

22220

24225

3 Hours / 70 Marks

Seat No.

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- Instructions –*
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answer with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
 - a) Draw symbol of Schotkey diode and Zenor diode.
 - b) Write value of capacitor four colour bands – Yellow Violet Yellow.
 - c) List standard values of inductors available in the market.
 - d) Give classification of resistors.
 - e) Define Ripple factor and efficiency of rectifier.
 - f) Write the applications of laser diode.
 - g) Compare fixed and variable capacitor.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Differentiate between LDR and TDR.
 - b) Draw full wave centre tapped rectifier with i/p and o/p waveforms.
 - c) Describe construction of electrolytic capacitor with neat diagram.
 - d) Explain the working of SMD capacitor with its applications.
- 3. Attempt any THREE of the following:** **12**
- a) Explain Faraday's 1st Law and 2nd Law of electromagnetic induction.
 - b) Describe B-H curve with diagram.
 - c) Explain the construction of PIN diode.
 - d) Show the colour bands of resistor with –
 - i) 10Ω resistance with 5% tolerance.
 - ii) $22k\Omega$ with 10% tolerance.
- 4. Attempt any THREE of the following:** **12**
- a) Draw labelled waveform of ECG and EEG.
 - b) Explain working of logarithmic potentiometer with diagram.
 - c) Explain construction of Air Gang Capacitor with diagram.
 - d) The turns ratio of transformer used in bridge rectifier is $n_1:n_2 = 12:1$. The primary is connected to 230V, 50Hz power mains. Assume diode voltage drop to be zero. Find DC voltage across load.
 - e) Explain medical instrumentation system with diagram and state its objectives.

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

- a) Explain sources of biomedical signal.
- b) Differentiate between half wave, full wave centre tap and full wave bridge rectifier. (Any six points)
- c) Explain polarization and depolarization of cell with diagram.

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

- a) Draw symbol and V-I characteristic of P-N junction diode and explain it.
 - b) Differentiate between –
 - i) Hard and Soft magnetic materials.
 - ii) Ferromagnetic and Ferrimagnetic materials.
 - c) List the medical equipments based on following types –
 - i) Medical imaging
 - ii) Intensive care
 - iii) Diagnostic
 - iv) Analytical.
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