SE-6203/400

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B. E. - II (EL) (Sem. - III) Examination

April / May – 2011

Electronics - I

(Old Course)

Time : Hours] [Total Marks :

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.
Name of the Examination :
☛ **B. E. - 2 (EL) (SEM. - 3)**
Name of the Subject :
☛ **ELECTRONICS - 1 (OLD COURSE)**
☛ Subject Code No. : **6 2 0 3** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

1 (a) Answer the following : **10**

(i) What is level and Breakdown voltage ?

(ii) What is the value of ripple factor for half ware and full ware rectifier ?

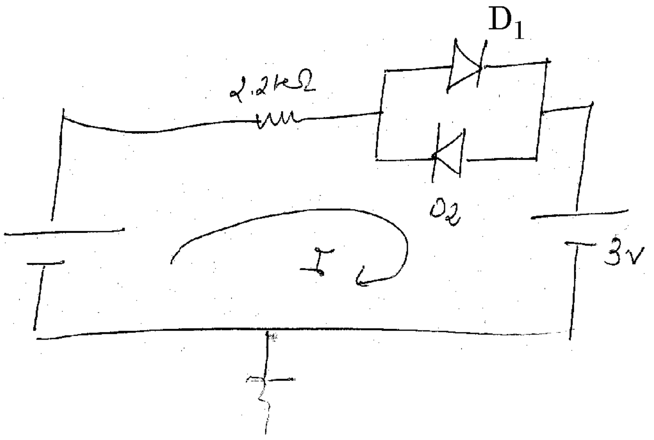
(iii) What is valance band and conduction band ?

(iv) List the properties of semiconductor material.

(v) What is PIN ? Give the value in PIN for half ware rectifier.

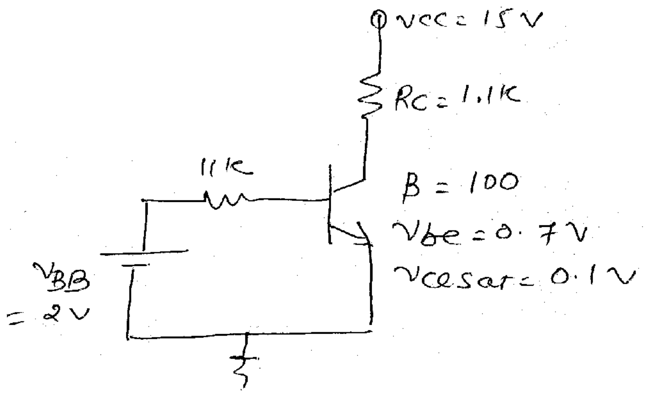
(b) Describe the working of zener diode, Distinguish between zener breakdown and avalanche breakdown. **5**

(c) Determine the current I in the following ckt and also give the status of diodes.



2 (a) Draw and explain the ckt diagram of bridge rectifier. Also derive the expression for the efficiency. 8

(b) For the circuit shown below, 7



Find Q point and draw load live.

OR

2 (a) Explain the concept of dynamic resistance in diode. 8

(b) Explain the current flow mechanism in NPN x'tor. 7

3 Attempt any **three** : 15

(i) N-type semiconductor.

(ii) π-filter

(iii) Establish the following relationship

$$\beta = \frac{\alpha}{1-\alpha}$$

(iv) Compare CE, CB and CC configuration.

4 (a) Answer the following : 10

(i) Why Q-point in a voltage amplifier is selected in the middle of the active region ?

(ii) Which configuration of amplifier is used for impedance matching ?

(iii) The unit of h_{11} is ______ and h_{22} is ______.

(iv) The operation of JFET involves the flow of ______ carriers.

(v) The saturation drain current I_D in FET is______.

(vi) True/False : BJT is current controlled device.

(vii) True/False : In Class-C amplifier, Q-point is well beyond the cut-off region.

(viii) The potential divider method of biasing is used in amplifier to make the ______ independent of β.

(ix) Why n-channel FETS are superior to p-channel FETS ?

(x) What is the need of biasing ?

(b) Explain stability factor analysis for common emitter amplifier. **10**

5 (a) Explain direct coupled push-pull amplifier with advantages and disadvantages. **8**

(b) Discuss the effect of temperature on Q-point. **7**

OR

5 (a) Explain n-channel FET and its characteristics. **8**

(b) For the si transistor in figure (1), $h_{fe} = 100$ and $h_{re} = h_{oe} = 0$. Find $h_{ie,}$ A_i, z_i, z_o. **7**

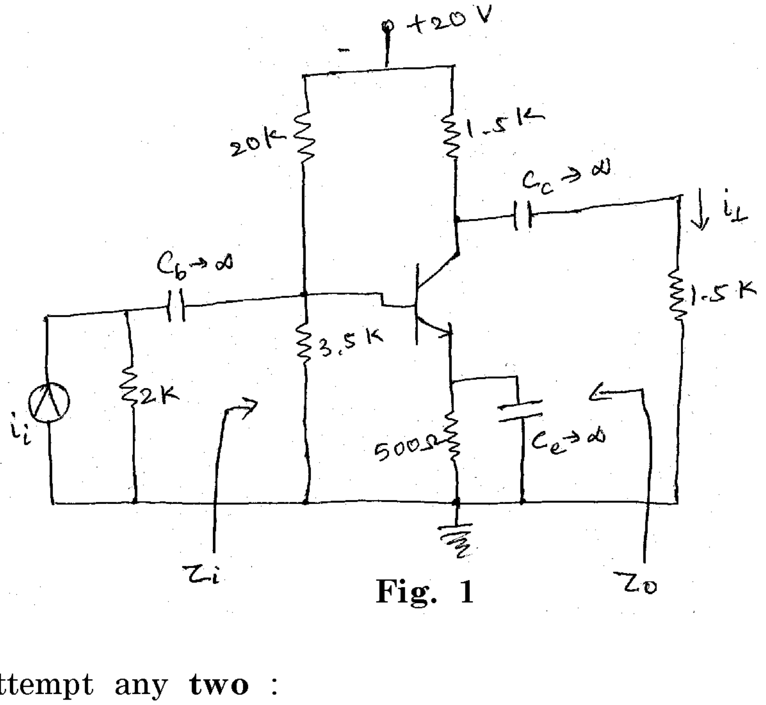


Fig. 1

6 Attempt any **two** : **15**

(i) Compare BJT and FET and Classify FET devices.

(ii) Temperature compensation using diodes.

(iii) Impedance Reflection in the transistor.