

312309

24225

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) Define active and passive components.
 - b) Draw the symbol of LED and PN junction diode.
 - c) State the four application of BJT.
 - d) Define amplitude and phase of a sinusoidal quantity.
 - e) State the operating regions of transistor.
 - f) State the advantages of crystal oscillator.
 - g) Write down voltage regulator IC names to obtain +5V and –12V.

P.T.O.

- 2. Attempt any THREE of the following :** **12**
- a) Explain the working of zener diode as voltage regulator.
 - b) In a common base connection, current amplification factor (α) is 0.9. If the emitter current is 1 mA, determine the value of base current and collector current.
 - c) Draw symbol of ideal voltage source and practical voltage source.
 - d) Explain center tapped full wave rectifier with the help of circuit diagram and draw input, output waveforms.
- 3. Attempt any THREE of the following :** **12**
- a) Draw and explain V–I characteristics of zener diode.
 - b) Compare LC and π filter with following parameter.
 - i) Defination
 - ii) Components are used
 - iii) Waveform
 - iv) Application
 - c) Sketch circuit diagram of Hartely oscillator. State expression for frequency of oscillation.
 - d) Draw the block diagram of switched mode power supply and explain it's working.
- 4. Attempt any THREE of the following :** **12**
- a) Explain the working of full wave bridge rectifier with neat diagram.

- b) From the sinusoidal wave given below, in Fig. No. 1 and Fig. No. 2. Calculate Amplitude, frequency.

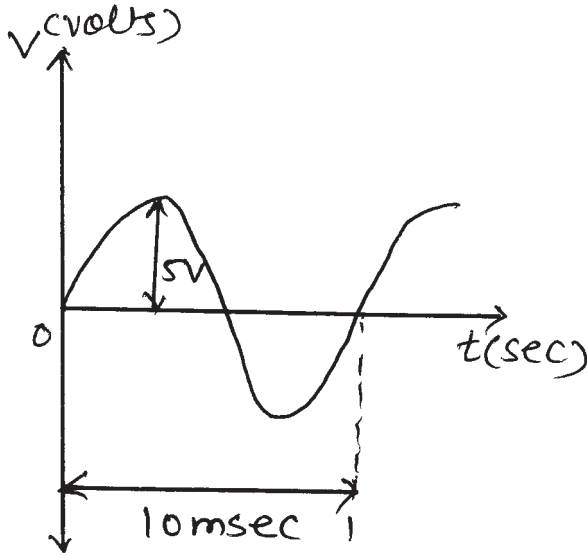


Fig. No. 1

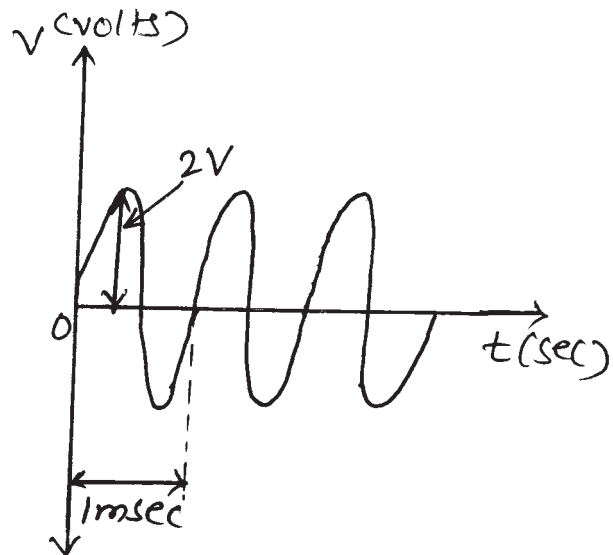


Fig. No. 2

- c) Compare CE, CB and CC configuration on the following points.
- Common terminal
 - Current gain
 - Output resistance
 - Application
- d) State the Barkhausen criteria. Draw the circuit diagram of colpitt's oscillator.
- e) For negative feedback system write comment on –
- Overall phase shift
 - Stability
 - Voltage gain
 - Application

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

- a) Draw the block diagram of regulated DC power supply and explain the function of each block.
- b) Explain with neat diagram how transistor can be used as –
 - i) Switch
 - ii) An Amplifier
- c) Define resistor and state its type. Find the value of resistor from the given colour code.
 - i) Orange, Red, Brown, Silver
 - ii) Green, Orange, Orange, Silver

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

- a) Explain the JFET with respect to –
 - i) Symbol
 - ii) Construction
 - iii) Working principle
 - b) Sketch circuit diagram of RC phase shift oscillator. If the value of capacitor $C = C_1 = C_2 = C_3 = 5\text{PF}$ and frequency of oscillation is 800 Hz, Calculate value of resistor R_1 ($R = R_1 = R_2 = R_3$)
 - c) Explain clipper and clamper circuit with following points.
 - i) Types
 - ii) Circuit diagram
 - iii) Application each two.
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