



Printed Pages : 7

EEC - 101 / EEC - 201

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3302

Roll No.

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B. Tech.

(SEM. II) EXAMINATION, 2008-09

ELECTRONICS ENGINEERING

Time : 3 Hours

[Total Marks : 100

Note : Attempt **all** questions.

SECTION-A

1×20=20

- 1 Attempt all the parts of this questions. All parts of the question carry equal marks. This question contains 20 objectives/fill in the blanks type /true false type questions.
- (i) Diffused impurities with five valence electrons are called.....
 - (ii) In an n-type material the electron is called the.....and the hole is.....
 - (iii) In the reverse bias region the reverse saturation current of a silicon diode doubles for energyrise in temperature.
 - (iv) The wavelength and frequency of light of a specific colour are directly related to the.....of the material.

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[Contd...

- (v) In the dc mode the levels of I_C and I_B are related by a quantity called.....
- (vi) The quantity Beta provides an important relationship between the base and collector currents, and is usually between.....
- (vii) For C E configuration, typical value of Z_i are in the range of
- (viii) Given $\beta = 150$ and $I_E = 3.2$ mA for a common emitter configuration with $r_0 = \infty \Omega$, the value of Z_i is.....
- (ix) The input controlling variables for a BJT transistor is.....
- (x) The input impedance of all commercially available FET is.....

Select the correct answer in the following :

- (xi) A semiconductor has a.....
- (a) Negative temperature coeff. of resistance
- (b) Positive temperature coeff. of resistance
- (c) Constant temperature coeff. of resistance
- (d) None of these.



- (xii) To obtain n-type semiconductor, the impurity added to a pure semiconductor is
- (a) Trivalent
 - (b) Tetravalent
 - (c) Pentavalent
 - (d) None of these
- (xiii) For a germanium, PN junction the maximum value of barrier potential is
- (a) 0.3 V
 - (b) 0.7 V
 - (c) 1.3 V
 - (d) 1.7 V
- (xiv) The current I_{CBO} flows in the
- (a) Emitter and base leads
 - (b) Collector and base leads
 - (c) Emitter and collector leads
 - (d) None of these
- (xv) A biasing circuit has a stability factor of 40. If due to temperature change, I_{co} change by $1 \mu A$, then I_c will change by
- (a) $20 \mu A$
 - (b) $40 \mu A$
 - (c) $80 \mu A$
 - (d) None of these.



- (xvi) A zener diode has a sharp break-down voltage at low reverse voltage. The above statement is
- (a) True
 - (b) False
- (xvii) A varactor diode is optimised for its variable capacitance. Above statement is
- (a) True
 - (b) False
- (xviii) The most commonly used transistor circuit arrangement is common collector. The above statement is
- (a) True
 - (b) False
- (xix) The emitter of a transistor is doped moderately. The above statement is
- (a) True
 - (b) False
- (xx) The ideal value of stability factor is 10. The above statement is
- (a) True
 - (b) False



SECTION-B

Note : Attempt any **three** parts of the following: $10 \times 3 = 30$

- 2
- (a) Explain the working of Half wave and Fullwave bridge rectifier. What are the advantages of full wave rectifier ?
 - (b) A half wave rectifier is used to supply 10 V d.c. to a resistive load of 400Ω . If the crystal diode has a forward resistance of 20Ω . Determine the value of a.c. voltage supplied to the circuit.
 - (c) Explain the potential divider biasing circuit.
 - (d) Explain the CE and CC configuration of BJT.
 - (e) What is OPAMP ? How it is used as an integrator and summer ?

SECTION-C

$10 \times 5 = 50$

Note : Attempt **all** the questions. All questions carry **equal** marks.

3 Attempt any **one** part of the following :

- (a) Explain the construction and characteristics of JFET.
- (b) Explain the basic construction, operation and characteristics of MOSFET.

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[Contd...

4 Attempt any **one** part of the following :

- (a) (i) Convert the $(725.25)_{10}$ to its equivalent in Base-2, Base-8 and base -16
- (ii) Perform $M-N$ and $M+N$ if $M=10101$ and $N=1111$
- (b) Discuss the postulates of boolean algebra. How it is different from ordinary algebra ? What are universal gates ?

Implement the expression of XOR gate with the help of NAND gates only.

5 Attempt any **one** part of the following :

- (a) Simplify the boolean function F in sum of products using don't care conditions d (using K-map)

(i) $F = Y' + X'Z'$

$$d = YZ + XY$$

(ii) $F = B'C'D' + BCD' + ABCD'$

$$d = B'CD' + A'BC'D$$

- (b) How zener diode is used as shunt regulator ? Explain it.

6 Attempt any **one** part of the following :

- (a) Explain the working of digital multimeter. What are its application ?
- (b) Discuss in detail CRO. How is used for measurement of frequency ?



7 Attempt any **one** part of the following :

- (a) Explain the working of positive clipper and negative clamper circuits.
- (b) The input voltage V_i to the two level clipper shown in figure varies linearly from 0 to 150V. Sketch and determine the output voltage V_o to the same time scale as the input voltage. Assume ideal diodes.

