04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

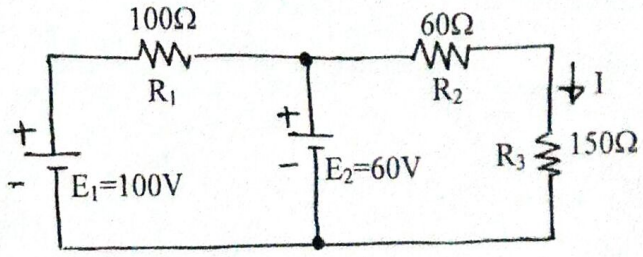
2069 Poush

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 *(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. Find the current I in R_3 using Thevenin's theorem. [4]



2. Draw the circuit diagram of RC Low Pass Filter and explain with the help of frequency dependent response of the output. [4]
3. What is diode? Explain the I-V characteristics of PN junction diode. [6]
4. Explain the working principle of full-wave bridge rectifier circuit. [6]
5. What is dc load line curve? Explain the common emitter configuration circuit with the help of input and output characteristic curve. [1+5]
6. Explain the construction and working principle of MOSFET. [6]
7. State four important properties of ideal operational amplifier. Draw the circuit diagram of an integrator using op-amp and show that output is the integration of input signal. [2+4]
8. Explain the working principle of square wave oscillator circuit using op-amp. [6]
9. Define communication system. Discuss about the merits of optical fiber communication over the other transmission media. [2+4]
10. Simplify the expression using K-Map, F(x,y,z) = x'yz + x'y'z + xyz and realize it using logic gates. [2+2]
11. Mention various types of flip flops and discuss about the J-K flip flop with the help of logic diagram. [2+4]
12. Perform the following: [1×4]
    a) $(122)_{10} = (?)_{BCD}$
    b) $(423.25)_8 = (?)_2$
    c) $(179.03125)_{10} = (?)_2$
    d) Subtract $(25)_{10}$ from $(49)_{10}$ using 2'S complement method
13. Write short notes on: (any four) [4×4]
    a) Data logger
    b) Internet / Intranet
    c) Clipper circuit
    d) Strain Gauge Transducer
    e) Instrumentation system

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