

22220

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) 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) Write classification of resistors.
- b) Write two applications of wire wound resistor.
- c) Write the value of capacitor for colour bands.
Yellow Violet Yellow
- d) Write value of inductor for following colour bands
Yellow Violet Orange
- e) Draw symbols of :
 - (i) Zener diode
 - (ii) Schotkey diode
- f) Define TUF related to rectifier.
- g) State the application of laser diode.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw and describe carbon film resistor.
 - b) Write following specification of capacitor:
 - (i) Dissipation factor
 - (ii) Insulation resistance
 - (iii) Tolerance
 - (iv) CV product
 - c) Compare variable capacitor with fixed capacitor.
 - d) Draw full wave centre tapped rectifier with input and output waveforms.
- 3. Attempt any THREE of the following:** **12**
- a) Describe Faraday's 1st law and 2nd law of electromagnetic induction.
 - b) Describe different types of magnetic materials and their B-H curve.
 - c) Draw and describe the construction of PIN diode.
 - 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.
- 4. Attempt any THREE of the following:** **12**
- a) Sketch labelled waveform of ECG and EEG.
 - b) Describe the concept of polarization and depolarization of cell with sketch.
 - c) Describe the working principle of logarithmic potentiometer.
 - d) Describe the construction of air gang capacitor with neat sketch.
 - e) Sketch the resistor with colour band of 100Ω resistance with 10% tolerance.

- 5. Attempt any TWO of the following:** **12**
- a) Describe the characteristics of PN junction diode with sketch.
 - b) Describe the sources of biomedical signal.
 - c) Describe the construction and working of photodiode.
- 6. Attempt any TWO of the following:** **12**
- a) Compare half wave, full wave centre tap and full wave bridge rectifier (six points)
 - b) List six different medical equipment based on :
 - (i) Intensive care equipment.
 - (ii) Analytical equipment
 - c) Draw and describe the construction of air core inductor and write three application of it.
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