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**B. E. (Fourth Semester) Examination,
April-May 2021**

(New Scheme)

(IT Branch)

ANALOG ELECTRONICS CIRCUITS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Answer all questions. Part (a) is compulsory and carries 2 marks. Answer any two parts from (b), (c) and (d) carries 7 marks.

Unit-I

- 1. (a) Why cascading of amplifier is needed? 2

- (b) An amplifier circuit is shown in fig. 1. Find out the following quantities for the circuit : 7

[2]

- (i) ac emitter current
- (ii) ac voltage at emitter, base and collector
- (iii) voltage gain.

(Note : Assume h_{ie} or $r_{in} = 250 \Omega$)

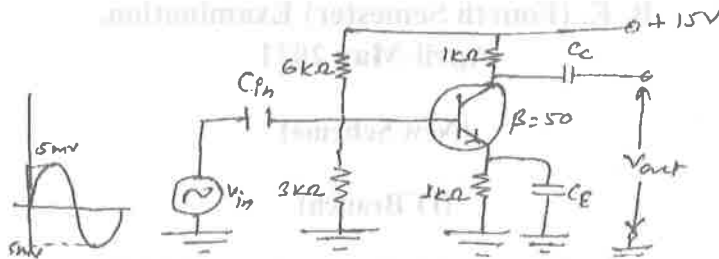


Fig. 1

- (c) Show the table of comparison for CE, CC and CB configuration transistor for simplified hybrid model on parameter A_i , R_i , A_v and R_o and explain their construction. 7
- (d) Draw the circuit of a darlington pair. Derive the expression for current gain and input resistance. 7

Unit-II

- 2. (a) Write the relation between f_β and f_α . 2

[3]

- (b) What are hybrid π capacitance? Show that diffusion capacitance is proportional to emitter bias current I_E . 7
- (c) Derive the expression of gain band width product for voltage and draw the conclusion. 7
- (d) Write a short note on frequency response of a single stage CE amplifier. 7

Unit-III

- 3. (a) Define bandwidth of an amplifier. 2
- (b) Discuss response of two-stage R-C coupled amplifier at low and high frequency. 7
- (c) Explain noise figure and show the procedure for measurement of noise figure. 7
- (d) Write short note on distortion in amplifiers. 7

Unit-IV

- 4. (a) Define positive and negative feedback. 2
- (b) Write down the comparison between voltage series, current series, voltage shunt and current shunt. 7

[4]

- (c) Write down the advantage of negative feedback amplifiers. 7
- (d) Write a short note on effect of feedback on amplifier bandwidth and stability. 7

Unit-V

5. (a) Define oscillator. 2
- (b) Explain wien bridge oscillator. 7
- (c) Draw circuit of crystal controlled oscillator. Explain its working principle in detail. 7
- (d) Explain the working of colpitis oscillator. 7