Scheme - I

Sample Question Paper

Program Name	: **Digital Electronics, Medical Electronics and Instrumentation**
	Engineering Program Group
Program Code	: **DE/IE/IS/IC/MU**
Semester	: **Third**
Course Title	: **Electronic Instruments and Measurement**
Marks	: **70**

22331

Time: 3 Hrs.

Instructions:
 (1) All questions are compulsory.
 (2) Illustrate your answers with neat sketches wherever necessary.
 (3) Figures to the right indicate full marks.
 (4) Assume suitable data if necessary.
 (5) Preferably, write the answers in sequential order.

Q.1) Attempt any FIVE of the following. 10 Marks

 a) Define the term 'Measurement'.

 b) Write the specifications of an analog multimeter.

 c) State significance of lissajous figure.

 d) Define Transducers.

 e) Sketch block diagram of Instrumentation system.

 f) State the applications of Bourdon Tube.

 g) List application of Data Acquisition System.

Q.2) Attempt any THREE of the following. 12 Marks

 a) Describe the different types of errors occurs in measurement with one example.

 b) Explain the role of shunt resistor connect across PMMC movement.

 c) Describe the function of each block of CRO.

 d) Explain with sketches the working principle of LVDT.

Q.3) Attempt any THREE of the following. 12 Marks

 a) Explain with sketches the working of analog ohm meter

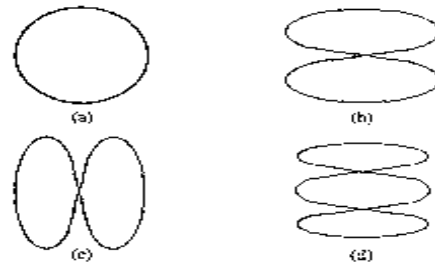 b) Calculate horizontal to vertical frequency ratio for Lissajous figures as shown in figure no.1

Figure no.-1

c) Explain significance of transducer in instrumentation system.

d) Sketch labeled DC signal conditioning circuits used for Pressure measurement

Q.4) Attempt any THREE of the following. 12 Marks

a) Convert the PMMC movement into a dc-ammeter of the range 0 to 100mA.

b) Sketch labeled equivalent circuit diagram of practical ammeter and voltmeter.

c) Suggest instrument to measure unknown frequency above 5 MHz and store result. Justify it.

d) Convert 520 mm of Hg into bar.

e) Sketch AC signal conditioning circuit for level measurement.

Q.5) Attempt any TWO of the following. 12 Marks

a) Determine the smallest measureable change in the voltage of an analog voltmeter having range 0-200V with resolution of 0.15% of full scale

b) Sketch and describe pressure measurement system for 800mm pressure, that contain Bourdon tube and LVDT.

c) Describe functions of the each block of DAS.

Q.6) Attempt any TWO of the following. 12 Marks

a) Sketch the DC signal conditioning circuit for pressure measurement using strain gauge. Justify it.

b) For the parameters accuracy, linearity and range, suggest the name of the temperature transducer to measure human body temperature. Justify it.

c) (i) Calculate the resistance of PT-100 for 40°C.

(ii) Sketch characteristics of PT-100 and compare it with that of thermocouple.

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Scheme - I

Sample Test Paper - I

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Program Name	**: Digital Electronics, Medical Electronics and Instrumentation Engineering Program Group**
Program Code	**: DE/IE/IS/IC/MU**
Semester	**: Third**
Course Title	**: Electronic Instruments and Measurement**
Marks	**: 20**

22331

Time: 1 Hour

Instructions:
   (1) All questions are compulsory.
   (2) Illustrate your answers with neat sketches wherever necessary.
   (3) Figures to the right indicate full marks.
   (4) Assume suitable data if necessary.
   (5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR.   **08 Marks**

   a) Differentiate analog and digital multimeter (any two points).

   b) Define the term measurement.

   c) List application of DSO.(any four)

   d) Define Resolution and accuracy.

   e) List type of Errors.

   f) State significance of Lissagious figure.

Q.2 Attempt any THREE.   **12 Marks**

   a) Identify the standards for calibration of the multimeter instrument with justification

   b) Describe error in measurement and classify it..

   c) List different display device and explain PMMC meter.

   d) Convert the PMMC with 100 ohm internal resistance with 10mA maximum deflection
      to 0- 10V range voltmeter.

   e) Compare DSO and CRO with four features.

   f) Sketch Block diagram of function generator and state function of each block.

Scheme - I

Sample Test Paper - II

Program Name	: **Digital Electronics, Medical Electronics and Instrumentation Engineering Program Group**
Program Code	: **DE/IE/IS/IC/MU**
Semester	: **Third**
Course Title	: **Electronic Instruments and Measurement**
Marks	: **20**

22331

Time: 1 Hour

Instructions:

(1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

Q.1 Attempt any FOUR. 08 Marks

a) Define Transducer.

b) Identify following transducer as active and passive

 i) Thermocouple ii) LDR iii) LVDT iv) Bellows

c) Sketch .Burdon Tube and Bellows schematic.

d) List transducers used in level measurement.

e) Define signal conditioning.

f) State need of DAS.

Q.2 Attempt any THREE. 12 Marks

a) Explain selection criteria of transducer.

b) Sketch basic building blocks of instrumentation system and state function of each block.

c) Explain working principle of orifice plate for flow measurement.

d) Convert 1bar pressure to pascal, psi, Hg mm.

e) Sketch pressure transducer system using DC bridge and instrumentation amplifier.

f) Describe basic DAS with neat and labeled sketch.