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SARDAR PATEL UNIVERSITY
B.Sc. (III Sem.) Examination
2013
Tuesday, 19th November
2.30 - 5.30 pm
US03CELE01 - Electronics Devices

Total Marks: 70**Note:** Figures to the right indicate full marks of the questions.**Q.1 Multiple Choice Questions:****[10]**

- (1) The reactance of capacitor is given as $X_C =$ _____.
 (a) $\frac{1}{2\pi fC}$ (b) $2\pi fL$ (c) R
- (2) The metal film resistor is made from _____.
 (a) Silver (b) Carbon (c) Nickel
- (3) The reactance of inductor is given as $X_L =$ _____.
 (a) R (b) $\frac{1}{2\pi fC}$ (c) $2\pi fL$
- (4) Doped semiconductor material is known as _____ material.
 (a) Extrinsic (b) Intrinsic (c) Resistive
- (5) The complete current solution in case of RC circuit consists of _____ term.
 (a) forced (b) transient (c) steady state
- (6) Pure semiconductor material is termed as _____ material.
 (a) Extrinsic (b) Metal (c) Intrinsic
- (7) The output of voltage doubler is _____.
 (a) DC Voltage (b) AC Voltage (c) Zero Voltage
- (8) The voltage clampers are used in _____ circuits.
 (a) Radio (b) Television (c) Stabiliser
- (9) The other name of tunnel diode is _____.
 (a) Zener diode (b) Varactor diode (c) Esaki diode
- (10) The voltage variable capacitor diodes are used as a tuning _____ to adjust the frequency of resonant circuits.
 (a) Capacitor (b) Transistor (c) Resistor

Q.2 Answer any ten in brief.**[20]**

- (1) Explain in brief the wire wound resistor.
- (2) Explain in brief the mica capacitor.
- (3) List the different types of fixed inductor coils and explain any one.
- (4) Write a note on P-type semiconductor.
- (5) Write a note on N-type semiconductor.
- (6) Draw the diagram of a reverse biased PN junction.
- (7) What is amplitude demodulation? What is the principle of operation of detector circuit?
- (8) Draw the circuit of square law diode modulator and explain it in brief.
- (9) Draw the frequency spectrum of amplitude modulated voltage and explain it in brief.
- (10) What is a thermistor? State the uses of thermistor.

- (11) What is a charge coupled device?
(12) What is a voltage variable capacitor diode?

Q.3

- (a) What is a resistor? Discuss in detail the fixed resistors. [05]
(b) Write a note on system of colour coding used in resistors. [05]

OR

Q.3

- (a) List different types of fixed capacitors and explain any two in detail. [06]
(b) List the different types of variable capacitors and explain any one in detail. [04]

- Q.4 Discuss in detail the forward biased PN junction. [10]

OR

- Q.4 Discuss in detail the reverse biased PN junction. [10]

Q.5

- (a) Draw the circuit of voltage doubler and explain its working giving necessary wave form. [05]
(b) Write a note on Peak rectifier. [05]

OR

Q.5

- (a) Draw the circuit of amplitude modulated amplifier with base injection and explain its working. [05]
(b) Draw the circuit of amplitude modulated amplifier with collector injection and explain its working. [05]

- Q.6 Explain the working of forward biased and reverse biased tunnel diode. [10]

OR

Q.6

- (a) Discuss in detail the construction of charge coupled device. [05]
(b) With the help of necessary diagrams explain the transfer of charge in a charge coupled device. [05]

