

Sample Question Paper-I

Course Name : Mechanical Engineering Group

Semester : Fourth

Subject : Fundamentals of Electronics.

Marks : 80

9051

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. A) Attempt any four.

08 Marks

1. Draw the symbols of Zener diode and Photo Transistor.
2. List the types of Filters.
3. State why the value of α for bipolar transistor is always less than unity.
4. Why NAND gate is called as universal gate.
5. State different types of triggering in digital electronics.

Q 1. B) Attempt any two.

08 Marks

1. Draw the construction of JFET and state the working principle.
2. Draw the circuit diagram of bridge rectifier and define its ripple factor and efficiency.
3. Compare JFET and MOSFET on any four parameters.

Q 2. Attempt any three.

12 Marks

1. Draw symbol and VI characteristics of DIAC and TRIAC.
2. Draw the circuit diagram of series and shunt regulator. Compare their performance based on regulation.
3. Draw the circuit diagram of Half wave rectifier with Π filter and label it.
4. Show how IC 723 is used as a voltage regulator?

Q 3. Attempt any three.

12 Marks

1. Describe how Transistor is used as switch.

2. Compare Class A & Class B amplifier on the basis of operating point, conduction cycle, efficiency and application.
3. How CE configuration is made to work as amplifier.
4. Describe working principle of Hartley Oscillator with its diagram.

Q 4. Attempt any four.

16 Marks

1. Draw the circuit diagram of Instrumentation amplifier using Op-amp and label it.
2. Describe how op-amp is used as voltage to current converter.
3. Draw the circuit diagram of Non Inverting amplifier. If $R_f=20k$ and $R_{in} = 5k$; Calculate gain of the amplifier.
4. Draw circuit diagram and timing diagram of three bit SISO.
5. What is thermistor? What are its types ?
6. Draw circuit diagram of phase shift oscillator. State the formula for frequency of oscillation.

Q 5. Attempt any three.

12 Marks

1. Draw circuit diagram of 4:1 Multiplexer.
2. Convert 68.5 decimal into binary, hexadecimal and BCD.
3. Describe how NOR gate is used as Universal gate.
4. Draw the circuit diagram of 3:8 decoder.

Q 6. Attempt any three.

12 Marks

1. Draw the block diagram of IC 555 and label it.
2. Describe working principle of astable multivibrator using IC 555
3. Describe working of level control circuit.
4. Explain the operation of speed control circuit.