(38)

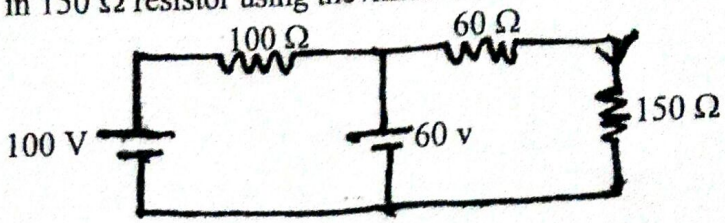
04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2070 Magh

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.

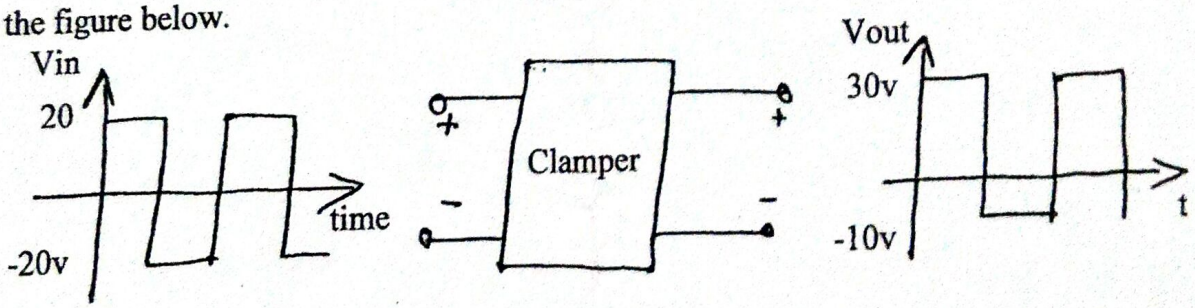
Subject: - Basic Electronics Engineering *(EX451)*

- ✓ 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.*

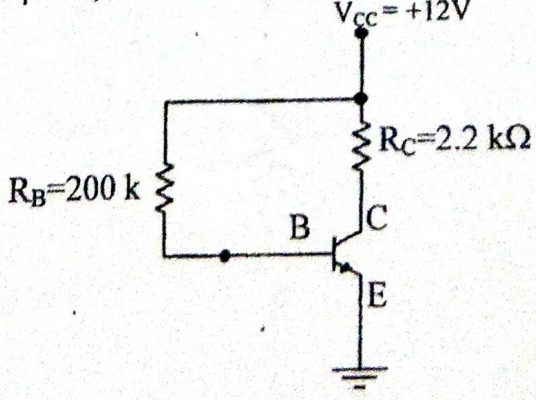
1. Find the current I in 150 Ω resistor using thevinius theorem. [6]



2. Find the value of resistor from following colour code. [2]
   a) Red Orange Green Silver b) Yellow Black Gold Gold
3. Explain the operation of RC high pass filter circuit with the help of necessary diagrams and figures. [4]
4. Describe IV characteristics of PN Junction diode. [6]
5. What is a clamper circuit? Design a clamper circuit to perform the function indicated in the figure below. [2+4]



6. For the given circuit with β=75, Determine V_{BE}, I_B, I_C and V_{CE}. [6]



7. Explain how BJT can be used as a switch. What are the difference between MOSFET and BJT? [4+2]

8. Explain the concept of virtual ground in op-amp. Design a summer circuit using op-amp to get the output voltage as: $V_0 = -(V_1 + 10V_2 + 25V_3)$ [2+4]

9. How do you define positive feedback? Draw the circuit for Wein bridge oscillator and explain the principle of operation. [2+4]

10. What are the advantages of optical fiber communication system? Draw and label the diagram of optical fiber. [3+3]

11. Explain why modulation is needed in Communication System. Mention any three parameters of antenna. [3+3]

12. Simply the given function using K-map method. $F(A, B, C) = \Sigma (0, 1, 2, 5) + D (3, 4, 6)$ and implement the simplified circuit using NAND only. [3+3]

13. What is the difference between combinational and sequential circuit. Discuss JK flip-flop with the help of logic diagram. [2+6]

14. Write short notes on: (any two) [3×2]

a) Data logger
b) Regulated power supply
c) Digital Multi-meter

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