Total No. of Questions-8] [Total No. of Printed Pages-4

B.E. III Semester Examination

BE - III/12(A)

233274

IT. ENGG.

No.: ECE - 313

Electronics)

Time Allowed- 3Hou *Maximum Marks-100*

Note:- Attempt a e questions in **all** by selecting atleast **One** question fron ch unit. All questions carry **equal** marks.

Unit - I

1. a) Discuss Diode capaci and static resistance of Diode. Explain dynamic resistance & derive for the same **(10)**

   b) Explain the Tunnel Diode & Schottky diode. Draw symbol & characteristics **(10)**

OR

2. a) Explain with neat diagram the working of capacitor filter & derive an expression for ripple factor with necessary waveform. **(15)**

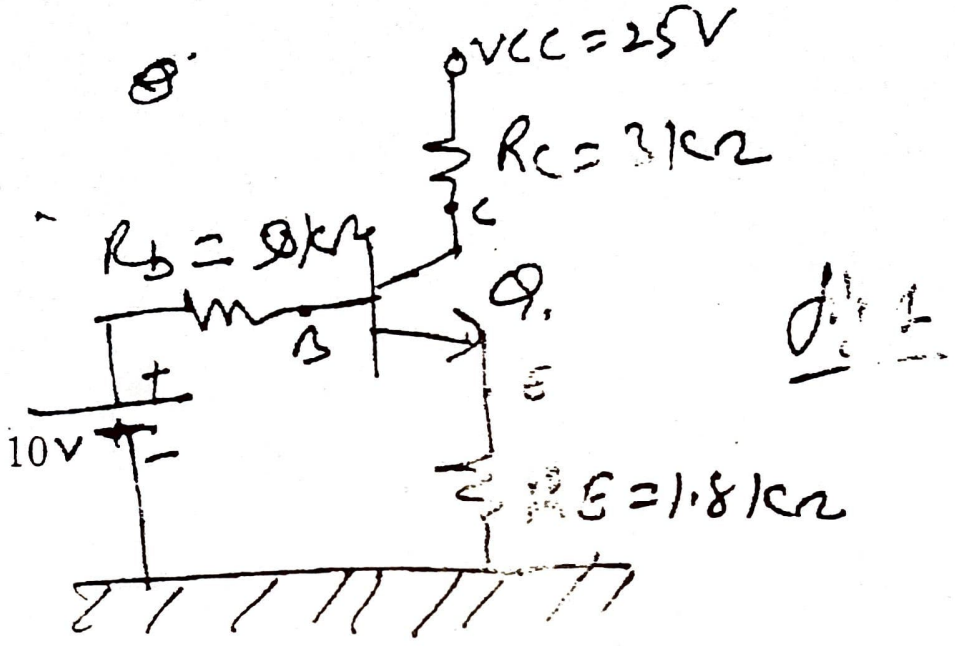
   b) For a Ge diode having reverse current of 1μ Amp. Calculate the dynamic r_f and r_r at a voltage of $I0.25V$ applied across diode. Assume $V_T = 26$ mv. — **(5)**

Unit - II

3. a) Explain the working of Transistor as C.B. configuration. Draw the I/P and O/P characteristics & show active, saturation and cutoff regions. How the characteristics can be modified by Early effect? **(10)**

b) The silicon Transistor shown in Fig.1 has following characteristics.

$\beta = 100, V_{CE\,sat} = 0.2V, V_{BE\,sat} = 0.8V, V_{BE\,active} = 0.7V,$ $V_{BE\,cut\,in} = 0.5V$ and $V_{BE\,cut\,off} = 0V$. Determine the state in which the transistor is **(10)**



OR

4. a) Derive an expression for S, S' *and* S of voltage divider Bias. **(10)**

b) A GE transistor is used for self biasi configuration with $V_{cc} = 16V, R_c = 1.5k\Omega$ *and* The operating Pts. are $V_{ce} = 8V$ and I_c = ... *Amp. If* $S = 10$, calculate, values of R_1, R_2 *and* RE of circuit **(10)**

Unit - III

5. a) Discuss the JFET parameters and their relations. Also compare BJT, JFET and MOSFET **(10)**

   b) Explain the working of MOSFET in Enhancement mode. Draw the symbol, characteristics. **(10)**

OR

6. a) Derive an Expression for A_v, R_i, R_o in Case of JFET in C.D. amplifier as small signal mode with & without R_D. **(10)**

   b) Fig.2. Shows the JFET amplifier circuit. If the JFET has $I_{DSS} = 3mAmp, V_p = -2.4v \text{ and } rd >> R_d$. Calculate $I_{DS}, V_{DS} and V_{as}$. Also calculate A_v, R_i, R_o.

