

Hall Ticket Number:

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Code No. : 14466 AS N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (E.C.E.) IV-Semester Advanced Suppl. Examinations, Aug. / Sept-2023

Electronic Circuits

Time: 3 hours

Max. Marks: 60

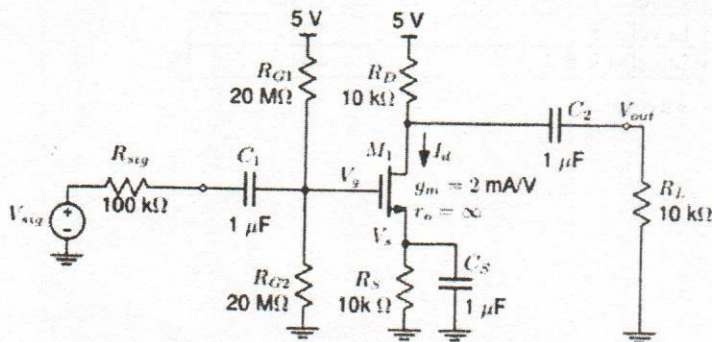
Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B**

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO	PSO
1.	What is the need for Transistor Biasing?	2	1	1	1	1,2
2.	Define thermal Runaway.	2	1	1	2	1,2
3.	Mention the parameters that effect the fall of gain at low frequency and high frequency regions of RC coupled amplifier.	2	1	2	1	1,2
4.	Draw the Circuit of Differential Amplifier and Mention its applications.	2	2	2	2	1,2
5.	State the advantages of Negative Feedback Amplifiers.	2	2	3	2	1,2
6.	Derive the expression for closed loop gain of current Shunt feedback Amplifier.	2	3	3	1	1,2
7.	State Barkhausen criteria for sinusoidal oscillators	2	1	4	1	1,2
8.	Draw the equivalent circuit of Crystal Oscillator and justify it.	2	3	4	1	1,2
9.	What is Total Harmonics Distortion in power amplifier?	2	1	5	1	1,2
10.	Define the conversion efficiency of a power amplifier.	2	1	5	1	1,2

Part-B (5 × 8 = 40 Marks)

11. a) Derive the expression for Stability factor in a Self Bias circuit. Use proper circuit with BJT. 4 3 1 3 1,2
- b) Design a Self Bias Circuit using BJT for the given specifications. 4 2 1 3 1,2
 $\beta=50, V_{BE}=0.6V, V_{CC}=22.5V$ and $R_C=5.6K\Omega$. The required operating point is $V_{CEQ}=12V, I_{CQ}=1.5mA$ and Stability factor=3.
12. a) Draw the Circuit of Single stage RC coupled Common Emitter Amplifier and explain the significance of each component. 4 2 2 1 1,2
- b) 4 3 2 2 1,2



Draw the Small signal model of the above circuit.

13. a)	Draw the Block Diagram of a Feedback Amplifier and explain the function of each Block.	4	2	3	1	1,2
b)	An amplifier having an input resistance $4k\Omega$ has a voltage gain of 200. If a series negative feedback with $\beta=0.01$ is introduced, determine the value of input resistance of the feedback amplifier. If the amplifier in its open loop configuration had cut off frequencies $f_l= 2kHz$ and $f_h= 500kHz$ before the feedback path was added, what is the new bandwidth of the circuit with feedback?	4	3	3	3	1,2
14. a)	Draw the circuit diagram of an RC Phase Shift Oscillator using FET and explain its working principle.	4	2	4	2	1,2
b)	Given for a Colpitts Oscillator $C_1=100pF$, $C_2= 7500pF$. The inductance is variable. Determine the range of inductance values if the frequency of Oscillations is to vary from $860kHz$ to $1180kHz$. If the inductance is fixed at $2\mu H$ what is the new frequency of Oscillations.	4	3	4	3	1,2
15. a)	Identify the circuit used to eliminate Second Harmonic Distortion and derive its efficiency.	4	2	5	2	1,2
b)	A single tuned amplifier consist of tuned circuits having $R=5ohm$, $L=10\mu H$, $C=0.1KPF$. Determine a) Resonant frequency b) Quality factor of tank circuit c) Band width of amplifier.	4	3	5	2	1,2
16. a)	Mention different types of FET biasing methods and explain any one of them with circuit diagram.	4	3	1	2	1,2
b)	Evaluate the values of i) The input impedance ii) Current gain iii) Voltage gain iv) output impedance of a transistor CE configuration .Assume h-parameters values of BJT are $h_{ie} =1100 \Omega$, $h_{re}= 10 \times 10^{-4}$; $h_{fe}= 50$; $h_{oe}= 100 \times 10^{-6}$. Load resistance and Source Resistances are $1 K\Omega$ each..	4	2	2	2	1,2
17.	Answer any <i>two</i> of the following:					
a)	Compare the 4 types of Negative feedback amplifiers in terms of input impedance and output impedance.	4	2	3	2	1,2
b)	Derive the condition for Oscillations of a Hartley Oscillator.	4	3	4	2	1,2
c)	Draw the circuit of Class C Tuned amplifier and explain its working.	4	2	5	1	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%
