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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. | | | | | | | | | | |

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 eletrons 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 energy .....rise 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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(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 Zi 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 Zi 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.

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(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 μA, then I_c will change by

(a) 20 μA

(b) 40 μA

(c) 80 μA

(d) None of these.

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(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

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SECTION-B

Note : Attempt any **three** parts of the following: **10×3=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 400 Ω. If the crystal diode has a forward resistance of 20 Ω. 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 **10×5=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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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) $\mathbf{F = Y' + X'Z'}$

$\mathbf{d = YZ + XY}$

(ii) $\mathbf{F = B'C'D' + BCD' + ABCD'}$

$\mathbf{d = B'CD' + A'BC'D}$

(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 ?

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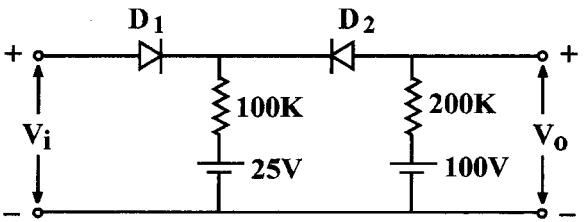
7 Attempt any **one** part of the following :

(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 linearily from 0 to 150V. Sketch and determine the ouput voltage V_0 to the same time scale as the input voltage. Assume ideal diodes.



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