

ELECTRONICS AND COMMUNICATION ENGINEERING

QUESTION BANK

Course Title: Electronics Devices and Circuits

Course Code: 25EC303

Regulation: NR25

UNIT-IV

TRANSISTOR AMPLIFIERS

S.No	Questions	BT	CO	PO
Part –A(Short Answer Questions)				
1	Define transistor amplifier.	L2	4	1
2	What is small signal amplification?	L2	4	1
3	What are h-parameters?	L2	4	1
4	Why are h-parameters called hybrid parameters?	L2	4	1
5	Define h _{ie} .	L2	4	1
6	Define h _{re} .	L2	4	1
7	Define h _{fe} .	L2	4	1
8	Define h _{oe} .	L2	4	1
9	Draw the h-parameter equivalent circuit of CE amplifier.	L2	4	1
10	Draw the low-frequency hybrid equivalent circuit of CB amplifier.	L2	4	1
11	Draw the low-frequency hybrid equivalent circuit of CC amplifier.	L2	4	1
12	Define voltage gain.	L2	4	1
13	Define current gain.	L2	4	1
14	Define input impedance.	L2	4	1
15	Define output impedance.	L2	4	1
16	What is emitter bypass capacitor?	L2	4	1
17	State the function of emitter bypass capacitor.	L2	4	1
18	What is approximate CE model?	L2	4	1
19	Compare exact and approximate CE models.	L3	4	2
20	Which transistor configuration is called emitter follower?	L2	4	1
Part– B(Long Answer Questions)				
S.No	Questions	BT	CO	PO
1	Explain transistor as a small signal amplifier.	L3	4	2
2	Derive the h-parameter equivalent circuit of a transistor.	L4	4	2
3	Explain the significance of h-parameters in transistor amplifier analysis.	L3	4	2
4	Analyze a CE amplifier using h-parameters.	L4	4	2
5	Analyze a CB amplifier using h-parameters.	L4	4	2
6	Analyze a CC amplifier using h-parameters.	L4	4	2
7	Derive expressions for voltage gain, current gain, input impedance and output impedance of CE amplifier.	L4	4	2
8	Draw and explain the low-frequency hybrid equivalent circuits of CE, CB and CC amplifiers.	L3	4	2
9	Explain the approximate CE model with emitter bypass capacitor.	L3	4	2
10	Explain the approximate CE model without emitter bypass capacitor.	L3	4	2

11	Compare CE, CB and CC amplifiers based on gain and impedance characteristics.	L4	4	2
12	Derive the expressions for gain and impedance of emitter follower.	L4	4	2
13	The source and load resistances connected to a BJT amplifier in CE configuration are 680 Ω and 1 KΩ respectively. The h-parameters of the transistor are: $h_{ie} = 1.1 K\Omega$ $h_{re} = 2 \times 10^{-4}$ $h_{fe} = 50$ $h_{oe} = 20 \mu mhos$ Calculate: - Voltage gain (A_V) - Input resistance (R_i) using both approximate and exact analysis.	L4	4	1,2
14	For the emitter follower (CC amplifier), the following parameters are given: $R_S = 0.5 K\Omega$ $R_L = 50 K\Omega$ $h_{fe} = -50$ $h_{ie} = 1 K\Omega$ $h_{oe} = 25 \mu A/V$ $h_{re} = 1$ Determine: - Voltage gain (A_V) - Current gain (A_I) - Input impedance (Z_i) - Output impedance (Z_o)	L3	4	1,2