Exam.Code:0905
Sub. Code: 6822

1079

B.E. First Semester

EC-101: Basic Electronics

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, selecting atleast two questions from each Unit.*

x-x-x

UNIT – I

I. a) What is P-N junction? Draw the V-I characteristics of a P-N junction diode.

b) Explain the construction and working of a varactor diode. What are its applications? (2x5)

II. a) Draw the output characteristics for a common-base transistor amplifier and explain its various regions.

b) With neat circuit diagrams and waveforms, explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. (2x5)

III. a) Explain the basic construction of a p-channel JFET.

b) What are some of the applications of MOSFETs? Explain any one in detail. (2x5)

IV. a) Draw three input summing amplifier using op-amp. Describe how it can be used as scaling.

b) Describe the application of an op-amp as a non-inverting amplifier. (2x5)

UNIT – II

V. a) Explain the concept of feedback in amplifiers.

b) Give the block diagram of a feedback circuit used as an oscillator. What is the condition for oscillation? (2x5)

VI. a) Convert the following logic equation into canonical POS form and realize using a convenient universal gate. $Y = (A + BC + AB')(B + C'A + A'B')$

P.T.O.

b) Implement the following logic function using a MUX:

$F(A, B, C, D) = \Sigma m\ (1, 3, 4, 11, 12,13,14,15)$ (2x5)

VII. a) Design MOD-5 counter using JK flip flop and implement it.

b) What are signal generators? Explain any one type. (2x5)

VIII. a) What is a transducer? Distinguish between active and passive transducers.

b) What is modulation? Differentiate between AM, PM and FM. (2x5)

x-x-x