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Question Paper Code : 91444

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Third Semester

Electronics and Communication Engineering

EC 6304 – ELECTRONIC CIRCUITS – I

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. What is an operating point ?
2. Define Thermal runaway.
3. What is a cascade amplifier ?
4. What does bootstrapping mean ?
5. Define BiMOS.
6. Draw the small signal model of JFET.
7. State Miller's Theorem.
8. What is meant by gain-bandwidth product ?
9. Define CMRR.
10. What are the advantages of MOSFET amplifiers ?



PART - B

(5×13=65 Marks)

11. a) With neat diagram explain the different types of biasing of JFET. (13)

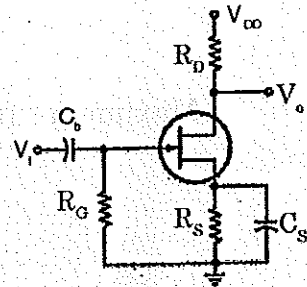
(OR)

b) The amplifier shown in Fig., n-channel FET for which $I_D = 0.8 \text{ mA}$, $V_p = -20 \text{ V}$ and $I_{DSS} = 1.6 \text{ mA}$. Assume that $r_d > R_d$. Find :

i) V_{GS} . (5)

ii) g_m . (4)

iii) R_{GS} . (4)



12. a) With neat diagram, explain BJT Differential Amplifier and its different modes of operation. (13)

(OR)

b) Explain Bootstrap Emitter Follower technique. (13)

13. a) With neat diagram, explain Common source JFET amplifier with self-bias. (13)

(OR)

b) Explain the small signal analysis of Common-Gate MOSFET amplifier. (13)

14. a) Explain the Low frequency analysis of BJT amplifier. (13)

(OR)

b) Draw a two stage RC coupled amplifier and derive the expression for upper and lower cut-off frequencies. (13)

15. a) Explain current steering circuit using MOSFET. (13)

(OR)

b) Explain CMOS differential amplifier and also write the expression for Differential mode gain and common mode gain. (13)

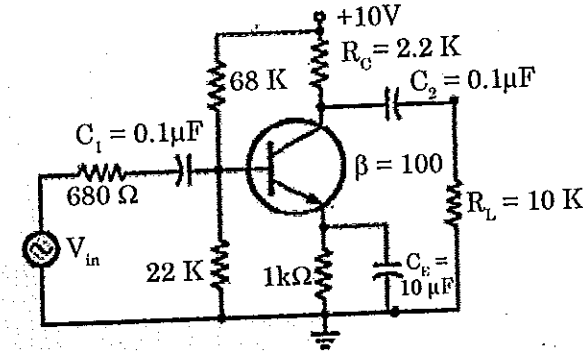


PART - C

(1×15=15 Marks)

16. a) Derive and determine the low frequency response parameters of the amplifier circuit shown in the figure. (15)

Also draw the low frequency response of it.



(OR)

b) i) Derive expressions and analyze the IC MOSFET amplifier with active load, enhancement load and depletion load. (8)

ii) Give brief notes on BiMOS cascode amplifier. (7)