

312309

23242

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 Active component. Give two examples.
 - b) Draw symbols of zener diode and photodiode.
 - c) List configuration of BJT.
 - d) Draw a neat sketch of Sinusoidal signal and label the following:
 - i) Time period
 - ii) Amplitude
 - iii) Peak to peak voltage
 - e) State relation between emitter current (I_E), Base current (I_B) and collector current (I_C) of BJT.
 - f) State applications of Hartley Oscillator.
 - g) Define the term 'Load Regulation'.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Draw the block diagram of regulated power supply and state the function of each block.
 - b) In a common base configuration, current amplification factor is 0.7. If emitter current is 2mA, determine the value of base current. Also draw circuit diagram of CB configuration.
 - c) Differentiate active and passive electronic components on any four points.
 - d) Sketch circuit diagram and input, output waveform of full wave bridge rectifier. State its efficiency.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the construction and working of OLED with help of diagram.
 - b) Compare Clipper and Clamper circuits with following parameters:
 - i) Definition
 - ii) Components are used
 - iii) Energy components are required
 - iv) Application
 - c) State type of feedback used for oscillator circuit. Explain Barkhausen criteria.
 - d) Draw circuit diagram and describe the working of zener diode as voltage regulator.
- 4. Attempt any THREE of the following:** **12**
- a) Sketch circuit diagram of center tap rectifier with LC filter. State function of each component.
 - b) Explain following signal parameters:
 - i) Amplitude
 - ii) Cycle
 - iii) Time period
 - iv) Wavelength
 - c) List types of biasing. Explain with neat sketch voltage divider biasing.
 - d) Explain with neat sketch working principle of crystal oscillator.
 - e) Explain with neat sketch working principle of RC phase shift oscillator.

- 5. Attempt any TWO of the following:** **12**
- a) Write need of SMPS. Draw the block diagram of switched mode power supply and describe its working.
 - b) Describe the working of transistor as a switch with neat circuit diagram.
 - c) i) Compare Unipolar and Bipolar Devices
ii) Ideal and Non ideal voltage source.
- 6. Attempt any TWO of the following:** **12**
- a) Explain with diagram construction and working of N-channel Enhancement MOSFET.
 - b) Explain with circuit diagram Wein bridge oscillator. Write the equation for output frequency.
 - c) Explain RC integrator and RC differentiator circuit with following points:
 - i) Circuit Diagram
 - ii) Waveform
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