17321

11920

3 Hours / 100 Marks Seat No. | | | | | | | | |

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.

Marks

1. (A) Attempt any SIX of the following : **12**

(a) State any two trivalent and pentavalent impurities each.

(b) Draw the symbol of (i) PN Junction diode (ii) Zener diode

(c) State the application of LED & photodiode.

(d) State the need of filter circuit and state its types.

(e) Define the following with respect to rectifier :

(i) Ripple factor

(ii) TUF

(f) Draw symbol of UJT & Transistor.

(g) Define α and β for transistor.

(h) Define operating point of transistor.

(B) Attempt any TWO of the following : **8**

(a) Draw and explain V-I characteristics of PN junction transistor.

(b) Compare Half wave, Full wave and Bridge rectifier (Four points)

(c) Draw circuit diagram of transistor as a switch and describe its working.

2. Attempt any FOUR of the following : **16**

(a) State and explain any four specifications of diode.

(b) Draw circuit diagram of Bridge type rectifier and describe its working with input/output waveform.

(c) State the need for biasing and explain fixed bias circuit.

(d) Draw the characteristics of Zener diode in forward & reverse bias. Explain reverse bias characteristics.

(e) Draw the circuit diagram of single stage CE amplifier and state the function of each component.

(f) Draw Transformer coupled cascaded amplifier and explain its operation. State its application.

3. Attempt any FOUR of the following : **16**

(a) Draw construction and explain the operating principle of UJT.

(b) Describe the working of transistor as amplifier (CE amplifier) with graphical representation.

(c) State the need of cascading of amplifier. Draw RC coupled cascaded amplifier.

(d) Draw block diagram of DC regulated power supply and explain the function of each block.

(e) Compare BJT and FET (Four points).

(f) Draw circuit diagram of Hartley oscillator and explain its working. States the formula for frequency.

4. Attempt any FOUR of the following : **16**

(a) Compare positive and negative feedback. (Four points)

(b) Draw circuit diagram of transistorized series voltage regulator and describe its working.

(c) Define Power amplifier. State its types. How are they classified ?

(d) (i) State the need of Heat sink in power amplifier.

(ii) Describe the concept of cross over distortion.

(e) Describe the working of Zener diode as voltage regulator and explain its working.

(f) Define oscillator. Draw block diagram of oscillator and explain its working.

5. Attempt any FOUR of the following : **16**

(a) Draw functional pin diagram of IC 78 × X and state the function of each pin. Draw +5V regulator using 7805 IC.

(b) (i) Define regulator. State its need.

(ii) Draw neat labelled diagram of RC oscillator.

(c) (i) Explain Barkhausen's criterion.

(ii) Draw neat labelled diagram of crystal oscillator.

(d) Compare CE, CB and CC configuration. (Four Points)

(e) Draw and explain the input characteristics of CE configuration.

(f) Draw circuit diagram of class AB power amplifier and describe its working.

6. Attempt any FOUR of the following : **16**

(a) Draw and explain the block diagram of Microprocessor.

(b) What are Universal Gates ? Implement OR gates using NAND only.

P.T.O.

(c) Draw symbol, Truth table and state its logic expression for the following gates :

(i) AND gate

(ii) OR gate

(d) Explain the construction and working principle of N-channel FET.

(e) Draw and explain the output characteristics of JFET.

(f) (i) What is MOSFET ? State its types.

(ii) State applications of FET and MOSFET.

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