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12526

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) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) 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) Draw neat symbol of Photodiode and PN Junction Diode.
 - b) State different configuration of BJT.
 - c) Give classification of amplifiers.
 - d) State different methods of biasing of FET.
 - e) Draw symbol of n-channel and p-channel JFET.
 - f) State any two advantages and applications of regulated power supply.
 - g) State the necessity of regulated power supply.

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Explain operating principle of LED with neat sketch.
 - b) Explain the operation of NPN transistor in the active region.
 - c) Sketch circuit diagram of single stage transistor amplifier. Also state the function of each component.
 - d) Compare BJT and FET on any four points.
- 3. Attempt any THREE of the following : 12**
- a) Describe working of Full Wave Bridge Rectifier (FWR), with circuit diagram and waveforms.
 - b) Compare CB, CE and CC configuration of BJT on the basis of –
 - i) Input current
 - ii) Current gain
 - iii) Output resistance
 - iv) Output voltage
 - c) Explain the working of transistor as a switch with neat diagram.
 - d) Draw block diagram of a regulated DC power supply. Explain function of each block.
- 4. Attempt any THREE of the following : 12**
- a) Compare PN junction diode and Zener Diode on the basis of –
 - i) Symbol
 - ii) Direction of conduction
 - iii) Application
 - iv) Doping level
 - b) With neat diagram explain operation of voltage divider bias circuit used in BJT.
 - c) Draw and explain transformer coupled amplifier with its frequency response.
 - d) Compare RC coupled and transformer coupled amplifier. (Any four points)
 - e) Describe the working of Zener as a voltage regulator.

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

- a) Draw circuit diagram of LC filter with following rectifier circuits :-
- i) Half wave rectifier
 - ii) Full wave rectifier with center tapped transformer
 - iii) Full wave bridge rectifier.
- b) Explain different regions of output Characteristics of Common Emitter (CE) configuration of a transistor with neat sketch.
- c) Draw and explain of n-channel JFET. Also state applications of JFET.

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

- a) State the need of multistage amplifier. Also find overall gain in dB of a multistage amplifier having first stage gain 60, second stage gain 80 and third stage gain 100.
- b) Derive relation between μ , g_m and r_d . State any two advantages of JFET.
- c) Build the circuit diagram of dual voltage regulator to get fixed +5Vdc and -5Vdc output. Also state the output voltage of IC7812 and IC7915.
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