

[155]

SEAT No. _____

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SARDAR PATEL UNIVERSITY V.V.NAGAR

B.Sc.(IIrd SEM.) INSTRUMENTATION (V)

26th MARCH-2019 EXAMINATION

SUBJECT- INSTRUMENTATION SYSTEM - II

SUB.CODE-US02CINV21

TIME: 2:00 pm to 5:00 pm

MARKS-70

Q-1 Choose correct answer.

[10]

1. Two sinusoidal currents are given by the equation $i_1 = 10 \sin(\omega t + \pi/3)$ and $i_2 = 15 \sin(\omega t - \pi/4)$. The phase difference between them is ____.
(A) 60° (C) 105°
(B) 30° (D) none of above
2. A train of sine waves which contain 50 positive peaks and 50 negative peaks per second has a frequency of ____ Hz.
(A) 100 (C) 150
(B) 50 (D) none of above
3. Impedance of an RL circuit is given by the ____ sum of resistance and reactance.
(A) vector (C) scalar
(B) addition (D) none of above
4. A pure inductor or capacitor dissipates ____ power.
(A) maximum (C) low
(B) no (D) none of above
5. Photo multiplier tube consists of ____ material.
(A) Photo sensing (C) Semiconductor
(B) Pure conductor (D) none of above
6. Power Supply is used to convert A.C voltage to ____.
(A) Pulse Voltage (C) Lower A.C Voltage
(B) D.C Voltage (D) none of above
7. ____ Material used in piezoelectric transducer.
(A) Germanium (C) Quartz
(B) Silicon (D) none of above
8. Capacitive transducer is ____ type transducer.
(A) Passive (C) Displacement
(B) Non electric (D) none of above
9. In a shunt capacitor filter decreases with ____ in load resistance.
(A) decrease (C) increase and decrease
(B) increase (D) none of above
10. For a sinusoidal as voltage of peak value 100 V, the rms value is ____ V.
(A) 7.07 (C) 70.7
(B) 0.707 (D) none of above

(1)

(P.T.O)

- Q-2 Short answer type question. (ANY TEN) [20]**
1. Briefly explain tuned circuit.
 2. Define phase difference of sine wave.
 3. Briefly explain frequency and amplitude of sine wave.
 4. List application of resonance circuit.
 5. The current of 1.2 A flows in a coil with inductance of 0.4 H, calculate the energy stored in inductor.
 6. Define rectifier and briefly explain.
 7. Draw block diagram of power supply.
 8. Define a transducer.
 9. What is Q-factor of a coil? Briefly explain.
 10. Difference between active and passive transducers.
 11. State different type of displacement transducer.
 12. Briefly explain LED.
- Q.3 Discuss different values of sinusoidal voltage and current with necessary figure. [10]**
- OR**
- Q.3 Explain function generator in detail. [10]**
- Q.4(a) Write a note on parallel resonance circuit. [07]**
- Q.4(b) What is sharpness of resonance? And briefly explain it. [03]**
- OR**
- Q.4(a) Write a note on series resonance circuit. [07]**
- Q.4(b) A circuit consist of capacitor of 100pF connected in series with coil of resistance 5 Ω and inductance 100 μ H. Calculate resonance frequency (f_0), Q-factor (Q_0) and bandwidth (BW). [03]**
- Q.5(a) Writes note on Solar Cell with diagram. [05]**
- Q.5(b) Explain LC and n filter in detail. [05]**
- OR**
- Q.5 What is photomultiplier tube? And explain it in detail with necessary diagram. [10]**
- Q.6(a) Explain in detail Strain Gauge Transducer. [07]**
- Q.6(b) Explain about Variable differential transformer transducer. [03]**
- OR**
- Q.6(a) Explain Capacitive type transducer with diagram. [05]**
- Q.6(b) Write a note on Piezo electric transducer. [05]**