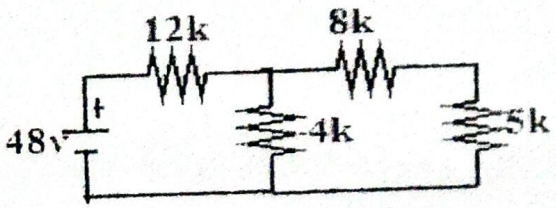
04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2075 Baishakh

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

Subject: - Basic Electronics Engineering *(EX451)*

- ✓ 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. Determine Vth, Rth and the current through 5 KΩ resistor using Thevenin's theorem. [4]



2. What do you mean by a filter circuit? Explain the operation of RC low pass filter with its transfer function and frequency response. [4]
3. Explain large signal models of PN junction diode. [4]
4. Explain the working principle of full wave bridge rectifier with necessary diagrams and expressions. [4]
5. Draw the DC load line and determine the Q point of the voltage divider biased transistor circuit having V_{CC} = 20v, RC = 2K, R1 = 20k, R2=10k, RE=4k, β=100. [6]
6. Describe the construction and working principle of n-channel depletion type MOSFET with necessary diagrams. [6]
7. Explain the operation of CMOS invertor with necessary diagram. [4]
8. Describe the working principle of square wave generator circuit using operational amplifier. [4]
9. What do you mean by virtual short circuit in OP amp? Draw the circuit diagram of the inverting integrator and show that the output is proportional to the time-integrai of the input. [2+2+2]
10. State Barkhausen criteria for oscillation. Draw Wein bridge oscillator circuit to generate sine wave and derive the frequency of the generate sine wave. [2+2+2]
11. Explain working principle of optical fiber. List out the advantages of optical fiber communication over copper cable communication. [2+4]
12. Write short notes: (any two) [2×3]
    i) Data Logger
    ii) Digital Multimeter (DMM)
    iii) Regulated Power Supply
13. What is an anetenna? Explain any two properties of the antenna. [2+2]
14. Simply the expression using K-Map, F(A,B,C)=A'B+BC'+AC'. [4]
15. Explain the operation of JK flip-flop with necessary diagrams and characteristic table. [6]
16. What is multiplexer (MUX) Explain 4:1 Multiplexer. [6]

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