SARDAR PATEL UNIVERSITY

B.Sc.INSTRUMENTATION (V)
SEM-III, NOVEMBER-2018 EXAMINATION

SUB. CODE:-US03CINV02   SUB: Electronic Circuit & Optical Device-I

DATE:-30/11/2018, Friday   TIME:-2:00 pm to 5:00 pm   MARKS-70

Q-1   Choose correct answer   **[10]**

1.   The Op-amp is device that can be used to amplify ___ signal.
(A) D.C as well A.C   (C) A.C
(B) D.C   (D) None of above

2.   The Resistance Measure between output terminal and ground is called___
(A) Input voltage gain   (C) CMRR
(B) Open loop voltage gain   (D) none of above

3.   The average of two base current entering into terminal is called ___
(A) Input offset Current   (C) Input Bias Current
(B) Input offset Voltage   (D) none of above

4.   The differential D.C Op-Amp is mostly used to amplify output of ___
(A) High Pass filter   (C)Transducer
(B) Low Pass filter   (D) none of above

5.   Current to Voltage Converter Op-Amp is also known as ___op-Amp.
(A) Trans-resistive   (C) Trans-inductive
(B) Trans-Capacitive   (D) none of above

6.   The Output voltage followed the input Voltage known as___
(A) A.C Voltage follower   (C) D.C Voltage follower
(B) Differential D.C Op-Amp   (D) none of above

7.   A PWM produces a train of pulse that is proportional to the ___of modulation signal.
(A) Amplitude   (C) Pulse
(B) Amplitude And Pulse   (D) none of above

8.   In Astable Multivibrator total Periodic time T=T1+T2=___
(A) $RC \log \frac{[(1+A)]}{[(1-A)]}$ (C) $2RC \log \frac{[(1+A)]}{[(1-A)]}$
(B) $2RC \log \frac{[(1-A)]}{[(1+A)]}$ (D) none of above

9.   A ___ in general is one which Separates, unwanted quantity from the signal.
(A) filter   (C) Active filter
(B) Passive filter   (D) none of above

10.   Bandpass filter will eliminate___
(A) Intermediate   (C) Zero
(B) Low And High   (D) none of above

Q-2   Short answer type question. (any ten)   **[20]**

1.   Briefly Explain Input Impedance And Common Mode Rejection Ratio (CMRR) of operational Amplifier.
2.   Explain Ideal Op-Amp Characteristics.
3.   Define Open loop frequency Response And Bandwidth.
4.   Draw the Circuit Diagram of Current to Voltage Converter in Operational Amplifier.
5.   Briefly explain adding Integrator with necessary figure.
6.   Briefly Explain Basic Comparator in Operational Amplifier.
7.   Draw Phase Detector Circuit and briefly explain it.
8.   Draw Circuit of Square wave generator and briefly Explain.
9.   Briefly Explain Schmitt Trigger Circuit.

(P.T.O.)

10. Differentiate between Active filter Vs. Passive Filter.
11. Briefly explain Notch filter.
12. Draw the Block diagram of Op-Amp

Q.3 Draw the Circuit Diagram of Inverting Amplifier and Derive necessary expression for it   [10]
with feedback.

<div align="center">OR</div>

Q.3(A) Describe summing op-amp with necessary diagram.   ,   [07]
Q.3(B) List the D.C and A.C Parameters of Op-Amp   [03]

Q.4(A) Draw the circuit diagram and wave form of integrator using Op-Amp and explain in   [07]
detail.
Q.4(B) Explain D.C voltage follower Circuit.   [03]

<div align="center">OR</div>

Q.4   Explain in Detail Voltage to Current Converter using Op-Amp.   [10]
Q.5   Describe Astable Mulltivibrator with Diagram and Waveform s.   [10]

<div align="center">OR</div>

Q.5(A) Explain Zero-Crossing Detector with necessary wave form.   [07]
Q.5(B) Discuss Pulse with Modulation circuit.   [03]

Q.6   Give the details about the Data Acquisition using Instrumentation Amplifier   [10]

<div align="center">OR</div>

Q.6   Define Instrumentation amplifier and explain it with circuit Diagram   [10]

<div align="center">— X —</div>

<div align="center">②</div>