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Code No. : 14365 N/O

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade

B.E. (E.E.E.) IV-Semester Main & Backlog Examinations, July-2023

Electronics Engineering-II

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.	Draw the transfer characteristic curve of a negative clipper with zero reference.	2	1	1	1	2
2.	Draw the circuit to transmit that part of a sine wave, which lies between -4V and -7V.	2	3	1	1,2	2
3.	A differential amplifier has $V_{s1}=10\text{mV}$, $V_{s2} = 9\text{mv}$. If it has $A_d=60\text{dB}$ and $\text{CMRR}=80\text{dB}$. Find its output Voltage.	2	2	2	1,2	2
4.	An amplifier with a gain of 8 has 10% of its output fed back to the input. Determine the gain of the stage i) with negative feedback ii) with positive feedback.	2	2	2	1,2	2
5.	List any four advantages of employing negative feedback in amplifiers.	2	1	3	1	2
6.	An amplifier has a gain of 300. When negative feedback is applied the gain is reduced to 240. Determine the feedback ratio.	2	2	3	1,2	2
7.	Give brief classification of oscillators and write the two conditions for sustained oscillations.	2	1	4	1	2
8.	The tuned collector oscillator circuit used in the local oscillator of a radio receiver makes use of an LC tuned circuit with $L_1 = 58.6 \mu\text{H}$ and $C_1 = 300 \text{ pF}$. Calculate the frequency of oscillations.	2	2	4	1,2	2
9.	Differentiate between power amplifier and voltage amplifier	2	1	5	1	2
10.	In an RC coupled power amplifier, the a.c. voltage across load $R_L (= 100 \Omega)$ has a peak- to-peak value of 18V. Find the maximum possible a.c. load power.	2	2	5	1,2	2
Part-B (5 × 8 = 40 Marks)						
11. a)	Derive the expression for output voltage when ramp signal is applied to high pass RC circuit.	4	3	1	1	2
b)	A 700V peak square wave with an average value of 0V and a period of 30ms is to be positively clamped at 20V. Draw the circuit diagram for this purpose. Draw the input and output waveforms.	4	4	1	1,3	2

Contd... 2

12. a)	Briefly explain the importance of cascading in amplifiers and derive an expression for overall gain of an N stage cascaded amplifiers.	4	3	2	1	2
b)	Describe any two drift compensation techniques.	4	1	2	1	2
13. a)	Derive the expressions for input impedance and output impedance of a voltage series feedback Amplifier.	4	3	3	1	2
b)	An amplifier has a voltage gain of 500 without feedback. If a negative feedback is applied, the gain is reduced to 100. Calculate the fraction of the output fed back. If, due to ageing of components, the gain without feedback falls by 20%, calculate the percentage fall in gain with feedback.	4	3	3	1,3	2
14. a)	Explain working of RC phase shift oscillator and derive an expression for the frequency of oscillations.	5	2	4	1	2
b)	Explain the working principle of crystal oscillator and justify that it has the highest frequency stability.	3	2	4	1	2
15. a)	Draw the circuit diagram class A transformer coupled power amplifier and derive for collector efficiency.	5	2	5	1	2
b)	A class A transformer coupled power amplifier has zero signal collector current of 50 mA. If the collector supply voltage is 5 V, find (i) the maximum a.c. power output (ii) the power rating of transistor (iii) the maximum collector efficiency.	3	3	5	1,2	2
16. a)	Draw the circuits of any four different types of shunt clippers and draw their corresponding transfer characteristics.	4	2	1	1	2
b)	Analyze the frequency response of RC coupled amplifier.	4	3	2	1	2
17.	Answer any <i>two</i> of the following:					
a)	Draw the block diagram of current series feedback amplifier and determine A_{vf} , R_{if} and R_{of} of the given amplifier.	4	2	3	1	2
b)	Obtain the step response of RC High pass filter with mathematical relations.	4	3	4	1	2
c)	What is Harmonic distortion in power amplifiers? Explain the procedure for the determination of 2 nd harmonic using three point method.	4	1	5	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	38.75%
iii)	Blooms Taxonomy Level - 3 & 4	41.25%
