

17435

11819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any SIX :

12

- (a) State two examples of absolute instruments and two examples of secondary instruments.
- (b) Compare active transducer and passive transducer on the basis of working principle and examples.
- (c) State the need of wave analyzer. Also give types of wave analyzer.
- (d) List any four applications of CRO.
- (e) List advantages of digital instruments.
- (f) State any two important specifications of analog D.C. Voltmeter.
- (g) What is pt-100 ? Explain.
- (h) What is signal generator ? Explain it's need.

- (B) Attempt any TWO :** **8**
- (a) Describe with neat diagram the operation of R.F. signal generator.
 - (b) Give examples of any two materials used and any two applications of piezo-electric transducer.
 - (c) Give classification of flow measuring transducer.
- 2. Attempt any FOUR :** **16**
- (a) Describe different types and applications of thermistors.
 - (b) Describe any two specifications of analog d.c. ammeter. Draw the connection diagram of d.c. ammeter in electronic circuits.
 - (c) Draw the block diagram of digital multimeter. Explain its working.
 - (d) Draw the block diagram of DSO. List it's applications.
 - (e) Draw the block diagram of function generator. Explain.
 - (f) Explain primary and secondary transducer with the help of suitable diagram.
- 3. Attempt any FOUR :** **16**
- (a) List any four static characteristics and any four dynamic characteristics of electronic instruments.
 - (b) A basic d'Arsonval meter with an internal resistance of $R_m = 100 \Omega$ and full scale deflection current $I_m = 1\text{mA}$ is to be converted into d.c. voltmeter with the range of (0-10) V. Find the value of series resistance.
 - (c) Explain with neat block diagram of digital LCR meter.
 - (d) Describe with neat sketch Lissajous pattern for phase measurement.
 - (e) Draw the block diagram of pulse generator.
 - (f) Draw the block diagram of Instrumentation system. Explain the function of each block.

4. Attempt any FOUR :**16**

- (a) With neat sketch, explain working principle and construction of PMMC.
- (b) Draw the block diagram of digital frequency meter. Explain the function of each block.
- (c) Draw the block diagram of dual beam dual trace oscilloscope.
- (d) Describe with neat block diagram operation of spectrum analyzer.
- (e) Illustrate the working of RVDT as a displacement transducer.
- (f) Give the classification of thermocouples based on material used and temperature range.

5. Attempt any FOUR :**16**

- (a) Explain with neat diagram the operation of single beam dual trace oscilloscope.
- (b) Describe with neat block diagram the operation of frequency selective wave analyzer.
- (c) Describe construction and working of capacitive transducer with suitable diagram.
- (d) Describe the working of electromagnetic flow meter with suitable diagram.
- (e) Define unit. Give two examples of each of base unit, supplementary unit and derived units.
- (f) What are requirements of shunt resistance in ammeter ?

P.T.O.

6. Attempt any FOUR :**16**

- (a) Define error. List sources of error in measurement system.
 - (b) Compare analog instruments and digital instruments on the basis of accuracy, resolution, working principle and examples.
 - (c) Draw neat and labelled diagram of internal structure of CRT.
 - (d) Describe working principle of Logic Analyzer with neat diagram.
 - (e) List any eight front panel controls of CRO.
 - (f) Define the term temperature and flow. State their units.
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