Please check that this question paper contains 9 questions and 1 printed page within first ten minutes

[Total No. of Questions: 09] [Total No. of Pages: .....]

Uni. Roll No. …….

Program: B.TECH

Semester: VI

Name of Subject: Basics of Electronics and Communication

Subject Code: OEEC-102

Paper ID: 17150

Time Allowed: 02 Hours **Max. Marks: 60**

NOTE:

1. Each question is of 10 marks.
2. Attempt any six questions out of nine
3. Any missing data may be assumed appropriately

09-07-21(E)

1. Explain the operation of Zener diode and PN junction diode in reverse bias condition that specifies the difference between the two in terms of depletion layer. Also, demonstrate its V-I characteristics.
2. Create the V-I characteristics curve for NPN transistor in CE configuration and discuss each mode of the configuration.
3. Determine the following using 1's compliment method and also verify the same using 2's compliment method:
   a) $(1011)_2$ - $(011)_2$
   b) $(0111)_2$ - $(11000)_2$
4. a) Analyze the mathematical expression for FM. Also, investigate the relation for its modulation index.
   b) The equation of amplitude modulated wave is given by $s(t)= 20[1+0.4\cos(2\pi x10^3 t)]\cos(4\pi x10^5 t)$. Find the carrier power, total side band power and bandwidth of AM wave.
5. a) Justify the need of feedback in Amplifier circuit. Discuss the various types of feedback circuit.
   b) Explain the working of Wein Bridge oscillator in detail.
6. Explain the digital modulation schemes ASK and FSK with its modulator demodulator circuit.
7. Specify the material used for the construction of Light Emitting diode and also explain the working of this diode.
8. Apply the concept of operating point to justify the concept of faithful amplification. Also, explain the need of bias stabilization.
9. Perform following operations:
   a) Convert $(1010.101)_2$ to decimal number.
   b) Convert $(765.123)_{10}$ to octal number

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