Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5668]-136

S.E. (E&TC/Electronics) (I Sem.) EXAMINATION, 2019

ELECTRONIC DEVICES AND CIRCUITS

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

(*ii*) Neat diagram must be drawn wherever necessary.

(*iii*) Use of logarithm tables, slide rule, Mollier charts, electronic pocket calculator and steam table is allowed.

(*iv*) Assume suitable data, if necessary.

1. (A) State and explain the stability factors. [6]

(B) Draw the circuit diagram of single stage CE amplifier and explain with suitable waveforms. [7]

Or

2. (A) What is thermal runaway ? Explain the thermal stability conditions. [6]

(B) Consider single stage CE amplifier with R_1 = 50 KΩ, R_2 = 2 KΩ, R_C = 2 KΩ, R_L = 2 KΩ , h_{fe} = 50, $h_{re} = 2.5 \times 10^{-4}$, h_{oe} = 25 uA/V and h_{ie} = 1.1 KΩ. Calculate : A_v, R_i, R_o. [7]

P.T.O.

3. (A) Explain the concept of frequency response of CE amplifier with justification. [6]

(B) Explain the general characteristics of negative feedback amplifier. [6]

Or

4. (A) Draw and explain the hybrid $-\Pi$ Model of common emitter (CE) amplifier Model. [6]

(B) State the Barkahusen criteria. Draw the copitts oscillator and explain it. [6]

5. (A) Compare the different types of large signal amplifiers. [6]

(B) What is crossover distortion ? Explain the method to overcome the crossover distortion. [7]

Or

6. (A) Draw and explain the vertically oriented structure of power BJT. [6]

(B) Draw and explain the Class B push pull power amplifier. State the merits and demerits of it. [7]

7. (A) Explain the following non-ideal characteristics of MOSFET : [6]

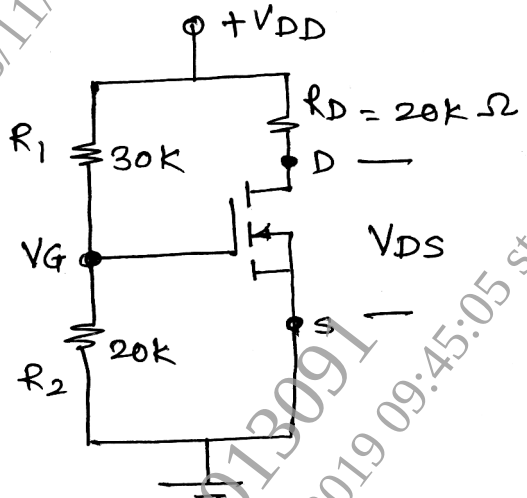
1. Finite output resistance
2. Sub threshold conduction
3. Body effect.

(B) Write a short note on Bi-CMOS technology. [6]

Or

8. (A) Draw the common source E-MOSFET amplifier & explain its modes of operation in detail with equation. [6]

(B) For the circuit shown in fig. 1, calculate I_{DQ}, V_{DSQ}. [6]



Assume :

V_{TN} = 1 V

K_n = 0.1 mA/V^2.