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SARDAR PATEL UNIVERSITY
External Examination 2016
M.Sc (Sem - I) Electronics and Communication
Subject :- Analog Interface Electronics
Subject Code :- PS01CELC02
Date & Day : 24/10/2016, Monday
Time : 10:00 am to 01:00 pm

Total Marks - 70

Note : The figure to the right indicates full marks

Q-1 Choose the correct answers

[08]

1. In JFET the gate controls _____
(a) The width of the channel (b) The drain current
(c) The gate control (d) All of above
2. Virtual ground in an OP-AMP is due to _____
(a) high gain (b) terminal is directly connect to ground
(c) high input impedance (d) Both (a) & (c)
3. Current flow in a semiconductor depends on the phenomenon of _____
(a) drift (b) diffusion
(c) recombination (d) None
4. OP-AMP can be used _____
(a) only in linear range (b) only in its saturation mode
(c) Both (a) & (b) (d) in saturation mode for high freq.
5. One of the application of the current mirror is _____
(a) output current limiting (b) current feedback
(c) obtaining very high current gain (d) temperature stabilized biasing
6. The drift current arise due to _____
(a) Carriers (b) Material
(c) Applied electrical field (d) None
7. In the feedback resistor in an inverting mode of OP-AMP is replaced by a capacitor, the circuit will work as
(a) Integrator (b) Differentiator
(c) Summer (d) Shmitt trigger
8. A Field effect Transistor _____
(a) Has 3 pn junctions
(b) incorporates a forward biased junction
(c) depends upon the variation of a magnetic field of a operation
(d) depends upon the variation of the depletion layer width with reverse voltage

(1)

P.T.O

Q-2 Attempt any Seven of the following

[14]

1. What do you mean by drift current.
2. Draw the circuit diagram of Inverter amplifier.
3. Draw the energy band diagram of Semiconductor material.
4. Why do we use window comparator?
5. List out the A.C parameters of OP-AMP.
6. Draw the circuit diagram of the Inverting amplifier and explain it.
7. Why current mirror circuit is required?
8. Explain the concept Hall effect.
9. What is zener effect?

- Q-3** [a] Explain the Extrinsic semiconductor material with appropriate crystal structure. [6]
[b] Write a note on Zener Diode. [6]

OR

- [b] Explain the AC & DC analysis of the Differential amplifier. [6]

- Q-4** [a] Explain the First order High pass filter with necessary circuit diagram. [6]
[b] Explain DC parameter of OP-AMP in brief. [6]

OR

- [b] Explain the construction and working of PNP Bi polar transistor, also explain one of its application. [6]

- Q-5** [a] Using the necessary concepts, derive the equation for hall coefficient obtained from Hall effect [6]
[b] With appropriate circuit diagrams, explain the enhancement mode MOSFET. [6]

OR

- [b] Draw the circuit diagram of Differentiator. Describe the process of Differentiation carried out in circuit. [6]

- Q-6** [a] Draw the circuit diagram of Instrumentation amplifier and describe its working in detail. [6]
[b] Explain the Second order Low pass filter with necessary circuit diagram. [6]

OR

- [b] Draw the circuit diagram of Instrumentation amplifier and describe its working in detail. [6]

--Best of Luck--

(2)