

Seat  
No.

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BEI1310

## Electronic Circuits and Applications (New) (1080)

P. Pages : 3

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** questions from each unit.
5. Use of non programmable calculator is allowed.

### UNIT - I

1. Solve any two.

20

- a) With the help of neat diagram, explain any one method which is used to improve CMRR of differential amplifier.
- b) What is multiplier circuit ? Explain with neat circuit diagram, the operation of voltage Tripler in detail.
- c) Draw circuit diagram of schmitt trigger circuit and explain its operation with waveforms.

### UNIT - II

2. Solve any two.

20

- a) Draw and explain circuit diagram of double tuned amplifier with the help of frequency response.
- b) For a single stage CE amplifier at high frequencies derive the equation for current gain with short circuit load. Define ' $F_B$ ' and ' $F_T$ '. What is relation between them.
- c) A BJT at high frequency has following parameters measured at  $I_C = 1 \text{ mA}$  are,  
 $h_{ie} = 3k$ ,  $h_{fe} = 100$ ;  $F_T = 4 \text{ MHz}$ ,  $C_e = 2 \text{ PF}$  and  $C_C = 18 \text{ PF}$   
Find  $r_{b'e}$ ,  $r_{bb'}$ ,  $g_m$  &  $f_H$  for load  $R_L = 1k$ .

## UNIT - III

3. Solve any two.

20

- a) The Loudspeaker of ' $8\Omega$ ' is connected to secondary of transformer of class 'A' power amplifier circuit. The Quiescent collector current is 140mA. The turns ratio of transformer is 3:1. The collector supply voltage is 10V and AC power delivered to Loudspeaker is 0.48 watt. Assuming ideal transformer, calculate.
- AC power developed across primary.
  - RMS value of primary voltage and Load voltage.
  - RMS value of primary current and load current.
  - DC power input.
  - Efficiency.
- b) Complementary symmetric class AB power amplifier uses two transistors and dual power supply of  $\pm 30V$ . It feeds a common load of  $8\Omega$ . If Input voltage to this amplifier is 8V(rms). Calculate
- 'dc' power input.
  - ac power output.
  - efficiency
  - Power dissipation by both transistor.
- c) What is cross over distortion ? Explain any one method to overcome this type of distortion.

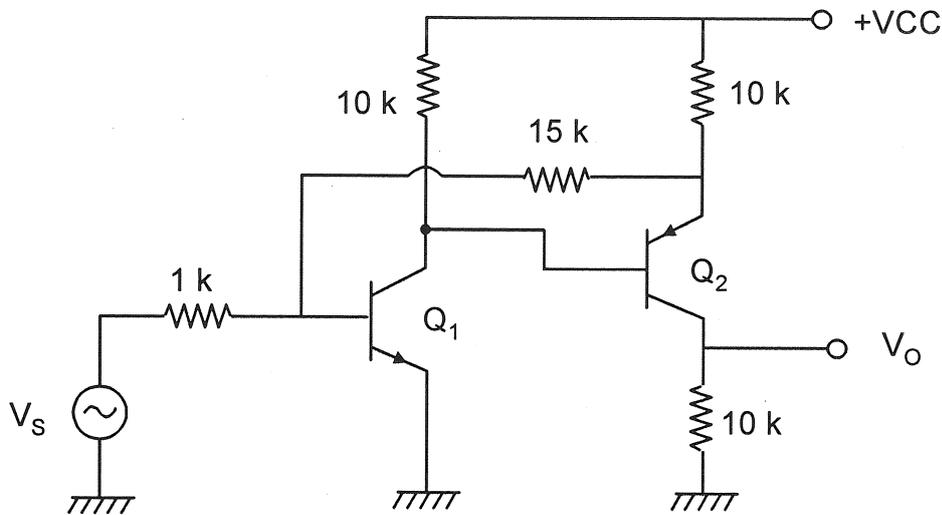
## UNIT - IV

4. Solve any two.

20

- Draw circuit diagram of colpitts oscillator. Explain its operation in detail.
- What are advantages of using negative feedback. For voltage series feedback derive equation for input impedance and output impedance.

- c) For circuit shown in figure identify the type of topology of f/B and calculate  $A_V$ ,  $A_{V_F}$ ,  $A_{I_F}$ ,  $R_{of}$ ,  $\phi$   $R_{if}$ .



$h_{ie} = 2\text{ k}$   
 $h_{fe} = 50$   
 $h_{re} = h_{oe} = 0$

UNIT - V

5. Solve any two.

20

- Draw block diagram of SMPS and Explain its operation in detail with the help of waveforms.
- Design a regulator by using IC723 to have output voltage of 6V and load current of 1Amp. Use fold back protection to get ISC = 250 mA.
- Write short note on :
  - UPS.
  - Three terminal regulators.

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