

Exam.Code:0933  
Sub. Code: 6972

1108  
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.*

x-x-x

I. Attempt the following:-

- a) Derive the relation between  $\alpha$  and  $\beta$ .
- b) What are barkhausen criteria for oscillations?
- c) What are the characteristics of ideal op-amps?
- d) Write the truth table for JK and T type of flip flop.
- e) List the applications of DACs?

(5x2)

UNIT - I

- II. Sketch the CE input and the output characteristics labeling the diagram with the active, saturation and the cut *off* regions. Also write the need for bias stabilization?  
(10)
- III. a) Determine the series and the parallel resonant frequencies of a crystal oscillator where the ac equivalent circuit has:  $L = 3H$ ,  $C_s = 0.05pF$ ,  $R = 4K$  and  $C_m = 10pF$ .  
b) Why quartz crystal is highly stable oscillator?  
(2x5)
- IV. What are the inverting and the non inverting applications of op amp? Design op amp as an adder and subtractor.  
(10)

UNIT - II

- V. What is full adder and full subtractor? Write its truth table and Boolean expression. Also minimize the expression using De Morgans Laws.  
(10)

P.T.O.



Sub. Code: 6972

(2)

- VI. a) Draw a master slave JK flip flop? How race around condition can be prevented.  
b) Give the differences between synchronous and asynchronous counters. (2x5)
- VII. Write short notes on:-  
a) Successive Approximation ADC  
b) Sample and Hold circuit (2x5)

x-x-x