17321

11819

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.

(5) Assume suitable data, if necessary.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following : **20**

(a) Draw the symbols of Schottkey-diode and Varactor diode.

(b) Define ripple factor and PIV of HWR.

(c) State the types of filters.

(d) List various transistor biasing methods.

(e) Define α and β of the transistor.

(f) State reason BJT is called as bipolar junction transistor.

(g) State the application of FET (any four).

(h) Define line regulation and load regulations.

(i) State the Barkhausen criteria of oscillations.

(j) Sketch symbol of NAND gate and NOR gate.

(k) Convert :

(i) $(AFB_2)_{16} = (?)_{10}$ (ii) $(43)_8 = (?)_2$

(l) Give the different types of amplifier coupling.

(m) Sketch output characteristics of CE configuration. Show all the regions.

(n) State the need of biasing of BJT.

2. Attempt any FOUR of the following : 16

(a) Describe working principle of LED with diagram.

(b) Describe thermal runaway of transistor and explain how it can be avoided.

(c) Compare half wave rectifier and full wave rectifier on the basis of :

(i) No. of diode (ii) PIV

(iii) Ripple factor (iv) Type of transformer used

(d) Describe the functional pin diagram of regulator IC 78XX and 79XX.

(e) Explain with circuit diagram fixed bias method of BJT.

(f) State advantages and disadvantages of positive and negative feedback related to oscillator.

3. Attempt any FOUR of the following : 16

(a) Describe operating principle of photo diode with neat diagram.

(b) Explain with circuit diagram two stage transformer coupled amplifier using transistors.

(c) Draw the circuit of centre tapped rectifier with LC filter, also draw input output waveforms.

(d) Draw V.I. characteristics of UJT and explain its working principle.

(e) Describe the working principle of N channel enhancement MOSFET.

(f) Explain crystal oscillator with circuit diagram.

4. Attempt any FOUR of the following : 16

(a) Draw VI characteristics of P-N junction diode in forward and reverse bias. Define static and dynamic resistance.

(b) Explain with circuit diagram transistorised shunt voltage regulator.

(c) Compare CB and CE configurations w.r.t.

(i) input resistance (ii) output resistance

(iii) current gain (iv) voltage gain

(d) Describe the emitter biasing technique of BJT with ckt. diagram.

(e) Draw and explain the circuit diagram of class A push pull amplifier.

(f) Define terms :

(i) Drain resistance (ii) Mutual conductance

(iii) Amplification factor (iv) Pinch off voltage of FET

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

(a) Draw circuit diagram of direct coupled amplifier and explain function of each component.

(b) State applications of FET and MOSFET.

(c) Describe the working of transistor as a switch with neat circuit diagram.

(d) Describe working of Hartley oscillator with neat diagram.

(e) Explain how zener diode is used as voltage regulator.

(f) State applications of digital electronics.

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

(a) Draw & explain construction of point contact diode.

(b) Define terms w.r.t. transistor.

(i) DC load line

(ii) operating point

(c) Draw block diagram of DC regulated power supply and state function of each block.

(d) Compare BJT and FET (any 4 points).

(e) Describe Ex-OR gate. Draw its symbol and truth table.

(f) Draw circuit diagram of colpitts oscillator, colpitts oscillator has C_1 = 250 PF, C_2 = 100 PF and L = 60 μH. Find the value of frequency of oscillation.
