TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division

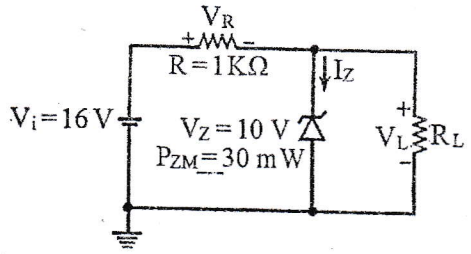
2078 Chaitra

Exam.	Regular		
Level	BE	Full Marks	80
Programme	BCE, BEL, BEX, BCT, BME, BAM, BIE, BAG, BGE, BAS	Pass Marks	32
Year / Part	I / II	Time	3 hrs.

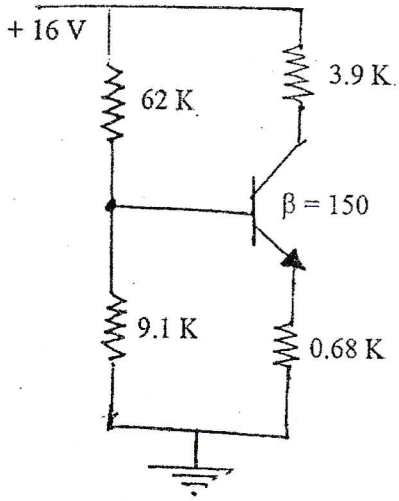
Subject: - Basic Electronics Engineering *(EX 451)*

- ✓ 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. Differentiate between Active and Passive components with examples. [3]
2. What is filter? Explain the procedure to calculate value of resistance for band 5. [1+3]
3. For the Zener diode network shown below, determine V_L, V_R, I_Z and P_Z for $R_L = 3\ K\Omega$. [4]



4. Explain the working principal of full wave Bridge rectifier circuit and define its parameters. [5]
5. Find I_{BQ}, I_{CQ}, V_{CEQ}, I_{Csat} and V_{CEsat} from the given voltage divider circuit. [6]



6. Explain N-channel E-MOSFET operation along with its characteristic curve. [7]
7. Draw the circuit diagram of BJT differential amplifier. [3]
8. Mention any four properties of an ideal op-amp. Derive the expression of voltage gain of an inverting amplifier using op-amp. [2+4]

9. State Barkhausen criteria for oscillation. Draw Wein bridge oscillator circuit to generate sine wave and derive the frequency of the generated sine wave. [2+4]

10. Differentiate between positive and negative feedback system with applications. [4]

11. Describe properties of EMW propagation. Draw structure of Optical fiber. [3+2]

12. Differentiate between Internet and Intranet. [3]

13. Convert the following: [5]

    a) $(257.24)_8 = (\ ?\ )_{10}$
    b) $(3B9)_{16} = (\ ?\ )_8$
    c) $(10110)_{Grey} = (\ ?\ )_2$
    d) $(2345.67)_{10} = (\ ?\ )_{16}$
    e) Subtract $(49)_{10}$ from $(37)_{10}$ using 2's complement method

14. Describe SR latch with necessary circuit diagram and truth table. [6]

15. Simplify the following Boolean Expression using K-Map and implement the simplified expression using NAND gate only: $F(A, B, C) = \Sigma\ (0, 1, 2, 5) + D\ (3, 4, 6)$ [3+2]

16. Write short notes on: (Any Two) [2×4]

    a) Data logger
    b) Digital Multimeter
    c) Regulated power supply

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