



Total No. of Questions: 25

Roll No. _____

Time: 03 Hours

Total No. of Pages: 04

Maximum Marks: 100

B.Tech. III Sem (Main/Back) Exam Jan. 2019
3CSU01 Electronics Devices and Circuits

3CSU3021

PART A : Short answer questions (up to 25 words) 10 x 2 marks = 20 marks.

All ten questions are compulsory.

PART B : Analytical/Problem Solving questions (up to 100 words) 6 x 5 marks = 30 marks. Candidate has to answer six questions out of eight.

PART C : Descriptive/ Analytical/Problem solving questions 5 x 10 marks = 50 marks. Candidates have to answer five question out of seven.

The following code(s) are required:

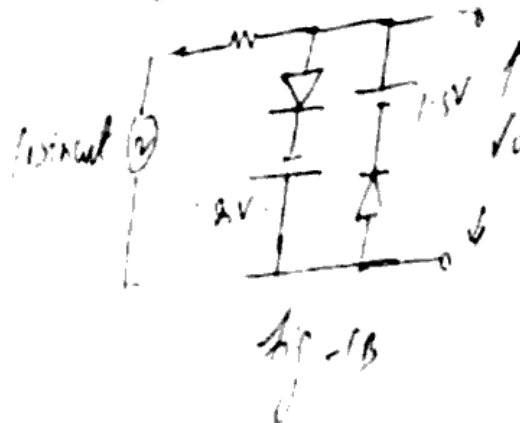
1. Nil 2. Nil

PART A

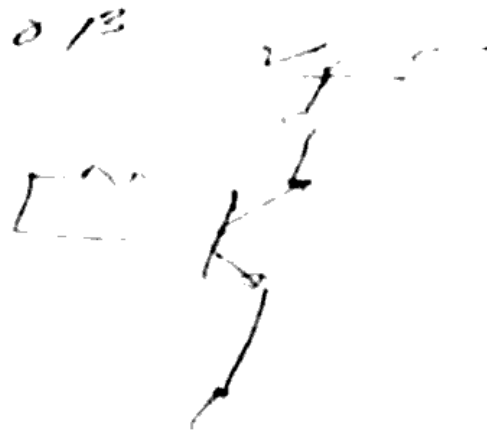
1. If in every 10^6 Si atom one Boron atom is mixed then find the no of majority carrier concentration.
2. Find the diode resistance at room temperature when its forward current is 50 mA.
3. If the output of a bistable multivibrator is a square wave of 20KHz, then find its triggering frequency.
4. If $R_i = 10K\Omega$ then find the value of R_{if} in a voltage shunt feedback amplifier. Assume the value of $D = 1050$.
5. Draw channel resistance r_{ds} of a FET with its V_{gs} .
6. If the output of a clipper circuit is clipped at two different level, then find the minimum no of diode in it.
7. Compare input resistance of CC, CB and CE.
8. If the input to a voltage doubler is $v = 10 \sin 100t$ then find its output.
9. Define diode static resistance.
10. Draw the output of a Schmitt trigger if its LTP = 1.5 volt and UTP = 3.5 volt. Assume the supply is 9 volts.

PART B

1. Draw output wave form in Fig 1 B.



2. Draw the circuit diagram of a full wave voltage doubler and explain its working.
3. Design an Astable multivibrator for generate 20 KHz clock.
4. Draw the equivalent circuit of a quartz crystal and draw its reactance variation with frequency.
5. A current shunt feedback amplifier has $R_i = 10K\Omega$ and $R_o = 500\Omega$ then find these resistances with 50 % negative feedback. Assume the open loop gain is 500.
6. Draw the h-parameter model of CC amplifier and explain how these parameters can be determined from its characteristics.
7. Find $\frac{\partial I_c}{\partial \beta}$ in Fig 7 B



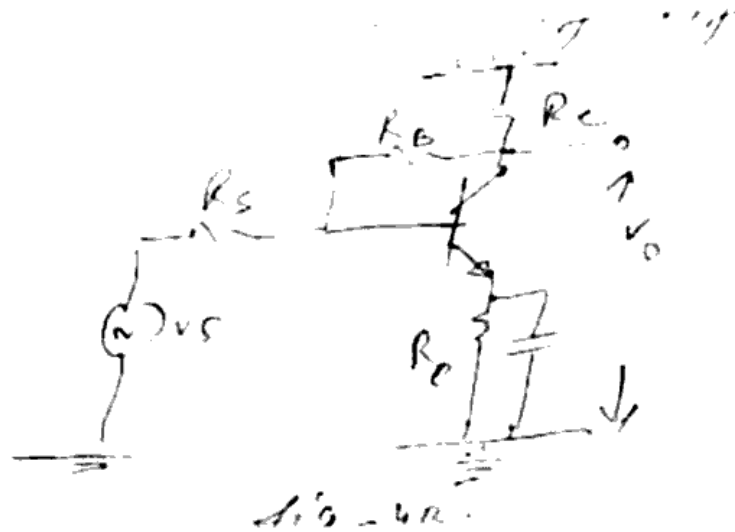
8. Design a colpitt oscillator for 20 MHz frequency. Assume the $\beta = 50$.

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- $0 \rightarrow 1 \rightarrow 2$
 $8 \rightarrow 11$
- Fig - 2-c
-
- Fig - 2-c

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5. Draw the circuit diagram of wein bridge oscillator with operational amplifier and explain its working.
6. Why multi stage amplifier bandwidth is lower than a single stage amplifier? Find overall bandwidth and gain in a three stage amplifier. Assume the gain of single stage is 10 dB and BW is 100 KHz.
7. What is AC ND dc ANALYSIS of an amplifier? Draw such equivalent circuit of a RC coupled amplifier.

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