Exam.Code:0933
Sub. Code: 6972

2021

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. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) What is Bias? What is the need of biasing?

b) State the Barkhausen criterion for sustained oscillation.

c) Explain the terms Accuracy and resolution for D/A converter.

d) Compare the characteristics of ideal Op-Amps and practical Op-Amps.

e) Write the comparison between Synchronous and Asynchronous counter. (5x2)

UNIT – I

II. a) Draw and explain the h parameter small signal low frequency model for BJT

b) In a single stage CB - amplifier circuit, RE = 20K, Rc = 10K, V_{EE} = -20V, V_{cc} = 20V, RL = 10K. Find out R_i R_o, A_i, A_v and power gain in dB. (5+5)

III. a) What will happen to the oscillation if the magnitude of the loop gain is greater than unity?

b) Define Harmonic distortion and intermodulation distortion.

c) Derive the equation for maximum efficiency of a class A transformer coupled amplifier. (10)

IV. a) Define the following terms:-

i) CMRR
ii) ii) Slew rate
iii) Input bias current
iv) Input offset voltage

b) Derive the output expression of a difference amplifier using OPAMP. (5+5)

P.T.O.

UNIT – II

V. a) What shortcomings does an SR flip-flop possess? Discuss.

b) What is universal shift register? Explain any one application of universal shift register with block diagram and truth table. (4+6)

VI. Simplify the Boolean function in SOP and POS form $F(A,B,C,D) = \Sigma m(0,1,2,5,8,9,10)$. (10)

VII. a) A process is defined by the logical expression. $Z = AB + BC + CD + BD + BC$. Reduce the given expression to minimum number of literals using K-map.

b) Explain the terms Accuracy and resolution for D/A converter. Discuss the weighted resistor type of Data converter . (5+5)

x-x-x