type instruments as on panels
 - (d) All the above
3. In Signal generator
 - (a) Energy is converted from simple DC source in to AC energy at some specific frequency
 - (b) Energy is created
 - (c) Energy is generated
 - (d) all the above
4. Sphere gaps are used for measurement of
 - (a) Instantaneous voltage
 - (b) RMS Voltage
 - (c) Average Voltage
 - (d) Peak Voltage
5. A Vertical amplifier for a CRO can be designed for
 - (a) A Constant gain times bandwidth product
 - (b) Only a high gain
 - (c) Only a broad bandwidth
 - (d) All the above
6. In a CRT the focusing anode is located at
 - (a) before pre accelerating anode
 - (b) After accelerating anode
 - (c) before accelerating anode
 - (d) between pre accelerating and accelerating anode
7. Period measurements is done in frequency meters for achieving high accuracy in the case of
 - (a) high frequencies
 - (b) medium frequencies
 - (c) low frequencies
 - (d) D.C.

8. In a digital frequency meter, the Schmitt trigger is used for
- (a) sinusoidal waveforms into rectangular waveforms
 - (b) scaling of sinusoidal waveforms
 - (c) providing time base
 - (d) none of the above
9. The turn on and turn off times of a LCD are of the order of
- (a) 1 s
 - (b) 1 ms
 - (c) 10 ms
 - (d) 10 ns
10. X-Y Recorders record a quantity
- (a) with respect to another quantity
 - (b) on X-axis with respect to time on Y-axis
 - (c) on Y-axis with respect to time on X-axis
 - (d) none of the above

PART B (10 x 2 = 20 Marks)

- 11. Define Q factor.
- 12. Mention the merits of MI type instruments.
- 13. Explain the merits of frequency synthesized sine wave generator.
- 14. Write a typical application for Spectrum Analyzer.
- 15. Explain the function of Vertical and Horizontal deflection system?
- 16. Explain the principle involved in digital frequency meter?
- 17. List any important features of IEEE 488 bus.
- 18. Classify the different types of Digital Voltmeter.
- 19. Write any two applications of X-Y recorder.
- 20. Write the principle of Magnetic Recording.

PART C (5 x 14 = 70 Marks)

21. (a) With neat sketch explain how current, voltage, resistance and conductivity can be measured with multimeter.

(OR)

- (b) (i) Explain the operation of power meter. (7)
- (ii) Describe the need, principle and application of true RMS meter. (7)

22. (a) Sketch the block diagram of Function Generator. Explain how amplitude, frequency and duty cycle of square wave can be adjusted.

(OR)

- (b) (i) Describe the operation of Harmonic Distortion analyzer. (10)
(ii) Write short notes on noise generator. (4)

23. (a) (i) Explain any one type of special oscilloscopes with diagram. (10)
(ii) Discuss the types of screen used in CRO. (4)

(OR)

- (b) (i) What are the functions of probe while using CRO and mention the different types. (4)
(ii) Explain the dual beam and dual trace in CRO. (10)

24. (a) Explain any one type of digital voltmeter with sketch and mention merits and drawback of that.

(OR)

(b) Write short notes on :

- (i) Automatic polarity indication. (4)
(ii) Automatic ranging. (6)
(iii) Auto zeroing. (4)

25. (a) (i) Explain the principle and construction of X-Y recorders. (8)
(ii) Write a short note on Electrostatic interference. (6)

(OR)

(b) Write short notes on

- (i) Data loggers. (7)
(ii) Magnetic tape recorders. (7)
