

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

**Term-End Examination**

**June, 2014**

00930

**BEE-042 : ELECTRONICS**

*Time : 2 hours*

*Maximum Marks : 70*

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

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1. (A) Select the correct answer from the given four alternatives : 7×1=7

(a) Which of the following is **not** a semiconductor ?

- (i) Gallium arsenide
- (ii) Indium phosphide
- (iii) Silicon
- (iv) Molybdenum

(b) Which of the following has highest mobility ?

- (i) Proton
- (ii) Hole
- (iii) Electron
- (iv) Chlorine ion

- (c) Which of the following modes of operation of transistor has highest gain ?
- (i) CE
  - (ii) CB
  - (iii) CC
  - (iv) All modes have same gain
- (d) Resistance of a conductor is inversely proportional to
- (i) cross-sectional area
  - (ii) drift velocity
  - (iii) length of the conductor
  - (iv) resistivity
- (e) A conductor is stretched to four times of its original length. Its new resistivity will
- (i) become 4 times
  - (ii) become  $\frac{1}{4}$ <sup>th</sup>
  - (iii) remain unchanged
  - (iv) become twice
- (f) Doping is required in semi-conductors to increase
- (i) Conductivity
  - (ii) Resistivity
  - (iii) Electron density
  - (iv) Mechanical strength

- (g) The core of a transformer is laminated in order to minimise
- (i) Hysteresis losses
  - (ii) Eddy current losses
  - (iii) Coulomb losses
  - (iv) Flux losses

(B) State *True* or *False* against the following statements : 7×1=7

- (i) In Digital frequency meter the signal whose frequency is to be measured is converted into a train of pulses.
- (ii) Magnetic Tape recorders are used for Video Tape recording.
- (iii) The use of thermocouple is cheaper.
- (iv) Thermocouples have lower accuracy.
- (v) UJT exhibits a negative resistance characteristics.
- (vi) In Enhancement MOSFET there are n channels diffused b/w the source and the drain.
- (vii) A NOT gate can be realised using diodes.

2. Give detailed construction and working of the following : 14

- (a) Magnetic Recorders
- (b) X-Y Recorder

3. Explain the construction and working of Electromagnetic flow meter with the help of a diagram. 14

4. Explain the working of a Triac with the help of diagrams and characteristics. Write the application also. 14
5. With the help of required block diagrams, explain the working of a monochromatic television transmission and reception circuit. 14
6. With the help of block diagram and required tables, explain the working of half and full subtractors and adders. 14
7. Explain the operation of a transistor as an amplifier clearly discussing each concerned formula. 14
8. Write short notes on any **two** of the following :  $2 \times 7 = 14$ 
  - (a) Voltage multiplier
  - (b) Clamper
  - (c) Filters \_\_\_\_\_