No. of Printed Pages : 05 BEC 2101

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

PAPER ID : 23401 Roll No.

B.Tech Examination 2015-2016

(First Semester)

BASIC ELECTRONICS ENGINEERING

Time : 3 Hours] [Maximum Marks : 60

Note :– Attempt all questions.

Section 'A"

1. Attempt all parts of the following : 8x1=8

   (a) Describe the difference between Intrinsic and Extrinsic semiconductor.

   (b) What are the PIVs for half wave rectifier and center tapped transformer full wave rectifier.

   (c) The BJT has $I_E = 10mA$ and $\alpha = 0.98$. Determine the values of I_B and β.

   (d) Define Pinch off voltage for JFET.

   (f) Define Phase Modulation (PM).

   (g) Draw the circuit of Unity Follower.

   (h) For an Op-Amp if differential gain is 10^5 and common mode gain is 10, then find CMRR.

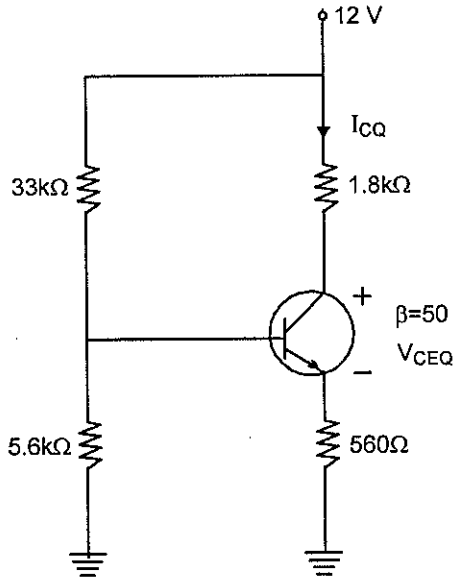
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Section 'B'

2. Attempt any two parts of the following : 2x6=12

(a) Draw circuit diagram of full wave bridge rectifier and explain its working. What PIV rating is required for the diodes in a bridge rectifier that produces an average output voltage of 50*v*?

(b) Find I_{CQ} and V_{CEQ} for the network shown below :



(c) (i) Implement the following expression using basic gates

$$F(A,B,C,D) = A'BC' + AC'D + ACD'$$

(ii) Minimize the given function in SOP form using K-Map and convert the minimized function into POS form :

$$F(A,B,C,D) = \Sigma(1,3,5,7,9,10,12,13)$$

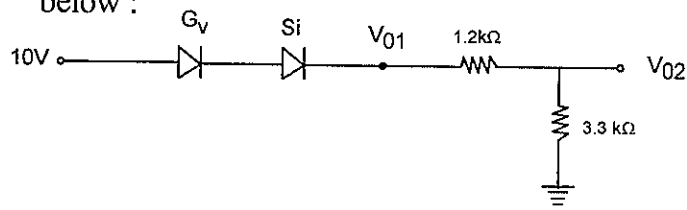
(d) Explain the working of CRO with the help of a block diagram.

Section 'C'

Note : Attempt any two parts from each question :

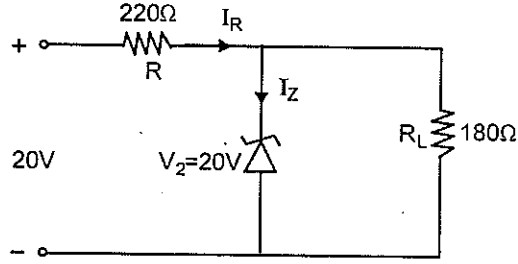
5x8=40

3. (a) Determine V_{01} and V_{02} for network given below :



(b) Write short notes on LCD and solar cell.

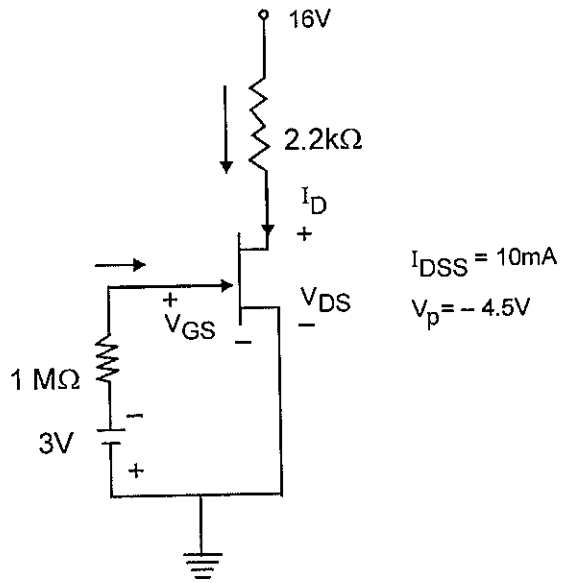
(c) Determine V_L, V_R, I_Z and I_R for following zener diode network.



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4. (a) Explain depletion type MOSFET with diagram.

   (b) Find V_{GS}, I_D and V_{DS} for following network :



   (c) Draw the circuit diagram to obtain the characteristics of BJT in CE configuration. Draw output characteristic curve and indicate the different regions of operation.

5. (a) Convert the followings as directed :

   (i) $(7084.25)_{10}$ into Octal

   (ii) $(B7E.CF)_{16}$ into Binary

   (iii) $(465.21)_8$ into Binary

(b) Explain the communication system using block diagram.

(c) Perform each of following subtraction as directed :

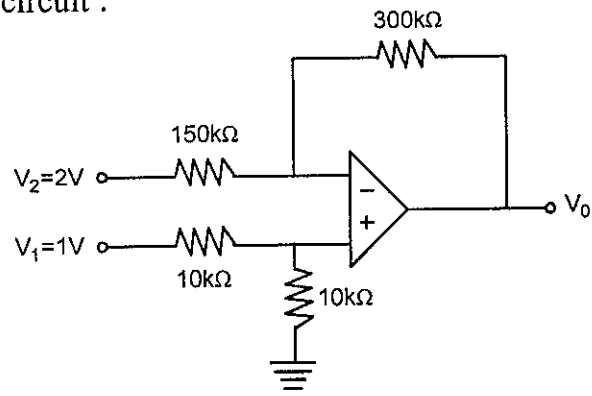
(i) 24-18; using 1`s complement

(ii) 48-58; using 2`s complement

6. (a) Enlist the characteristics of an ideal OP-amp.

(b) How OP-amp can be used as an integrator?

(c) Determine output voltage for the following circuit :



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