

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) State different types of standards.
- b) Write the function of delay line in CRO.
- c) State the features of digital meter (any two).
- d) Define Calibration.
- e) Identify the parameter measured by the given instruments:
 - i) LUX meter, ii) LCR meter, iii) DFM, iv) DVM.
- f) State the condition for balancing Wheatstone bridge..
- g) Write any two uses of AC bridge.

Q.2) Attempt any THREE of the following.

12 Marks

- a) Explain the block diagram of measurement system with suitable sketch.
- b) Write steps to convert PMMC instrument to measure the current with neat diagram.
- c) Compare Analog meter and Digital meters on the basis of
 - i) Display,
 - ii) Resolution,
 - iii) Functions available and
 - iv) Power consumption
- d) Explain the working of Maxwell's bridge with neat diagram.

Q.3) Attempt any THREE of the following.

12 Marks

- Describe construction of PMMC type instrument with neat diagram.
- Calculate the resolution and sensitivity of $3\frac{1}{2}$ digital Display.
- Explain the procedure for measuring the value unknown capacitance using Schering Bridge.
- Explain the different types of errors in measurement.

Q.4) Attempt any THREE of the following.

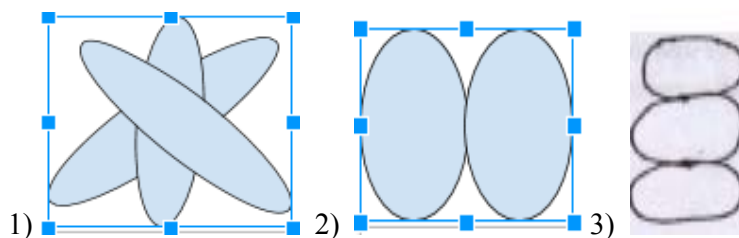
12 Marks

- Describe the following terms of voltmeter:
i) loading effect, ii) sensitivity
- Calculate the value of the multiplier resistance on the 50 V range of a dc voltmeter that uses a $200\ \mu\text{A}$ meter movement with an internal resistance of $100\ \Omega$
- Design a multi range DC ammeter using a basic movement with an internal resistance $R_m = 50\ \Omega$, and a full scale deflection current $I_m = 1\ \text{mA}$. The range required are 0–10 mA, 0–50 mA, 0–100 mA, 0–500 mA., and calculate its sensitivity
- Justify the statement:” Digital meters are more advantageous than analog meter.”
(any four points)
- Calculate the resolution and sensitivity of $3\frac{1}{2}$ digital Display.

Q.5) Attempt any TWO of the following.

12 Marks

- Compare functions of DSO with CRO (any six points)
- Find Vertical Frequency when horizontal frequency is 5kHz for the following patterns

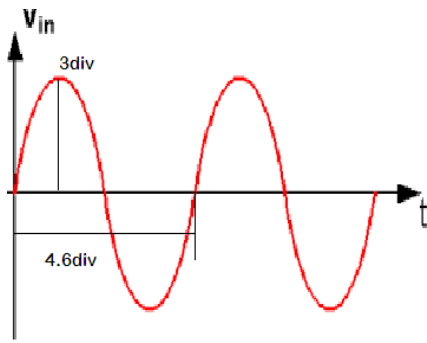


- Describe the principle of operation of LUX meter.

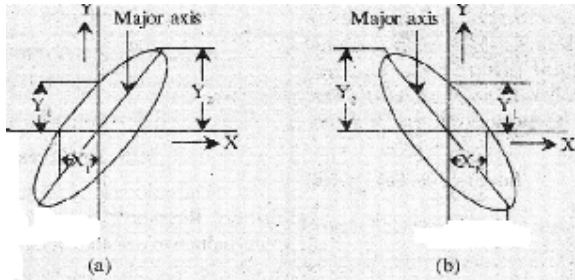
Q.6) Attempt any TWO of the following.

12 Marks

- Calculate Voltage and frequency of the given AC Wave where V/Div: 1, time/div: 1ms

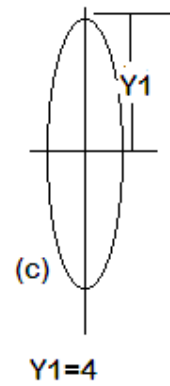


- b) Calculate the value of the shunt resistance on the 100mA range of a dc voltmeter that uses a $500 \mu\text{A}$ meter movement with an internal resistance of 100Ω
- c) Calculate phase between frequencies using given figures and data.



$Y_1=0.6$
 $Y_2=1.4$

$Y_1=1$
 $Y_2=2.2$



$Y_1=4$

Scheme - I

Sample Test Paper - I

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) Give classification of instruments with one example of each
- b) Define unit. Give any two examples
- c) Give specification of Aryton shunt resistors.
- d) Draw the schematic of PMMC Instrument
- e) State the features of digital meter (any four)
- f) Identify the parameter measured by the given instruments:
 - i) LUX meter, ii) LCR meter, iii) DFM, iv) DVM

Q.2 Attempt any THREE.

12 Marks)

- a) Distinguish between accuracy and precision with example.
- b) A Wheatstone bridge gives 2.4 mm deflection on galvanometer for 6Watts of input.
Determine its sensitivity.
- c) Describe construction of PMMI type instrument with neat diagram
- d) Explain any one type of Ohmmeter with neat sketch.
- e) Explain the block diagram Digital frequency meter
- f) "Digital meters are more advantageous than analog meter." Justify the statement (any four points)

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) Give specifications of Digital frequency meter.(any four).
- b) Calculate the resolution and sensitivity of $3\frac{1}{2}$ digital Display.
- c) List the applications of CRO (any/four)
- d) Write the function of delay line in CRO.
- e) Condition for balancing Wheatstone bridge
- f) Write the advantages of AC and DC bridge(two each)

Q.2 Attempt any THREE.

(12 Marks)

- a) Write steps to measure phase and frequency with help of CRO.
 - b) Compare functions of DSO with CRO (any four points)
 - c) Explain the block diagram of spectrum analyser
 - d) Explain the working of Maxwell's bridge.
 - e) Identify the ac bridge use to measure inductance. Draw its diagram and write the expression to measure unknown inductance
 - f) Give one application of the following
- i) Spectrum analyzer, ii) Signal generator iii) DSO iv) Logic analyzer.