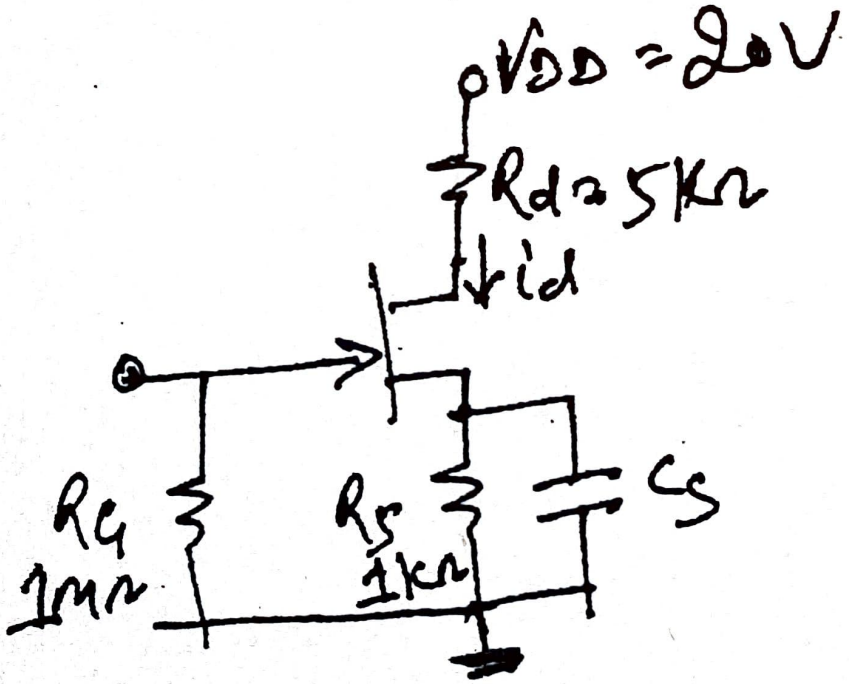


Fig 2.

(10)

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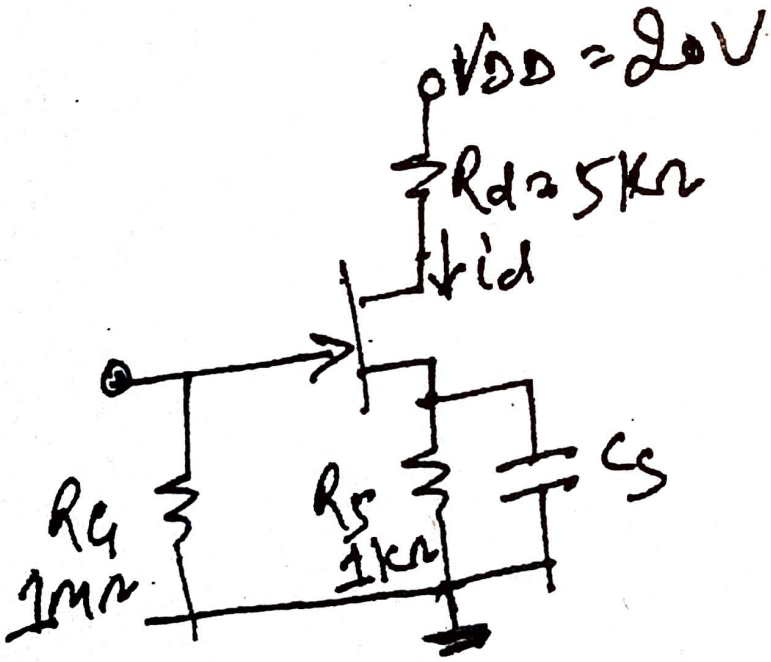

Fig 2.

(10)

[Turn Over

Unit - IV

7. Explain with neat diagram, the working of Op - Amp as clipper and clamper. Draw the I/P and O/P waveforms **(20)**

OR

8. Explain with neat diagram, the working of Op - Amp as square wave, Triangular wave & Saw tooth wave Generator. Derive the Expression for the same **(20)**