

**B.E. DEGREE EXAMINATIONS: APRIL/MAY 2009**

Fourth Semester

**ELECTRONICS AND INSTRUMENTATION ENGINEERING**

**U07EI402 Electronic Instrumentation**

**Time: Three Hours**

**Maximum Marks: 100**

**Answer ALL the Questions:-**

**PART A (20 x 1 = 20 Marks)**

1. A true RMS reading voltmeter uses two thermocouples in order to:  
A. Increase Sensitivity                      B. To cancel Nonlinear effects  
C. To prevent drift                              D. To improve Accuracy
2. A 1mA ammeter has a resistance of 100  $\Omega$ . It is to be converted to a 1A ammeter. The value of shunt resistance required is:  
A. 0.001  $\Omega$                       B. 0.1001  $\Omega$                       C. 100000  $\Omega$                       D. 100  $\Omega$
3. An Electrodynamic voltmeter reads:  
A. Average value      B. RMS value      C. Peak value      D. Peak to peak value
4. Vector voltmeters are useful in:  
A. Low frequency applications  
B. Very low frequency applications  
C. High frequency applications  
D. Very high frequency applications
5. An Astable Multivibrator produces:  
A. Sine wave      B. Triangular Wave      C. Square wave      D. Saw tooth wave
6. In Colpitts oscillator, the 180° phase shift is achieved by using:  
A. Tapped capacitance      B. Tapped inductance      C. Resistor      D. Tapped Resistor
7. The Heterodyne wave analyzers find application in the range of:  
A. Hz      B. KHz      C. MHz      D. GHz
8. The dynamic range of spectrum analyzer with a third order intercept point of +25dBm and a noise level of - 85dBm is:  
A. 40 dB                      B. 73 dB                      C. 60 dB                      D. 110 dB

9. An aquadag is used in CRO to collect:
- A. Primary electrons
  - B. Secondary emission electrons
  - C. Both primary and secondary emission electrons
  - D. Photons
10. In a CRT, focusing anode is located:
- A. After accelerating anode
  - B. Before pre – accelerating anode
  - C. After vertical deflection plate
  - D. Between pre – accelerating anode and accelerating anode
11. During the retrace time, the electrons forming the horizontal beam move from:
- A. Left to right on screen
  - B. Right to left on screen
  - C. Bottom to top on screen
  - D. Top to bottom on screen
12. The horizontal amplifier should be designed in C.R.O for:
- A. High frequency signals with slow rise time
  - B. High amplitude signals with slow rise time
  - C. High amplitude signals with fast rise time
  - D. Low amplitude signals with fast rise time
13. IEEE 488 is:
- A. Input Device
  - B. Output Device
  - C. Serial interface standard
  - D. Parallel interface standard
14. Integrating type Digital Voltmeters are based on:
- A. Voltage to current conversion
  - B. Voltage to frequency conversion
  - C. Current to voltage conversion
  - D. Frequency to voltage conversion
15. The purpose of Schmitt trigger in the frequency meter is to convert:
- A. Sine wave to triangular wave
  - B. Triangular wave to square wave
  - C. Sine wave to square wave
  - D. Square wave to sine wave

Resolution of 4 ½ digit voltmeter is:

- A.  $10^4$       B. 0.0001      C.  $10^5$       D. 0.00001

Data Loggers:

- A. Measure data      B. Record Data      C. Measure and record data      D. Correct data

18. LED is made from the material:

- A. Silicon      B. Germanium      C. Gallium Arsenide      D. Silicon dioxide

19. Which modulation technique is used for recording data onto magnetic tape recorders:

- A. AM      B. FM      C. PM      D. PAM

20. Which recorder is most accurate:

- A. X – Y type      B. Magnetic tape type  
C. Digital Recorder      D. Circular chart type

**PART B (5 x 16 = 80 Marks)**

21. (a) (i) Explain the principle of working and operation of a true RMS meter. (8)

(ii) Explain the working of a multi – range voltmeter. (8)

**(OR)**

(b) With a neat block schematic, explain the working of a vector voltmeter in detail. (16)

22. (a) (i) Explain the working of function generator with necessary block diagram. (8)

(ii) Explain the generation of sine wave by Hartley oscillator. (8)

**(OR)**

(b) (i) With a neat sketch, explain the principle of working and operation of a Heterodyne wave analyzer. (12)

(ii) Give the applications of wave analyzer. (4)

23. (a) With neat block diagram, explain in detail the working of a storage oscilloscope. (16)

**(OR)**

(b) Explain in detail the various components of horizontal deflection system with appropriate diagrams. (16)

24. (a) With appropriate block schematics, explain the working of a Successive Approximation type Digital voltmeter. (16)

(OR)

(b) (i) What are the advantages of Digital Multimeter over analog multimeter? (4)

(ii) Explain the working of DMM in detail. (12)

25. (a) (i) Discuss in detail the working of X – Y recorders. (8)

(ii) Explain the construction and working of LED. (8)

(OR)

(b) Explain the various components of a data logger in detail. (16)

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