

DIPLOMA IN ELECTRICAL AND MECHANICAL ENGINEERING

Term-End Examination

December, 2013

BEE - 042 : ELECTRONICS

Time : 2 hours

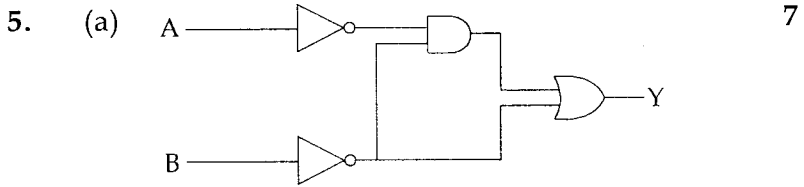
Maximum Marks : 70

- Note :**
- (i) Question No. 1 is *compulsory*.
 - (ii) Attempt *any four* questions from the remaining questions numbered 2 to 8.
 - (iii) Use of calculator is *permitted*.

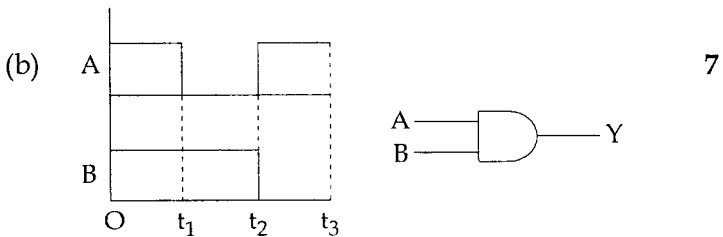
1. (a) Select the correct answer from the given four alternatives. **7x1=7**
- (i) One electron volt energy is equal to :
 - (A) 1.6×10^{-19} Joules
 - (B) 9.1×10^{-31} Joules
 - (C) 1.67×10^{-27} Joules
 - (D) 6.023×10^{-24} Joules
 - (ii) A photo diode is used generally in :
 - (A) Forward biased
 - (B) Reverse biased
 - (C) Photo diode does not require biasing
 - (D) Photo diode itself is a voltage source
 - (iii) Base of Hexadecimal system is :
 - (A) 8
 - (B) 2
 - (C) 6
 - (D) 16
 - (iv) Negative resistance is exhibited by :
 - (A) UJT
 - (B) BJT
 - (C) MOSFET
 - (D) LASER

- (v) In a Antimony Bismuth Thermocouple, the direction of thermoelectric current at cold junction is from :
- (A) Antimony to Bismuth
 - (B) Bismuth to Antimony
 - (C) No current will flow
 - (D) Can be in either direction
- (vi) A diode can not be used as a :
- (A) Oscillator
 - (B) Constant voltage dc supply
 - (C) Half wave Rectifier
 - (D) Bridge Rectifier
- (vii) A *P* type semiconductor is :
- (A) Positively charged
 - (B) Negatively charged
 - (C) Electrically Neutral
 - (D) Varying charge polarity
- (b) State 'TRUE' or 'FALSE' against the following statements : 7x1=7
- (i) A NAND can be used (or a combination of NAND gates) to make all other gates.
 - (ii) Increase in temperature causes decrease in mobility of the holes.
 - (iii) Rating of a thermo - couple is of the order $25\mu\text{V}/^\circ\text{C}$.
 - (iv) An SCR is cheaper and need less core in handling as compared to electromechanical relays.
 - (v) A bridge rectifier needs number of diodes equal to four.
 - (vi) A NOR gate can be realised using diodes only.
 - (vii) An OR gate can be realised using diodes only.

2. With the help of neat diagrams explain the working and components of a digital voltmeter. 14
3. With the help of diagrams explain the different methods of liquid level measurement. 14
4. Explain different parts and working of a monochromatic Television Transmitter and receiver circuit. 14



Get the truth table of the given digital circuit.



The two digital waveform A and B are fed to the inputs of an AND gate . Draw the waveform of output Y.

6. Discuss the transistor action and characteristics of a Field Effect Transistor . 14
7. Explain the working with diagram and mathematical relations for a Full Wave Rectifiers. 14
8. Write short notes on *any two* of the following : 2x7=14
 - (A) Recording device
 - (B) Piezoelectric Transducer
 - (C) Full Adder
 - (D) Pyrometer