

Scheme – I

Sample Question Paper

Program Name : Computer Engineering Program Group

Program Code : CO/CM/IF/CW

Semester : Second

Course Title : Basic Electronics

Marks : 70

22225

Time: 3 Hrs.

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 FIVE of the following.

10 Marks

- a. Define Active Components and Passive Components
- b. Define the terms :Rectifier and Filter
- c. Define the following for CE Amplifier (i) Current gain (ii) Voltage gain
- d. Draw the symbol of n-channel and p-channel FET.
- e. Draw the symbol of Fixed Resistor & Variable Resistor
- f. Name the materials that are used in piezoelectric transducer
- g. Define transducers and name two active transducers

Q.2 Attempt any THREE

12 Marks

- a. Determine the value of resistance with the following colour code
 - i) Red Red Red Silver
 - ii) Brown Black Orange Gold
- b. Sketch the labeled Forward and reverse characteristics of PN Junction Diode
- c. Explain the working principle of LED with sketch.
- d. State four applications of BJT.

Q3. Attempt any THREE

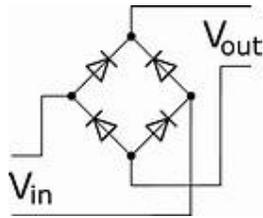
12Marks

- a. Draw the labelled drain characteristics of JFET and explain.
- b. Draw a sketch and describe the working of a capacitive transducer
- c. State the function of capacitor and inductor in a circuit
- d. With a circuit diagram, explain how transistor works as a switch.

Q4. Attempt any THREE

12 Marks

- a. Explain i) Seebeck effect ii) Peltier effect
- b. Identify the below circuit and draw the output waveform for a sinusoidal input



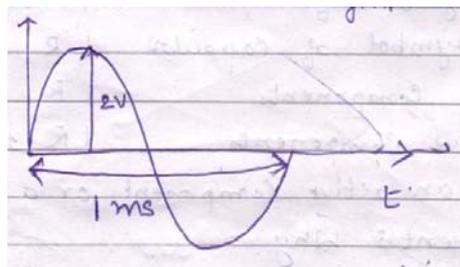
- c. Derive a relation between α and β of a transistor
- d. When V_{GS} of a FET changes from -3.1 V to -3 V , the drain current changes from 1 mA to 1.3 mA . What is the value of transconductance?
- e. State the need for filters in Rectifier

Q5. Attempt any TWO

12 Marks

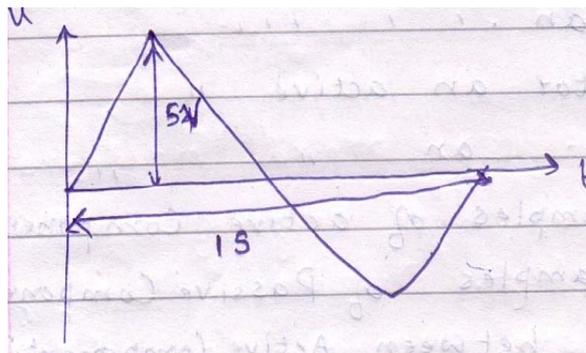
- a. Solve the following:
 - i. Given the following waveform state its Amplitude, Frequency, Phase and wavelength.

(4M)



- ii. Given below is triangular wave. Determine its Amplitude and frequency

(2M)



- b. In CE configuration, if $\beta = 98$, Leakage Current $I_{CEO} = 50\ \mu\text{A}$. If base current is 0.5 mA , Determine Collector current I_c and Emitter current I_E .
- c. Sketch the block diagram of a regulated power supply. State the function of each block. Draw the waveforms at the output of each block.

Q6. Attempt any TWO.

(12 Marks)

a. Differentiate MOSFET & FET on the following points.

- i. Schematic symbol
- ii. Transconductance Curve
- iii. Modes of Operation
- iv. Input Impedance

Explain the phenomenon of “pinchoff” in JFET

b. Identify which configuration has following characteristics

Voltage gain =1

Input impedance =High

Output impedance = very Low

Current gain = 100.

Draw the circuit diagram

c. Draw the experimental setup for measuring the temperature of a liquid using thermocouple .State the procedure for measurement of temperature. State the principle of physics that is used for the same.

Scheme – I

Sample Test Paper - I

Program Name : Computer Engineering Program Group
Program Code : CO/CM/IF/CW
Semester : Second
Course Title : Basic Electronics
Marks : 20

22225

Time: 1 Hour

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 Four of the following.

08 Marks

- a. Define Resistor and Capacitor.
- b. Identify whether the following are active or passive elements.
 - i. Capacitor
 - ii. Voltage Source
- c. Define the following terms:
 - i. knee voltage
 - ii. static resistance
- d. Explain the internal resistance of an Ideal voltage Source & Ideal Current Source.
- e. Explain the unidirectional behavior of PN junction diode.
- f. Draw the symbol of Fixed Resistor & Variable Resistor

Q.2 Attempt any Three of the following

12 Marks

- a. State advantages of ICs over discrete components.
- b. Explain the working principle of LED.
- c. State the need for filters in Rectifier
- d. A 4 band resistor and a multimeter is provided. Explain the procedure to measure the value of resistance using multimedia and how to verify the measured value

Scheme – I

Sample Test Paper - II

Program Name : Computer Engineering Program Group
Program Code : CO/CM/IF/CW
Semester : Second
Course Title : Basic Electronics
Marks : 20

22225

Time: 1 Hour

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 Four of the following.

08 Marks

- a. Define the following FET parameter i) Amplification factor ii) Trans conductance
- b. Name two passive transducers. Give their functions.
- c. Draw the symbol of N-channel MOSFET. State any two applications of MOSFET
- d. Draw the symbol of n-channel and p-channel FET.
- e. Explain Seebeck effect with reference to thermocouple.
- f. Define α and β of a transistor and give the relation between them.

Q.2 Attempt any Two of the following.

12 Marks

- a. Explain the parameters that need to be considered to use a transistor as a amplifier and state their typical values.
- b. Draw the construction of p-channel FET & describe it's working.
- c. Explain with sketch for temperature measurement using thermocouple and materials used in thermocouple.
