UNIVERSITY OF PUNE

[4361]-105

F. E. Examination – 2013

BASIC ELECTRONICS ENGINEERING

(2012 Pattern)

[Time : 2 Hours] **[Max. Marks : 50]**

Total No. of Questions : 08 **[Total No. of Printed Pages :3]**

Instructions :

(1) Black figures to the right indicate full marks.

(2) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(3) Assume suitable data, if necessary.

Q1) A) Sketch I_R and V_o w. r .t time for the network shown in fig. A. [06]
Assume both the diodes are silicon type with V_f = 0.7 V

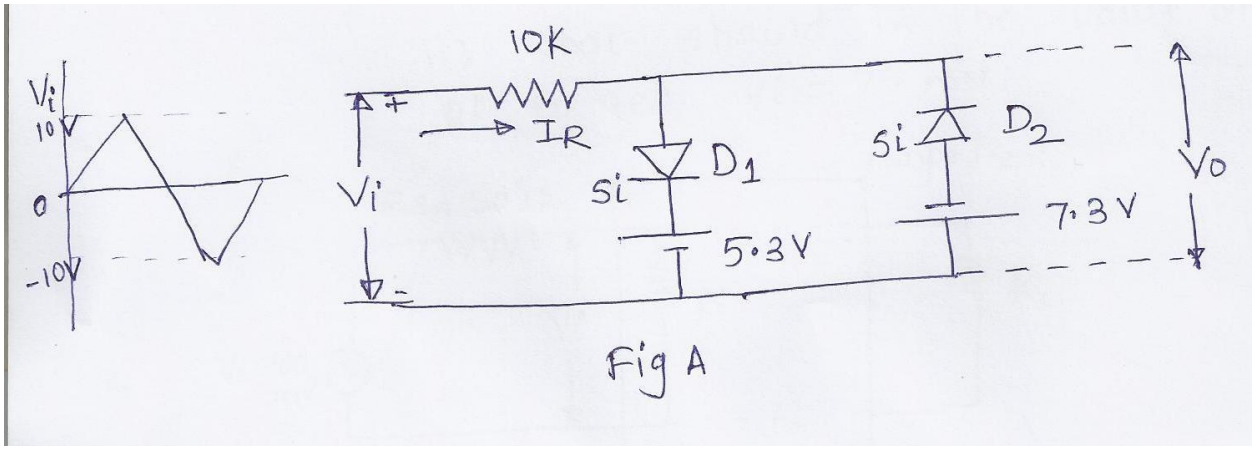

Fig A

B) For a BJT as a switch why CB and cc configurations are not preferred. [02]

C) Explain how R_i and R_o affect the performance of the BJT voltage amplifier. [04]

OR

Q2) A) Explain with V-I characteristics the working of zener diode as voltage regulator. [06]

B) In the voltage amplifier shown in Fig B, V_S=100mV R_s= 50 Ω [06]

i) Calculate input voltage V_i if the input resistance R_i is 600 Ω

ii) What should be the value of R_i to get V_i = 75 mV

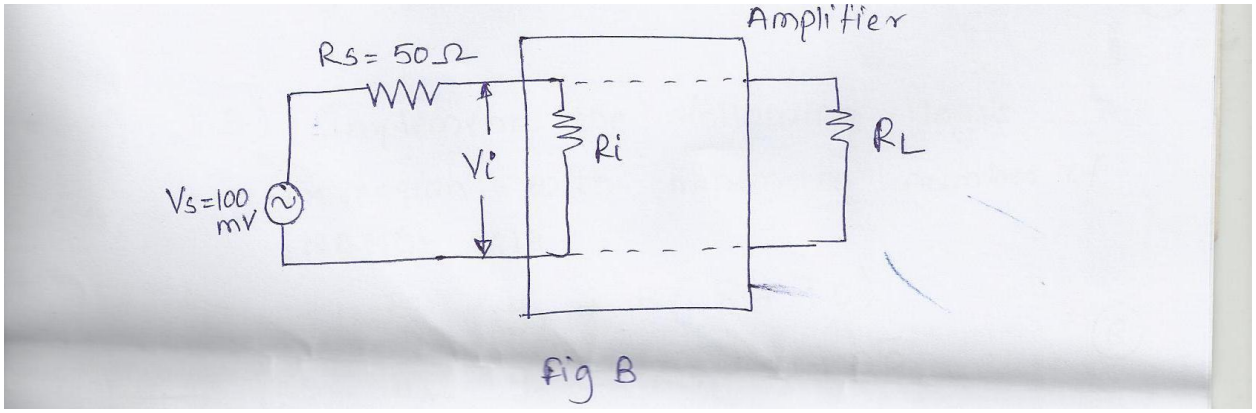

Fig B

Q3) A) In fig. C if V_a = +2V V_b= +4V [04]

$R_a = R_b = R_1 = 1\ k\ \Omega$ and $R_f = 3\ k\ \Omega$

determine the voltage V_1 at non-inverting terminal of OP-AMP and output voltage V_o

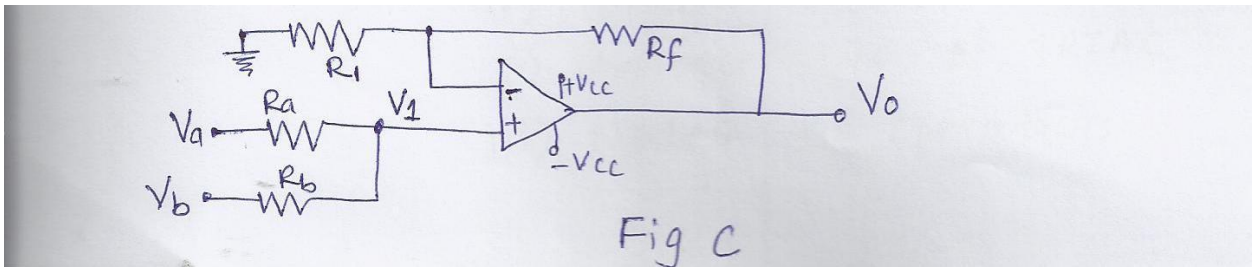

Fig C

B) Draw the block diagram of full adder using two half adder, explain its working with proper expression for sum and carry [06]

C) Explain how EX-OR gate can be used as an invertor. [02]

OR

Q4) A) With neat waveform explain IC555 in astable mode. [06]

B) Implement the following logic expression with minimum number of NAND gate. [06]

i) y_1 = B ($\overline{D}$ + $\overline{C}$D)

ii) y_2= AB + CD+ B$\overline{C}$

Q5) A) Explain in detail, the selection criteria for transducer. [06]

B) Explain in detail [07]

i) construction of TRIAC

ii) characteristics of TRIAC

iii) modes of operation

OR

Q6) A) Explain with block diagram an electronic weighing machine. [06]

B) Explain the construction of DIAC w.r.t [07]

i) Characteristics

ii) Application

Q7) A) What is the importance of modulation index. Draw the AM waveform for [08]

i) Liner modulation

ii) Over modulation

iii) Modulation index = 0

B) Explain the basic structure of mobile phone system. [05]

OR

Q8) A) With respect to FM explain [08]

i) Frequency deviation

ii) Modulation index

iii) Deviation ratio

iv) Frequency spectrum of FM

B) Write a note on co-axial cable and optical fibre cable. [05]