Exam.	New Back (2066 & Later Batch)		
Level	BE	Full Marks	80
Programme	All (Except B.Arch.)	Pass Marks	32
Year / Part	I / II	Time	3 hrs.

Subject: - Basic Electronics Engineering

✓ Candidates are required to give their answers in their own words as far as practicable.
✓ Attempt **All** questions.
✓ The figures in the margin indicate **Full Marks**.
✓ Assume suitable data if necessary.

1. State Thevenin's theorem and use it to find the current through $4K\Omega$ resistor.   [2+6]
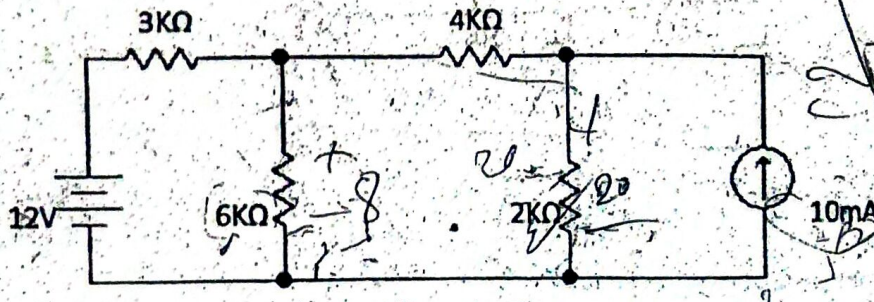
2. Explain large signal model of PN junction diode.   [6]

3. Explain the working principle of half wave rectifier with necessary diagrams.   [6]

4. Explain any two DC-biasing methods of BJT with necessary derivations and diagrams.   [8]

5. Why BJT is bipolar and MOSFET is a unipolar device? Draw the circuit diagram of NOT gate using CMOS.   [2+2]

6. Mention any five properties of IDEAL Op-Amp. Draw the circuit diagram and explain the operation of square wave generator using Op-Amp.   [2+4]

7. Find the voltage gain of non inverting Op-Amp.   [4]

8. Briefly describe about the block diagram of communication system.   [5]

9. What do you mean by electromagnetic waves? How are they propagated? Explain.   [2+3]

10. Simplify the expression using K-Map, $F(A, B, C) = A'B + BC' + AC'$.   [3]

11. What is multiplexer (MUX)? Explain 4:1 multiplexer.   [3]

12. Perform the followings: [1.5×4]

    a) $(903)_{10} = (?)_{BCD}$
    b) $(624.03)_8 = (?)_{16}$
    c) $(101101)_2 + (10111)_2 = ?$
    d) Subtract using 2's complement : $(14)_{10} - (11)_{10}$

13. Write short notes on: (any four)   [4×4]

    a) Regulated Power Supply
    b) Application circuit of strain gauge
    c) Comparison of digital and analog instruments
    d) Data logger
    e) Light Emitting Diode (LED)
    f) Diode Clamper Circuit

***