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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

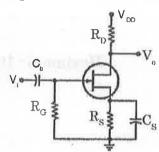
 $(10\times2=20 \text{ Marks})$ 

- 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)
  - b) The amplifier shown in Fig., n-channel FET for which  $I_D = 0.8$  mA,  $V_P = -20$  V and  $I_{DSS} = 1.6$  mA. Assume that  $r_d > R_d$ . Find :
    - i)  $V_{GS}$ .
    - ii)  $g_m$ . (4)
    - iii)  $R_s$ . (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)
  - 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)

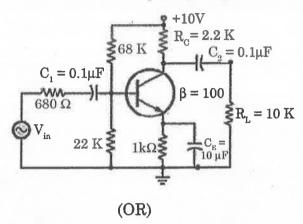


PART - C

(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.

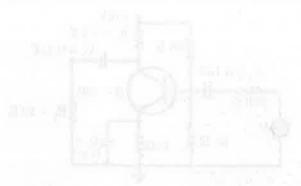


- b) i) Derive expressions and analyze the IC MOSFET amplifier with active load, enhancement load and depletion load. (8)
  - ii) Give brief notes on BiMOS cascode amplifier. (7)

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