EC32/EC32(O)

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(Autonomous Institute, Affiliated to VTU)
(Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited by NBA & NAAC with 'A+' Grade

SEMESTER END EXAMINATIONS – MARCH 2022

Program	:	**B.E. : Electronics and Communication Engineering**	**Semester**	:	**III**
Course Name	:	**Analog Circuits / Analog Electronic Circuits**	**Max. Marks**	:	**100**
Course Code	:	**EC32 / EC32(O)**	**Duration**	:	**3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT- I

1. a) Using nodal analysis find i_1 and i_3 currents in the circuit shown in Fig.1(a) . CO1 (10)

Fig.1(a)

b) Using mesh analysis, find V_y in the circuit shown in Fig.1(b). CO1 (10)

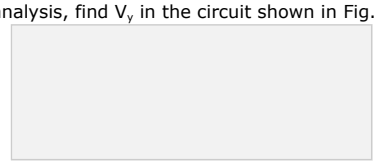

Fig.1(b)

2. a) Reduce the network shown in Fig.2(a), to a single voltage source in series with a resistance between terminals A and B. CO1 (10)

Fig.2(a)

b) Find R_{in} for the circuit shown in Fig. 2(b) using star-delta transformation. CO1 (10)

Fig.2(b)

UNIT – II

3. a) State and prove Norton's theorem and maximum power transfer theorem. CO2 (10)

   b) Find the current flowing through 3Ω resistor for the network shown in Fig.3(b), by using Thevenin's theorem. CO2 (10)

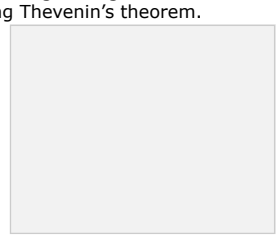

Fig.3(b)

4. a) Find Z_{eq}, for the circuit shown in Fig.4(a). CO2 (10)

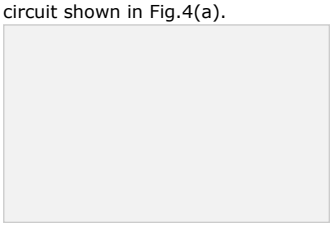

Fig.4(a)

   b) Find the voltage across 3Ω resistance for the circuit shown in Fig.4(b), using Norton's theorem. CO2 (10)

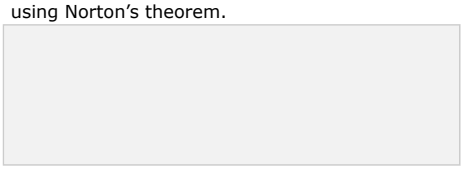

Fig.4(b)

UNIT – III

5. a) The transistor amplifier shown in Fig. 5(a) uses a transistor whose h-parameters are as follows: h_{ie}=1.2kΩ, h_{fe}=100, h_{re}=2.4×10^{-4} hoe=25×10^{-6} A/V. Calculate I_o/I_i , A_v ,A_{vs} ,$R_{i'}$. CO3 (09)

Fig.5(a)

b) Show that negative feedback decreases the output resistance of voltage series feedback amplifier. CO3 (06)

c) State and prove Miller's Dual theorem. CO3 (05)

6. a) State the advantages and disadvantages of h-parameters and draw the small signal model of CE amplifier. CO3 (06)

b) The transistor with h_{ie}=1kΩ, h_{fe}=60, h_{re}=205×$10^{-4,}$ hoe=25×10^{-6} A/V. is connected in CE configuration given in Fig. 6(b). Calculate: $A_i = I_o/I_i$,A_v ,R_i ,$R_{i'}$, R_o. CO3 (09)

Fig.6 (b)

c) Discuss the effect of negative feedback on amplifier bandwidth. CO3 (05)

UNIT – IV

7. a) Explain the principle and operation, derive an expression for output power and maximum conversion efficiency of class B push pull amplifier with relevant sketches. CO4 (10)

b) A power amplifier has harmonic distortions D2= 0.1, D3=0.02, D4=0.01, the fundamental current I1=4A and RL= 8Ω. Calculate the total harmonic distortion, fundamental power and total power. CO4 (06)

c) Explain block diagram of class-D amplifier. CO4 (04)