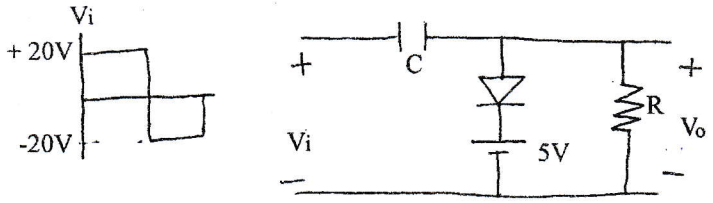
04 TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2076 Baisakh

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

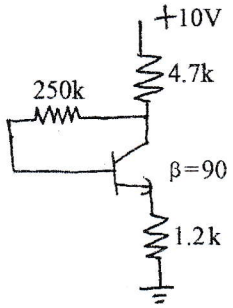
Subject: - Basic Electronics Engineering *(EX 451)*

- ✓ 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. Define dependent or controlled source. Briefly explain its type with suitable examples. [5]
2. Differentiate between active and passive components. [3]
3. Explain the operation of Varactor diode with its characteristic curve. [5]
4. Sketch V_0 for given network. Assume diode is made of silicon. [5]



5. Describe the input and output characteristics of common emitter configuration circuit of BJT with the help of circuit diagram and graph with various regions of operation. [6]
6. Determine Quiescent levels of ICQ and VCEQ for the network. [6]



7. Derive the expression of output voltage for integrator and differentiator using op-amp. [5]
8. State the Barkhausen Criteria for oscillation. Show how square wave is generated using Op-amp. [2+6]
9. What is electromagnetic wave? Explain about EMW propagation. [1+3]
10. Differentiate between: [3+3]
    a) Internet and Intranet
    b) Broadcasting and Communication
11. Using K-map simplify the expression $F(a,b,c) = \bar{a}bc + b\bar{c} + ab\bar{c} + a\bar{b}c$ [4]
12. Substract $(11100)_2$ from $(10011)_2$ using 2's complement method. [3]
13. Define Demultiplexer. Explain the operation of binary to octal decoder. [6]
14. Construct S-R flip-flop using NAND Gate only and explain the operation with characteristic table. [6]
15. Draw a basic lock diagram of oscilloscope and explain its function. [5]
16. Write short notes on: (Any one) [3]
    a) Strain Gauge
    b) Regulated Power Supply

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