

Seat No. : _____

XB-131

T.Y.B.Sc.

March-2013

Electronics : Paper – VIII
(Electronic Instrumentation)

Time : 3 Hours]

[Max. Marks : 70

- Instructions :** (1) All questions carry equal marks.
(2) Symbols used here have their usual meanings.
(3) Figures to the right indicate marks.

1. (a) What is Q-meter ? Discuss its working using circuit diagram and needed equations. **6**
(b) Draw the basic block diagram of a dual slope DVM and explain each block for its working, use necessary graph topology if required. **6**
(c) Answer the following : **2**
(1) What is VOM ?
(2) What is vector voltmeter ?

OR

- (a) Draw circuit diagram for AC voltmeter using half wave rectifier and full wave rectifier. Discuss its working clearly. Explain its DC Mode of operation and AC mode of operations using suitable circuit. **12**
(b) (1) What is VTVM ?
(2) What is TVM ? **2**
2. (a) What is CRO ? Draw neat and clean block diagram of a general purpose CRO. Explain its working by showing role of each block and draw cathode ray tube neatly. **12**
(b) Answer the following : **2**
(1) What is “Sweep” ?
(2) What is “Electronic switch” ?

OR

- (a) What is DSO ? Which are the main disadvantages of the storage cathode ray tube ? Draw the block diagram for DSO. Explain its working. Declare its advantages and applications. 12
- (b) Answer the following : 2
- (1) What is the function of Trigger circuit in CRO ?
- (2) What is calibrators in CRO ?

OR

- (a) What is DFM ? Draw the block diagram of DFM and explain its principle clearly. Also discuss digital phase meter in detail. 12
- (b) Answer the following : 2
- (1) What is “Pre-scaling” ?
- (2) What is “DDAs” ?

3. (a) What is signal generator ? List its characteristics, applications and classification clearly. Draw a block diagram of a simple sine wave generator as well as a conventional standard digital generator. Discuss their working and list the advantages and disadvantages both. 12
- (b) (1) What is duty cycle ? 2
- (2) What is THD ?

OR

- (a) What is Signal Analysis ? Which instruments can be used for that ? Discuss the following in detail using suitable diagrams. 12
- (1) Basic Wave Analyzer
- (2) Wave meter
- (b) Answer the following : 2
- (1) What is Rejection Amplifier ?
- (2) Define Spectrum Analyser.

4. (a) What is transducer ? List basic requirement of transducer and specifications for transducers. Draw transducer actuating mechanism neatly. 12
- (b) Answer the following : 2
- (1) What is “Dynamic Error” ?
- (2) What is LVDT ?

OR

- (a) What are capacitive transducers ? Discuss capacitive transducers using change in area of plates. **6**
- (b) What is “Strain Gauges” ? State its types and discuss Bounded strain gauges in detail. **6**
- (c) Answer the following : **2**
- (1) Draw ‘Foil gauge’.
- (2) What is “photodiodes” ?
5. (a) Draw neat and clean block diagram of a “Biomedical Instrumentation System” and explain each block in your words. **6**
- (b) How can you measure the “Blood flow” ? State its methods for flow monitoring, explain them briefly. **6**
- (c) Answer the following : **2**
- (1) Draw anatomy of Nerve Cell (Neuron)
- (2) What is “Heparin” ?

OR

- (a) What is “Nervous system” ? Classify it and discuss the “CNS” with appropriate diagrams and explanation. How messages are transmitted ? **12**
- (b) Answer the following : **2**
- (1) Draw B-scan display
- (2) What is “systolic pressure” ?
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