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BTECH
(SEM V) THEORY EXAMINATION 2023-24
ELECTRONIC INSTRUMENTATION AND MEASUREMENTS

TIME: 3 HRS

M.MARKS: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

Q no.	Question	Marks	CO
a.	Differentiate accuracy and precision.	2	1
b.	The measured value of resistance is 10.25ohm, where as its value is 10.22 ohm. Determine absolute error of measurement	2	1
c.	Write down advantages of digital voltmeter.	2	2
d.	Define term calibration with an example.	2	2
e.	Define importance of Kelvin double bridge over Wheatstone bridge.	2	3
f.	Name any two bridges for capacitance measurment.	2	3
g.	Describe the function of Vertical deflection plate and horizontal deflection plate in CRO?	2	4
h.	Differentiate CRO and DSO.	2	4
i.	Write down temperature range of thermistor, thermocouple and RTD.	2	5
j.	Name any two devices to measure flow.	2	5

SECTION B

2. Attempt any three of the following:

a.	Explain the principle of PMMC instrument? How controlling torque provided in PMMC instrument?	10	1
b.	Explain Transistor voltmeter circuit with working principle.	10	2
c.	Explain the working of Kelvin double bridge for measurment of low resistance.	10	3
d.	Explain the working of Q-meter with working principle and circuit diagram.	10	4
e.	Draw construction diagram of thermocouple and explain its working.	10	5

SECTION C

3. Attempt any one part of the following:

a.	Discuss the advantages of DC ammeter and DC voltmeter. Explain the working of DC voltmeter with suitable diagram.	10	1
b.	The coil dimensions on a galvanometer are $l=d= 2.5\text{cm}$, and the air gap flux density is 100mT. The light-beam pointer is 2.5m, and the control spring constant is $5 \times 10^{-6} \text{Nm/rad}$. Calculate the number of coil turns to give a current sensitivity of $100\text{mm}/\mu\text{A}$ when the on-scale deflection is 300mm.	10	1

4. Attempt any one part of the following:

a.	Discuss the working of digital voltmeter system with principal diagram and applications.	10	2
b.	Define probes. Explain how current can be measured with electronic instrument.	10	2

5. Attempt any one part of the following:

a.	Explain how unknown inductance can be measured by Maxwell bridge?	10	3
b.	Explain the working of Wheatstone bridge with circuit diagram.	10	3

6. Attempt any one part of the following:

a.	Describe construction and working of Digital storage oscilloscope (DSO) with its application. Why it is widely preferred over CRO?	10	4
b.	Explain wave analyzer and digital counter with working principle and block diagram.	10	4

7. Attempt any one part of the following:

a.	Discuss construction diagram and working principle of LVDT. Draw the combination of Burdon tube with LVDT.	10	5
b.	Explain how strain can be measured by strain guage. Derive it mathematically.	10	5