

SARDAR PATEL UNIVERSITY
BSc. (III-Sem.) EXAMINATION
Friday, 28th December, 2012
2.30 - 5.30 pm
US03CELE01 : Electronics Devices

Total Marks : 70

Q.1 Multiple Choice Questions : (Each Question carries one mark) (10)

- (i) The relative sizes of all fixed resistors change with the _____ rating.
 (a) Voltage (b) Current (c) Wattage
- (ii) A capacitor consists of two conducting plates separated by an insulating material called _____.
 (a) wood (b) rubber (c) dielectric
- (iii) The barrier potential assists the flow of _____ carriers across the junction.
 (a) majority (b) positively charged (c) minority
- (iv) When current flows through the wire that has been coiled it generates _____ field.
 (a) electric (b) magnetic (c) electro-magnetic
- (v) The _____ circuit converts alternating quantity to unidirectional quantity.
 (a) inverter (b) rectifier (c) clamper
- (vi) The process of recovering the _____ wave from the carrier is called detection.
 (a) sinusoidal (b) modulating (c) high frequency
- (vii) Thermostats are widely used for _____ compensation.
 (a) Voltage (b) temperature (c) resistance
- (viii) A tunnel diode is also called _____ diode.
 (a) Zener (b) Esaki (c) Low frequency
- (ix) In a charge coupled device all the metal electrodes are maintained at the same fixed _____ voltage.
 (a) positive (b) zero (c) negative
- (x) In a Schottky diode, the doping density is very _____ at the metal contact and diminishes towards the semiconductor.
 (a) narrow (b) light (c) heavy

Q.2 Attempt **Any Six** out of eight questions. (Each question carries two marks.) (12)

- (i) What is a Capacitor ? State the uses of capacitors.
- (ii) Write a note on the System of Colour coding used in resistors.
- (iii) Write a short note on reverse biased PN junctions.
- (iv) Draw the circuit of voltage doublers and briefly explain its working.
- (v) Write a note on air core inductor.
- (vi) Draw the frequency spectrum of an amplitude modulated voltage and briefly explain it.
- (vii) What is a transistor ? What is the application of transistors ?
- (viii) What is a unijunction transistor ?

Q.3 (a) What is a resistor ? Discuss in detail the fixed resistors. (04)

(b) Discuss in detail the variable resistors. (04)

OR

Q.3 (a) What is a Capacitor ? What are the uses of capacitors ? Discuss in detail the Mica and Ceramic Capacitors. (05)

(b) Write a note on electrolytic capacitors. (03)

- Q.4 What is an inductor ? Discuss different types of inductors. (08)
- OR**
- Q.4 Draw the circuit diagram for the step voltage response of a RL circuit and derive the expression for current. (08)
- Q.5 (a) Discuss in detail the reverse biased PN junction. (04)
- (b) Discuss in detail the forward biased PN junction. (04)
- OR**
- Q.5 (a) Draw the circuit of a diode clamper and explain its working giving necessary wave forms. (04)
- (b) Draw the circuit of a voltage doubler and explain its working giving necessary wave forms. (04)
- Q.6 (a) Write a note on peak rectifier. (04)
- (b) Draw the circuit of a full wave rectifier. With the help of necessary figures explain capacitor filtering of full wave rectifier. (04)
- OR**
- Q.6 (a) Discuss in detail amplitude modulated amplifiers using base injection and collector injection. (04)
- (b) Discuss in detail the amplitude demodulation using diode. (04)
- Q.7 (a) Discuss in detail the voltage variable capacitor diode. (04)
- (b) Discuss in detail the thermistors. (04)
- OR**
- Q.7 (a) Explain the reverse biased tuned diode. (04)
- (b) Explain the forward biased tuned diode. (04)
- Q.8 (a) With the help of necessary diagram explain the construction of charge coupled device. (04)
- (b) With the help of necessary diagram explain the transfer of charge in a charge coupled device. (04)
- OR**
- Q.8 (a) With the help of necessary diagram explain the storage of charge in a charge coupled device. (04)
- (b) Write a note on :
- (i) Input and Output arrangement of a charge coupled device. (02)
- (ii) Schottky diode. (02)

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