Examination Nov/Dec 2019

H-1208

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-1208
FACULTY OF SCIENCE AND TECHNOLOGY
S.Y.B.Tech. (ETC) (Sem-III)
Electronics Devises & Circuits
[OLD]

**[Time: Three Hours]**   **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
    i.   Q. No. 1 & Q. No. 6 are compulsory.
   ii.   Attempt any two questions from the remaining questions in each section.

Section A

Q.1   Solve any five: 10
    a) What is early effect?
    b) Define α & β of transistor.
    c) Enlist the types of biasing.
    d) What are the applications of h-parameters?
    e) What is bandwidth?
    f) Draw & label frequency response of single stage CE amplifier.

Q.2   a) How bias compensation is done in base bias with emitter feedback & derive expression 08
        for I_c , V_{CE} & S?
    b) Explain transistor as an amplifier.   07

Q.3   a) Explain the effect of emitter bypass capacitor on amplifier parameters. 08
    b) Compare h parameters of all configurations.   07

Q.4   a) For the single stage common collector amplifier circuit shown in figure. Calculate the 08
        value of R_i , R_O , A_i & $A_v \beta = 100$, $V_e^{'} = 2S/IE(MA)$

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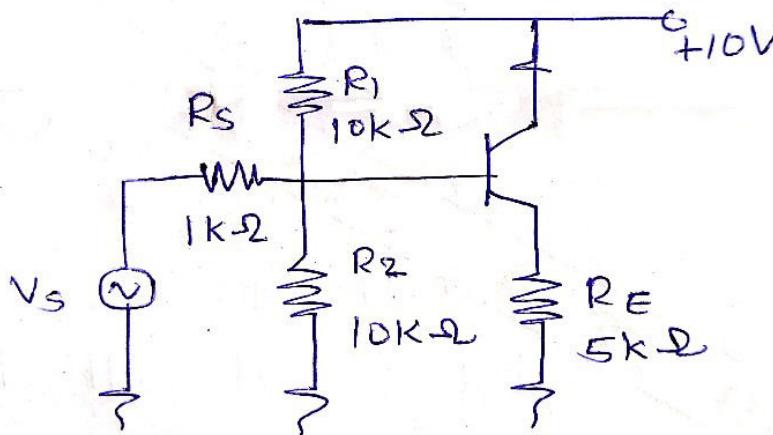
b) Draw the equivalent circuit of CE amplifier in terms of h-parameter & obtain the expression for voltage gain. 07

Q.5   a) Derive the expression for the stability factor of a fixed bias. 07

b) Determine the values of resistances for the circuit shown in fig. such that $I_c = 5\ mA$, $V_{CE} = 6\ V$, $V_c = 8V$, $S = 10$ $\beta = 200$ & $V_{cc} = 20\ V$ 08
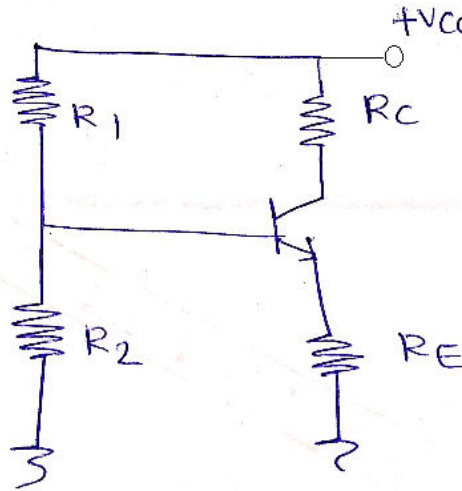
Section B

Q.6   Solve any five: 10

a) Enlist the characteristics of class C power amplifier.

b) What is the difference between voltage & power amplifier

c) Derive relation between μ, gm & rd.

d) Define Transconductance & give its unit.

e) Draw & label the circuit diagram of common gate amplifier.

f) What is inversion layer in E type MOSFET.

Q.7   a) What are biasing schemes available to achieve the required bias in a JFET? Explain any one of the biasing schemes. 08

b) Give the advantages & disadvantages of push pull configuration in power amplifiers. 07

Q.8   a) Calculate the values of voltages gain input resistance & output resistance of the amplifier shown in fig. if $gm = 4.2mA/V$, $r_D = 40k\Omega$. 08

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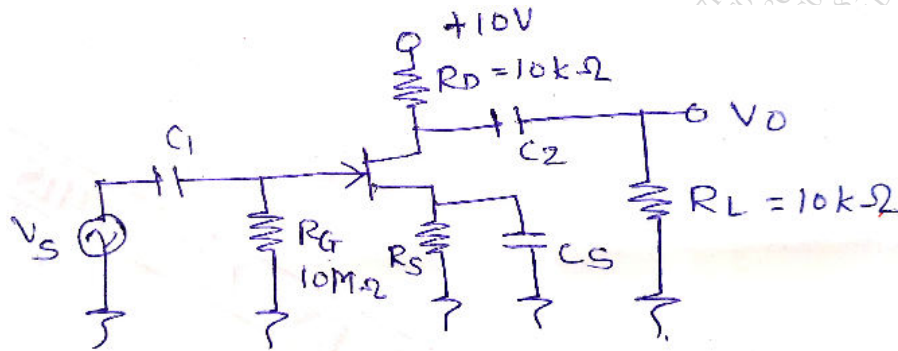
b) Derive the expression for maximum conversion efficiency of class B power amplifier. 07

Q.9   a) Explain in detail V-MOSFET.   07
        b) Explain depletion layer formation & operation of JFET.   08

Q.10   a) Draw drain characteristics of JFET & explain it.   08
        b) Compare JFET & MOSFET.   07