Model Question Paper

Semiconductor devices and their applications - Part III

12th Standard

Physics

Reg.No. : | | | | | | |

I.Answer all the questions.

II.Use Blue pen only.

Time : 01:00:00 Hrs

Total Marks : 95

Section-A

5 x 1 = 5

1) The resonating frequency of a Colpit oscilltor

(a) f=$2\Pi\sqrt{\frac{L\ C_1C_2}{C_1+C_2}}$ (b) f=$2/\Pi\sqrt{\frac{C_1+C_2}{LC_1C_2}}$ (c) f=$1/2\Pi\sqrt{\frac{C_1+C_2}{L(C_1C_2)}}$ (d) f=$2\Pi\sqrt{\frac{C_1+C_2}{LC_1C_2}}$

2) The "mil" equals to

(a) 0.01 inch (b) 0.1 inch (c) 0.001 inch (d) 0.100 inch

3) Digital electronics involves circuits and system in which there are only two possible states which are represented by

(a) open or closed switches (b) voltage levels (c) current levels (d) All the above

4) The Boolean equation of EXOR gate is Y=A⊕B=

(a) AB.$\overline{B}\overline{A}$ (b) AB+$\overline{AB}$ (c) A$\overline{B}$+$\overline{A}$B (d) $\overline{AB}$+$\overline{AB}$

5) According to the special theorem of Boolean algebra A($\overline{A}$+B) is equal to

(a) A+B (b) AB (c) A+AB (d) A

Section-B

2 x 3 = 6

6) What does a good amplifier must possess?

7) Draw the circuit diagram for single stage CE amplifer.

3 x 3 = 9

8) The outputs of two NOT gates are NORed, as shown in figure. What is this combination equivalent to ?

9) Calculate $I_E$in a transistor for which $\beta = 50$and $I_B = 20\mu A$

10) In a common base configuration, current amplification is 0.9. If the emitter current is 1 mA, determine the value of the base current.

Section-C

1 x 5 = 5

11) Explain the forward bias and reverse bias characteristics of a PN junction diode.

Section-D

4 x 10 = 40

12) What is meant by feedback ? Derive an expression for voltage gain of an amplifier with negative feedback.

13) Sketch the circuit of Colpitt's oscillator and explain its working.

14) Describe the working of a single stage CE amplifier

15) Discuss the output characteristics of a transistor connected in CE mode with a neat circuit diagram

****