

Hall Ticket Number:

Code No. : 14466 N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (E.C.E.) IV-Semester Main Examinations, July/August-2023**Electronic Circuits**

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10×2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO	PSO
1.	Define the Operating point of a transistor and give its importance	2	1	1	1	1,2
2.	Define Thermal runaway.	2	1	1	1	1,2
3.	Give the classification of amplifiers w.r.t BJT.	2	1	2	1	1,2
4.	Draw the circuit of Darlington amplifier and mention its applications.	2	2	2	1	1,2
5.	Write the general characteristics of negative feedback amplifier.	2	2	3	2	1,2
6.	Compare voltage series and voltage shunt feedback amplifier in terms of mixing and sampling	2	3	3	2	1,2
7.	List few applications of oscillators.	2	1	4	1	1,2
8.	Construct a crystal oscillator using LC oscillator circuit	2	4	4	3	1,2
9.	What is Harmonic distortion in amplifiers?	2	2	5	1	1,2
10.	A series-fed class-A power amplifier is supplied with input DC power of 5W. Determine the worst case power dissipation in transistor.	2	3	5	3	1,2
Part-B (5×8 = 40 Marks)						
11. a)	Mention different types of BJT biasing techniques and describe the Voltage divider biasing technique in detail.	4	1	1	1	1,2
b)	Design a fixed bias circuit for the following specifications. $I_{CQ}=9.2\text{mA}$, $V_{CEQ}=4.4\text{V}$, $\beta=115$, $V_{BE}=0.77\text{V}$ and $V_{CC}=9\text{V}$	4	3	1	3	1,2
12. a)	Explain the gain roll off at low frequencies and high frequencies of RC coupled CE amplifier.	4	2	2	1	1,2
b)	Derive the relationship between f_{β} and f_T .	4	3	2	2	1,2
13. a)	Determine the i) input impedance ii) output impedance and iii) voltage gain of voltage series feedback amplifier for amplifier gain without feedback is 1000 and feedback ratio (β) is 0.01. The input and output impedance of amplifier without feedback is $10\text{K}\Omega$ and $1\text{K}\Omega$ respectively.	4	2	3	3	1,2

Contd... 2

b)	Derive the expressions for input and output impedance of current shunt feedback amplifier	4	3	3	3	1,2
14. a)	Explain Hartley Oscillator with a neat circuit diagram and derive the expression for frequency of oscillations	4	3	4	3	1,2
b)	Explain RC Phase shift Oscillator with the help of neat circuit diagram	4	2	4	1	1,2
15. a)	Describe the Class-A push pull power amplifier and state its advantages	4	2	5	1	1,2
b)	Explain the operation of Class-AB power amplifier with a neat circuit diagram.	4	2	5	1	1,2
16. a)	Draw the small signal model of common source amplifier and derive the expression for voltage gain	4	3	2	3	1,2
b)	Draw the circuit diagram of Differential amplifier and describe its operation.	4	1	1	1	1,2
17.	Answer any <i>two</i> of the following:					
a)	Prove that gain bandwidth product of amplifier with and without feedback is same.	4	3	3	2	1,2
b)	Explain the theory of oscillator and Barkhausen criterion.	4	2	4	1	1,2
c)	Determine the i)centre frequency ii)gain at centre frequency and iii)bandwidth of R.F Tuned amplifier for tuned circuit load having $R=20\Omega, L=1mH$ and $c=1\mu F$. Assume $h_{fe}=100$ and $h_{ie}=1K\Omega$	4	3	2	3	1,2

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%
