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**SARDAR PATEL UNIVERSITY**

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B. Sc. (3<sup>rd</sup> Semester) Examination - 2019**US03CINS21** (Electronic Instrumentation)

Day and Date: Friday, 22/11/2019

Time: 02:00 pm to 05:00 pm

Maximum Marks: 70

**Que 1 Objective Type Questions.**

[10]

- 1 \_\_\_\_\_ is/are passive display/s.  
a) LCD  
b) EPID  
c) Both a) and b)  
d) None of these
- 2 \_\_\_\_\_ is/are console display/s.  
a) CRT  
b) LED  
c) Both a) and b)  
d) None of these
- 3 LCD stands for \_\_\_\_\_.  
a) Light crystal display  
b) Light critical display  
c) Liquid crystal display  
d) Liquid critical display
- 4 The sensitivity of voltmeter is defined as \_\_\_\_\_.  
a)  $\Omega/A$   
b)  $A/V$   
c)  $\Omega/V$   
d)  $V/\Omega$
- 5 IC 741, operational amplifier, is a directly coupled \_\_\_\_\_ amplifier.  
a) Very high gain  
b) High input impedance  
c) Both a) and b)  
d) None of these
- 6 IC 741, operational amplifier, has \_\_\_\_\_ pins.  
a) 8  
b) 6  
c) 4  
d) 2
- 7 Digital tachometer measures the \_\_\_\_\_.  
a) Speed of a rotating shaft  
b) Pressure  
c) Temperature  
d) Humidity
- 8 The purpose of \_\_\_\_\_ is to provide digital interfacing between programmable instruments.  
a) IEEE 488 bus  
b) Inductor  
c) Capacitor  
d) IC 741
- 9 A Q-meter is used to measure \_\_\_\_\_.  
a) Inductance  
b) Resistance  
c) Capacitance  
d) Impedance
- 10 The field strength meter is used to measure \_\_\_\_\_.  
a) Radiation intensity  
b) Moisture  
c) Temperature  
d) Pressure

Que 2 Short Questions (Attempt Any Ten)

[20]

- 1 A moving coil instrument has number of turns 100, width of coil 20 mm, depth of coil 30 mm, flux density in the gap  $0.1 \text{ Wb/m}^2$  and deflection torque  $30 \times 10^{-6} \text{ Nm}$ . Calculate the current through the moving coil.
- 2 Write note on bar graph displays.
- 3 Explain electro luminescence (EL) display.
- 4 Design a multirange ammeter with range of 0-1 A, 5A and 10 A employing individual shunt in each D'Arsonval movement with an internal resistance of  $500 \Omega$  and a full scale deflection of 10 mA is available.
- 5 Calculate the value of multiplier resistance on the 50 V range of a DC voltmeter that uses a  $500 \mu\text{A}$  meter movement with an internal resistance of  $1 \text{ k} \Omega$ .
- 6 Explain calibration of DC instrument.
- 7 Explain digital frequency meter.
- 8 Briefly explain digital phase meter.
- 9 Explain digital capacitance meter.
- 10 Explain briefly automatic bridge.
- 11 What is megger?
- 12 What is telemetry? Draw diagram of general telemetry system.

- Que 3 [A] Give complete classification of displays. [05]  
[B] Write a note on light emitting diode (LED). [05]

OR

- [C] Write a note on electrophoretic image display (EPID). [10]

- Que 4 [A] What do you mean by multirange voltmeter? Give an account of extending voltmeter ranges. [05]  
[B] Write a note on differential voltmeter. [05]

OR

- [C] Discuss solid state voltmeter. [05]  
[D] Explain AC voltmeter using rectifiers. [05]

- Que 5 [A] Explain digital measurement of time. [05]  
[B] Discuss digital measurement of frequency (mains). [05]

OR

- [C] Explain digital tachometer. [05]  
[D] Discuss digital pH meter. [05]

- Que 6 [A] Write a note on output power meter. [05]  
[B] Discuss field strength meter. [05]

OR

- [C] Discuss RX meter. [05]  
[D] Write a note on Owen bridge. [05]