

22220

12425

03 Hours / 70 Marks

Seat No. 

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

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|-----------|---|-----------|
| <b>1.</b> | <b>Attempt any <u>FIVE</u> of the following</b>   | <b>10</b> |
|           | <ol style="list-style-type: none"><li>a) Define active components</li><li>b) Write two applications of LDR</li><li>c) Write colour code for 33<math>\mu</math>F capacitor</li><li>d) Write two applications of air core inductor</li><li>e) Draw symbols of<ol style="list-style-type: none"><li>i) Tunnel diode</li><li>ii) Photodiode</li></ol></li><li>f) List the types of rectifiers</li><li>g) Write specification of PIN diode</li></ol> |           |

P.T.O.

- 2. Attempt any THREE of the following** **12**
- a) Describe the construction of wire wound resistor with neat sketch
  - b) List materials used for the construction of electrolytic capacitor
  - c) Write the classification of capacitor
  - d) Draw full wave bridge rectifier with input and output waveforms.
- 3. Attempt any THREE of the following** **12**
- a) Write about following terms related to magnetic material.
    - i) Permeability
    - ii) Reluctivity
    - iii) Coercivity
    - iv) Hysteresis
  - b) List hard and soft magnetic materials and state their applications.
  - c) Draw and describe the V-I characteristics of PN junction diode.
  - d) State the need of filters and explain the working of low pass filter.
- 4. Attempt any THREE of the following** **12**
- a) Sketch labelled waveform of ECG and EMG
  - b) Write the role of engineers in healthcare industry
  - c) Describe the working principle of linear potentiometer with neat sketch
  - d) List any four specifications of PVC gang capacitor.
  - e) Sketch resistor with color band of 1 k $\Omega$  resistance with 10% tolerance

**5. Attempt any TWO of the following****12**

- a) Describe the characteristics of Zener diode with neat circuit diagram.
- b) Describe action potential of a cell with neat sketch.
- c) Describe the construction of tunnel diode with sketch.

**6. Attempt any TWO of the following****12**

- a) Describe the circuit diagram of half wave rectifier with sketch.
  - b) Draw and describe medical instrumentation system (MIS)
  - c) Draw and describe construction of iron core inductor.  
Write 3 applications of it.
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