

1079
B.E. (Electrical and Electronics Engineering)
Third Semester
EE-307: Analog and Digital Electronics

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

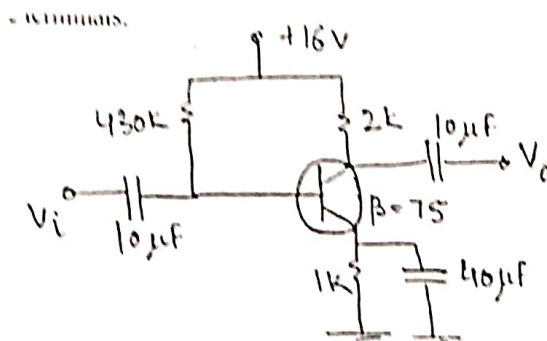
1. Answer the following:-

5x2=10

- What is operating point in transistors? Give its significance for stability in transistors.
- List the advantages of negative feedback amplifiers.
- Design a half adder and a half subtracter.
- Draw a multiplexer tree for a 6:1 multiplexer.
- What is the significance of preset and clear inputs in a flip flop? (5x2)

UNIT - 1

- II. a) For the emitter bias circuit as shown, calculate base and collector currents and voltages across the three terminals.



- Derive the hybrid model equations for current and the voltage gain in CE transistor. (7.3)
- III. a) Design a Hartley oscillator circuit and explain its working principle for an application in devices.
- Give the characteristics of differential amplifiers? (7.3)

P.T.O.

(2)

- IV. a) What is Barkhausen criteria and how positive feedback amplifiers behave as an oscillator? Justify.
- b) Draw and explain the characteristics of all types of active filters? (2x5)

UNIT - II

- V. a) Explain minimization of Boolean expression by simplifying the following expression K map:
 $Y = \sum m (1,3,4,5,6,8,10,13,14)$
- b) List differences between encoders and decoders. (7,3)
- VI. a) Explain a master slave J K flip flop?
- b) Give the difference between a flip flop and a latch. (7,3)
- VII. Write short notes on any two of the following:-
- a) Counters
- b) R-2R ladder DAC
- c) Sample and hold circuit (2x5)

x-x-x