

## B.Sc Sem.-3 Examination

## CC 201

## Electronics

January 2021

Time : 2-00 Hours]

[Max. Marks : 50

- Instructions: (1) All questions in section-1 carry equal marks.  
 (2) Attempt any THREE questions in Section-I.  
 (3) Question-9 in section-II is compulsory.

## Section-I

- Q-1 (A) Discuss the effect of emitter bypass capacitor on low frequency response with the help of h-parameter model of CE amplifier. (7)  
 (B) Calculate the size of bypass capacitor  $C_e$ , to provide a low frequency 3-dB point of 100 Hz when  $R_e = 1K$  ohm,  $h_{fe} = 50$ ,  $h_{ie} = 1$  k ohm and  $R_s = 600$  ohms. Also calculate  $f_o$  and  $f_p$ . (7)
- Q-2 (A) Write a short note on Cascading of CE stages. (7)  
 (B) Explain high frequency model for the common emitter amplifier. (7)
- Q-3 (A) Explain the effect of positive and negative feedback on an amplifier gain with suitable examples. (7)  
 (B) In a negative feedback amplifier,  $A=100$ ,  $\beta=0.04$  and  $V_i=50$  mV. Find (a) gain with feedback (b) output voltage (c) feedback factor (d) feedback voltage (7)
- Q-4 (A) Enlist advantages of negative feedback. Explain effect of negative feedback on the bandwidth of an amplifier. (7)  
 (B) An RC-Coupled amplifier has a mid-frequency gain of 200 and a frequency response from 100 Hz to 20 kHz. A negative feedback with  $\beta = 0.02$  is incorporated in to the amplifier circuit. Determine the new system performance. (7)
- Q-5 (A) Explain operation of JFET, when  $V_{GS}=0$  and  $V_{DS}$  is increased from zero. (7)  
 (B) Explain construction and working of DE MOSFET. (7)
- Q-6 (A) Enlist FET applications. Explain the working of FETs as switches. (7)  
 (B) Draw and explain static characteristics of a DE MOSFET. (7)
- Q-7 (A) Where Bleeder resistor can be placed in the power supply circuit? Explain the advantages of the Bleeder resistor. (7)  
 (B) Draw the circuit of transistor series voltage regulator and explain its working in detail. (7)
- Q-8 (A) Write a short-note on shunt capacitor filter. (7)  
 (B) Explain series inductor filter with the help of circuit diagram and waveforms. (7)

## Section-II

- Q-9 Attempt any EIGHT (8)  
 (A) What is transconductance?  
 (B) What is the 3-db frequency?

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- (C) What is "sag"?
  - (D) Find out  $r_{be}$  for  $h_{fe}=50$  and transconductance =58 mho.
  - (E) Which region in frequency response curve of an amplifier maintains the constant level of gain and output voltage?
  - (F) Which kind of feedback is known as degenerative feedback?
  - (G) What is the full form of IGFET?
  - (H) Draw the symbol of P-Channel JFET.
  - (I) What is "pinch-off voltage"?
  - (J) Mention one disadvantage of JFET.
  - (K) What is the typical value of  $V_{BE}$  for NPN transistor?
  - (L) Write an advantage of LC filter over inductor filter.
  - (M) Which kind of filter circuit is used in the power supply of low current equipment?
  - (N) \_\_\_\_\_ stage of a power supply uses a Zener as the main component?
  - (O) What is the difference between positive and negative feedback?
  - (P) Calculate the gain of a negative feedback amplifier whose gain without feedback is 10000 and  $\beta=0.1$ .
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