

22220

21819

3 Hours / 70 Marks

Seat No.

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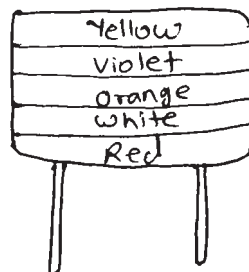
- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (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) Define passive components. Give two examples.
- b) State the two applications of resistor.
- c) Find the value of given capacitor using color code (Refer Fig. No. 1)

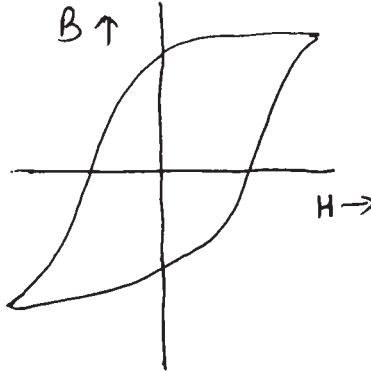


**Fig. No. 1**

- d) Draw symbol of schottky diode and tunnel diode.

P.T.O.

- e) Identify the type of magnetic material from the given B.H curve (Refer Fig. No. 2). Give its applications (any two).



**Fig. No. 2**

- f) Define PIV of diode in rectifies circuit.  
g) State any two bioelectric signals and its examples.

**2. Attempt any THREE of the following:**

**12**

- a) Explain the construction of standard wire wound resistor with neat sketch.  
b) Explain the construction and working of air gang capacitor with neat diagram and give its two applications.  
c) Explain the classification of capacitors in brief.  
d) Explain working of center tap full wave rectifier with neat circuit diagram and wave form.

3. Attempt any THREE of the following:

12

- Draw neat diagram of toroidal inductor and explain its construction. Give its two applications.
- Differentiate between hard and soft magnetic material (any four points).
- Draw the symbol. Explain the working of photodiode in brief.
- For the given bridge rectifier circuit find out the values of:
  - dc output voltage
  - peak inverse voltage of a diode (Refer Fig. No. 3).

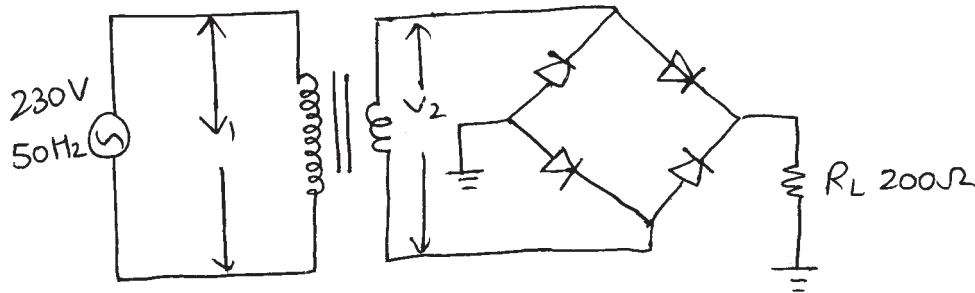


Fig. No. 3

4. Attempt any THREE of the following:

12

- Draw block diagram of man instrumentation system and explain any two blocks in brief.
- Explain the role of biomedical engineer in health care industry.
- Differentiate between linear and logarithmic potentiometer. (any four points).
- State the material used for SMD capacitor and give its advantages.
- Draw resistor having value 33 kΩ and 10% tolerance.

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

- a) Draw the symbol of led. State its four specifications and any four applications.
- b) Differentiate between :
  - (i) Zener diode and PN junction diode
  - (ii) Photodiode and LED (any three points for each).
- c) Categorize the following biomedical equipment on the basis of its classification:
  - (i) ECG machine
  - (ii) Shortwave diathermy
  - (iii) Nebulizer
  - (iv) CT machine
  - (v) Autoclave
  - (vi) X ray machine.

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

- a) State the need of filters and explain low pass and high pass filter with neat diagram and waveform.
  - b) Draw typical cell potential waveform and explain polarization depolarization and repolarization.
  - c) Give applications of each of the following indicator:
    - (i) Air core inductor
    - (ii) Toroidal inductor
    - (iii) AF inductor
    - (iv) Slung tuned inductor
    - (v) RF inductor
    - (vi) IF inductor
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