1078
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 Part.*

x-x-x

Q1) (a) How emitter follower is used as a buffer amplifier? Give one application.

(b) Why negative feedback is preferred in amplifiers? State five advantages.

(c) Write the output for the logic circuit given below:
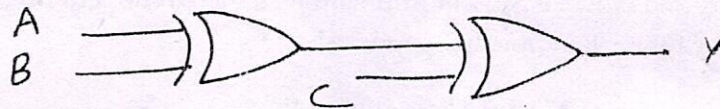
(d) What must be the values of S and R inputs of a flip flop to attain no change condition?

(e) What is the function of E MOS in sample and hold circuit?

(2*5)

Part A

Q2) (i) Determine the Q point in collector to base bias circuit in which $V_{cc}= 10V$, $R_C= 500\Omega$, $R_B =500K\Omega$, $\beta= 100$. Is the operating point lies in the centre of the active region? Comment.

(7 marks)

(ii) Show that the operating point in voltage divider biasing circuit is independent of β?

(3 marks)

Q3) (i) Derive an expression for the gain of a feedback amplifier in terms of its internal gain feedback factor.

(7 marks)

P.T.O.

(ii) How negative feedback can improve stability in gain? (3 marks)

Q4) What are the ideal characteristics of op amp. Design four stage op amps for an inverting and non inverting applications. (10 marks)

Part B

Q 5) (i) Simplify the expression $Y = \sum M(0,2,4,6,7,9,12,14,15)$ using K maps? (5 marks)

(ii) Realize a full adder and subtractor using logic gates. (5 marks)

Q6) (i) Draw a SR and clocked SR flip flop with its logic circuit and truth table. How they are different in terms of their function and application? (7 marks)

(ii) Give the significance of Master Slave JK flip flop? (3 marks)

Q7) Write short notes on :

(i)   ADCs (any one type)
(ii)   Shift registers

(5*2 marks)

x−x−x