

1058
B.E., Second Semester
EC-202: Introduction to Electronics
(May - 2016)

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

Q.1 Answer briefly: (2*5)

- Give applications of electronics in different areas.
- Explain how clipper is different from clamper?
- Draw the logic circuit for the expression $F = \bar{X}\bar{Y}Z + \bar{X}YZ + X\bar{Y}$
- Show how an RS flip flop can be converted into JK flip flop.
- Give and justify the frequency bands used for mobile and satellite communications.

PART-A

- Q.2 a) With necessary diagrams, explain the formation of 'depletion region' in a PN junction with no bias. Also explain the concept of barrier voltage. (5)
b) What do you mean by clamping and why is it used? Explain the working principle of a clamper using PN junction. (5)
- Q.3 a) Why Emitter, Base and Collector in a BJT are of different width and doping? Discuss. (5)
b) Draw and explain in detail the input and output characteristics of Common Collector (CC) configuration of a BJT. (5)
- Q.4 a) Perform the following conversions:
(i) $(225.225)_{10}$ into octal number.
(ii) $(10011.1101)_2$ into hexadecimal number. (5)
b) A four-variable function is given as: $f(A,B,C,D) = \prod M(0,3,4,5,6,7,11,13,14,15)$.
Use a K-map to minimize the function. (5)

PART-B

- Q.5 a) Draw diagram of a 4-bit asynchronous counter and explain its working. (5)
b) Explain the basic principle of Digital to Analog converters (DACs). Also list various types of DACs. (5)
- Q.6 Explain the application of an OP-AMP as summing amplifier both in inverting and non-inverting configurations. Which configuration is preferable and why? (10)
- Q.7 Explain the difference between analog and digital communication giving suitable block diagrams. What is the need for modulation? Also discuss the various frequency bands used for communication. (10)

x-x-x