

Sample Test Paper - I

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Second

Subject Title : Basic Electronics

Marks : 25

17213

Time:1 Hour

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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. Preferably, write the answers in sequential order.

**Q.1 Attempt any THREE.**

**09 Marks**

- a. List the three types of passive components with their units.
- b. Describe the operation of PN Junction diode under forward biased condition with neat figure.
- c. Define the following without sketch: i) Filter ii) Ripple factor iii) Static Resistance of a diode.
- d. Describe the Zener Breakdown Mechanism.

**Q.2 Attempt any TWO.**

**08 Marks**

- a. Describe the principle of operation of Varactor diode.
- b. Differentiate between Half wave rectifier and Bridge full wave rectifier on the basis of  
i)Number of diodes ii)Efficiency iii)PIV iv)D.C Output Voltage
- c. List the four applications of Electronics.

**Q3. Attempt any TWO.**

**08 Marks**

- a. Draw the V-I Characteristics of Zener diode under reverse biased condition and describe in brief.
  - b. Comparison between PN Junction diode and Light Emitting diode.(4 points)
  - c. Draw the circuit diagram of Half wave rectifier with its input and output waveforms.
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Sample Test Paper - II

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Second

Subject Title : Basic Electronics

Marks : 25

17213

Time:1 Hour

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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. Preferably, write the answers in sequential order.

**Q.1 Attempt any THREE.**

**09 Marks**

- a. Draw the circuit diagram of Astable Multi-vibrator using transistors. Give its one application.
- b. Name the three types of couplings used in amplifiers.
- c. Define the following without sketch: i) DC Drain Resistance ii) Transconductance iii) Amplification factor
- d. What is oscillator? What is the need of oscillator.

**Q.2 Attempt any TWO.**

**08 Marks**

- a. Derive the relation between  $\alpha$  and  $\beta$ .
- b. Differentiate between BJT and FET.(any 4 points)
- c. Draw the circuit diagram of single stage CE amplifier and give the function of each component.

**Q.3 Attempt any TWO.**

**08 Marks**

- a. Draw the transfer Characteristics of FET and give the meaning of  $I_{dss}$  and  $V_{gsoff}$ .
- b. List two advantages and two disadvantages of IC's.
- c. Draw the circuit diagram of RC coupled amplifier. List two drawbacks.

Sample Question Paper

Course Name : Computer Engineering Group

Course Code : CO/CM/IF/CD/CW

Semester : Second

Subject Title : Basic Electronics

Marks : 100

17213

Time:3 Hours

**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. Preferably, write the answers in sequential order.

**Q.1 Attempt any TEN**

**20 Marks**

- a) List the two types of electronic components with one example of each.
- b) Draw the symbol of MOSFET and FET.
- c) Give the two applications of tunnel diode.
- d) Enlist the two types of couplings used in amplifiers.
- e) List the four specifications of PN junction diode.
- f) Give two advantages and two disadvantages of IC's
- g) Draw the input and output waveforms of 'C' Filter.
- h) Define (in words)
  - i) Amplification factor
  - ii) DC drain resistance
- i) Describe the zener breakdown mechanism.
- j) Give the classification of IC's.
- k) Give the relation between  $\alpha$  &  $\beta$
- l) Draw the symbol of fixed resistor and variable capacitor.

**Q.2 Attempt any FOUR.**

**16 Marks**

- a) Give the four applications of electronics.
- b) Explain the operating principle of schottky diode with neat diagram.
- c) Draw the neat diagram of NPN transistor and describe its working.
- d) Draw the neat circuit diagram of two stage RC coupled amplifier. Give its two disadvantages.
- e) Distinguish between varactor diode and LED.
- f) Draw the circuit diagram of crystal oscillator and give its operating principle.

**Q.3 Attempt any FOUR**

**16 Marks**

- a) Describe the operating principle of any two non-linear resistors
- b) Draw the symbol of following diodes
  - i) Zener diode
  - ii) Schottky diode
  - iii) Varactor diode

- iv) Tunnel diode
- c) Draw the construction of N-channel FET and describe it.
- d) Draw the input and output characteristics of CE configuration and label them.
- e) In an NPN transistor,  $I_{CEO} = 200\mu A$ ,  $\beta = 100$ ,  $I_B = 10\mu A$ . Find  $I_C$  and  $I_E$ .
- f) Define oscillator. State its need and condition required for sustained oscillations.

**Q.4 Attempt any FOUR**

**16 Marks**

- a) Draw the forward and reverse characteristics of zener diode and describe in brief.
- b) Define rectifier. Give the classification of rectifier. Which rectifier is mostly used?
- c) Distinguish between BJT and FET. (Four points)
- d) Draw the circuit diagram of single stage CE amplifier. Give function of each components.
- e) What is the need of filter. List the types of filters.
- f) Define (in words)
  - i) Bandwidth
  - ii) Current Gain
  - iii) Power gain
  - iv) Voltage gain

**Q.5 Attempt any FOUR**

**16 Marks**

- a) Define (in words)
  - i) Reverse saturation current
  - ii) Knee voltage
  - iii) Depletion layer
  - iv) Static resistance of diode
- b) Differentiate between Half wave rectifier and Bridge full wave rectifier (any Four points)
- c) Draw the circuit diagram of Astable Multivibrator using transistor and give its two applications.
- d) Draw the experimental setup for VI characteristics of forward biased PN junction diode. Also draw its VI characteristics
- e) Draw the neat circuit diagram of direct coupled amplifier. Give its two applications.
- f) Differentiate between zener diode and PN junction diode.

**Q.6. Attempt any FOUR**

**16 Marks**

- a) Explain the formation of depletion layer in PN junction with neat sketch.
- b) Draw the block diagram of Regulated power supply and describe each block.
- c) What is biasing? State the requirements of biasing. Which is the most useful biasing method?
- d) With neat circuit diagram explain how transistor work as a switch.
- e) Draw the transfer characteristics of JFET. Give the meaning of  $I_{dss}$  and  $V_{gs_{off}}$
- f) An A.C. supply of 230 V is applied to Half wave rectifier circuit through a transformer of turns ratio 10 : 1. calculate
  - i) DC output voltage
  - ii) PIV of diode.