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BEE-042

**DIPLOMA IN ELECTRICAL AND MECHANICAL
ENGINEERING (DEME)**

Term-End Examination

00728

June, 2015

BEE-042 : ELECTRONICS

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Attempt any four questions of the remaining questions numbered 2 to 8.*

1. Select the correct answer from the given four alternatives : $14 \times 1 = 14$

(i) In n-type semiconductor the minority carriers are

- (a) holes
- (b) electrons
- (c) holes and electrons
- (d) None of the above

- (ii) In full wave rectifier, if the input frequency is 50 Hz, the output frequency is
- (a) 50 Hz
 - (b) 100 Hz
 - (c) 200 Hz
 - (d) 250 Hz
- (iii) Peak inverse voltage of full wave rectifier is
- (a) V_m
 - (b) $2 V_m$
 - (c) $\sqrt{2} V_m$
 - (d) $V_m / \sqrt{2}$
- (iv) The output of rectifier consists of
- (a) DC
 - (b) AC
 - (c) DC as well as some AC ripple
 - (d) None of the above
- (v) The temperature coefficient of semiconductor is
- (a) positive
 - (b) zero
 - (c) negative
 - (d) None of the above

- (vi) In an amplifier, coupling capacitor is used to
- (a) match the impedance
 - (b) prevent DC mixing with AC
 - (c) control frequency
 - (d) limit bandwidth
- (vii) Silicon controlled rectifier is a/an
- (a) unidirectional device
 - (b) bidirectional device
 - (c) three-layer device
 - (d) None of the above
- (viii) In which region does the transistor act as a switch ?
- (a) Cut-off
 - (b) Active
 - (c) Saturation
 - (d) Both (a) and (c)
- (ix) The transistor is in quiescent state, if
- (a) it is unbiased
 - (b) no current flows through it
 - (c) emitter junction and collector junction are equally biased
 - (d) no signal is applied to input

- (x) In a zener diode, if the load current decreases by the decrease in the load, the
- (a) zener current decreases
 - (b) zener current increases
 - (c) zener current remains constant
 - (d) None of the above
- (xi) Trigger circuit provides trigger pulse to
- (a) Frequency generator
 - (b) Time base generator
 - (c) Function generator
 - (d) Square wave generator
- (xii) CRT is also known as
- (a) Williams tube
 - (b) Electron tube
 - (c) Crookes tube
 - (d) None of the above
- (xiii) In combinational circuit output depends upon
- (a) clock pulse
 - (b) previous input
 - (c) previous output
 - (d) None of the above
- (xiv) Which logic family is most immunised to noise ?
- (a) CMOS
 - (b) ECL
 - (c) MOS
 - (d) TTL

2. (a) Give the energy band description of conductor, semiconductor and insulator. 6
- (b) What is the need of filter in rectifier circuit ? Explain the capacitor filter circuit. 8
3. (a) What is a transistor ? Explain the operation of a transistor as an amplifier. 6
- (b) Explain the input and output characteristic of a transistor in CC (Emitter Follower) configuration and give the current relation. 8
4. (a) Explain the functional elements of generalised measuring system with a block diagram. 7
- (b) Explain the formation of a potential barrier in pn junction. 7
5. (a) What is the function of actuator ? Classify the actuators with one example of each type. 7
- (b) Draw a schematic diagram of LVDT and explain its characteristics. 7
6. (a) Explain the universal gates. Illustrate NOT, OR and AND gates using universal gates. 7
- (b) Describe the classification of instruments. 7
7. (a) Discuss the working of a UJT as a relaxation oscillator. 7
- (b) Draw the symbol of an SCR. Discuss its characteristics. 7

8. Write short notes on any **four** of the following :

$$4 \times 3 \frac{1}{2} = 14$$

- (a) Microprocessor
 - (b) Eddy Current Transducer
 - (c) Lissajous Figures
 - (d) Rectifiers
 - (e) Field Effect Transistors
 - (f) Semi-conducting Materials
 - (g) Automatic Voltage Regulator
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