

17321

13141

3 Hours / 100 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) 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
- What is load Regulation of power supply?
 - Draw symbol OF AND, OR Gate and give truth table for same.
 - Define Depletion region and Barrier voltage of P-N junction.
 - State the need of Rectifier and give types of Rectifier.
 - Draw the symbol of UJT and BJT.
 - Give two applications of LED and LASER each.
 - Draw the block diagram of oscillator.
 - Is it possible to represent decimal no. 7 (seven) in binary form using two bits? Justify the answer.
 - State the need of power Amplifier.
 - What is the need of cascaded amplifier.

P.T.O.

- k) Give two applications of RC couple amplifier.
- l) State the need of transistor biasing.
- m) Draw the symbol of varactor diode and pin-contact diode.
- n) Draw the circuit diagram of transistor fixed bias.

2. Attempt any FOUR of the following: 16

- a) Draw the circuit diagram of voltage divider biasing and describe its operation.
- b) State the concept of Feed back and Barkhausen criteria in oscillator.
- c) Describe the operation of transistorized shunt voltage regulator with proper sketch.
- d) Describe the V.I. characteristics of P-N. junction diode with proper sketch and Define :
 - i) Break over voltage
 - ii) Reserve break down voltage
- e) Describe the operation of photodiode with proper sketch.
- f) Draw the circuit diagram of class A push pull amplifier and describe its operation.

3. Attempt any FOUR of the following: 16

- a) Compare BJT and FET on the basis of
 - i) Types of carrier
 - ii) Thermal stability
 - iii) Switching speed
 - iv) Power gain
- b) Describe how transistor acts as a switch with proper diagram.
- c) Describe the working of UJT with proper diagram.
- d) Draw the circuit diagram of RC coupled amplifier and describe its operation.
- e) What is LED? Describe it's operation with proper sketch.
- f) Describe the operation of voltage divider biasing with proper circuit diagram.

- 4. Attempt any FOUR of the following:** **16**
- a) Draw CE configuration of NPN transistor and sketch output characteristics.
 - b) State the need of filter and describe shunt capacitor filter with proper diagram.
 - c) Describe the operation of Bridge type full wave rectifier with diagram.
 - d) Describe the operation of MOSFET with proper sketch.
 - e) Describe the operation of LC oscillator with proper diagram.
 - f) Describe the operation of Zenerdiode as voltage regulator with proper diagram.
- 5. Attempt any FOUR of the following:** **16**
- a) Compare HWR and FWR on the basis of
 - i) No. of diode
 - ii) Efficiency
 - iii) PIV
 - iv) Application
 - b) Draw the block diagram of microprocess and give function of each block.
 - c) Draw the characteristics of FET showing different operating regions and briefly describe each region.
 - d) Define the following term with respect to transistor.
 - i) DC load line
 - ii) Operating point
 - e) Draw the block diagram of DC power supply and describe its operation.
 - f) State the need of heat sink and what is cross over distortion in power Amplifier.

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

- a) Give two application of FET and MOSFET each.
 - b) Describe the operation of transistorized series voltage regulator with neat circuit diagram.
 - c) Describe the working of crystal oscillator with proper diagram.
 - d) State and explain Barkhausen criteria.
 - e) Why NAND and NOR Gate are called as Universal Gate.
 - f) What is pinch-OFF voltage of FET and also describe drain resistance of FET.
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