SRM

SRM Institute of Science and Technology
College of Engineering and Technology
DEPARTMENT OF ECE
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu
Academic Year: 2021-2022 (EVEN)

OFFLINE MODE
SET A

Test: CLAT- 1
Course Code & Title: 18ECC201J - Analog Electronic Circuits
Year & Sem: II / IV

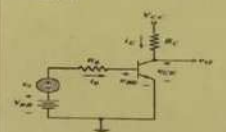
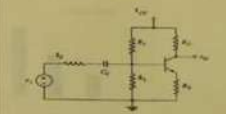
Date: 07-04-2022
Duration: 65 minutes
Max. Marks: 25

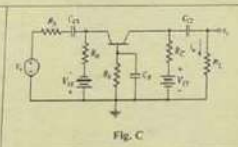
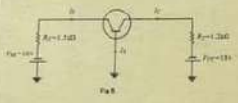
Course Articulation Matrix:

Part - A
(5 x 1 = 5 Marks)
Instructions: Answer any 5

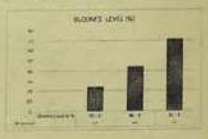
Q. No	Question	Marks	BL	CO	PO	PI Code
1	CE amplifier is mostly preferred in amplifier circuits because _____ a. of low output impedance b. of high output impedance c. it provides better voltage and current gain d. it has better Q-Point	1	1	1	1	
2	If the value of α is 0.9, then value of β is _____ a. 9 b. 0.9 c. 900 d. 90	1	2	1	2	
3	What is the current gain for a common-base configuration if, I_E = 4.2 mA and I_C = 4.0 mA? a. 16.8 b. 1.05 c. 0.2 d. 0.95	1	3	1	2	
4	In a voltage divider bias circuit R1 is 4.7 KΩ, R2 is 15002, and V_{CC} is +18 V, then the voltage across the base resistance is _____ a. 8.7 V b. 4.35 V c. 2.9 V d. 0.7 V	1	3	1	3	
5	Which of these are incorrect about Darlington amplifier? a) High input resistance b) Low output impedance c) Unity voltage gain d) It is used as a current buffer	1	1	1	1	

Part – B
(2 x 10= 20 Marks)
Instructions: Answer any TWO

6.a.	Calculate the small signal voltage gain of the bipolar transistor circuit shown in Fig A. Assume the transistor and circuit parameters are ; β = 100, V_{CC} = 20V, V_{BE} = 0.7, R_C = 6 KΩ , R_B = 50 KΩ, and V_{BB} = 1.2V. I_{DSS} = 1 mA, and $V_{GS(off)}$ = 8V.	5	2	1	3	
						
	Fig A					
6.b.	Draw the equivalent circuit of the NPN common emitter circuit with an emitter resistor as shown in Fig. B, and derive the expression for the input resistance (R_{in}) and state the resistance reflection rule.	5	2	1	2	
						
	Fig. B					
7.a.	Determine the small signal current gain of the CB configuration circuit shown in Fig C.	5	2	1	3	

	 Fig. C					
7.b.	For the common base circuit shown in Fig. B, determine Ic and V_{CB}. Assume the transistor to be of silicon. Given V_{BE} = 0.7 V  Fig.B	5	3	1	3	
8.a.	Draw the frequency response of an amplifier and give the significance of the 3 dB line in bandwidth calculation	4	2	1	2	
8.b.	Explain the impact of bypass capacitor in frequency response of an amplifier with necessary diagram	6	2	1	3	

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions



Evaluation Sheet

Name of the Student:
Register No.:

Q. No	CO	Marks Allotted	Marks Obtained	Total
		Part- A ALL FIVE (5 x 1= 1 Marks)		
1	1	1		
2	1	1		
3	1	1		
4	1	1		
5	1	1		
		Part- B Any TWO (2 x 10= 20 Marks)		
6.a	1	5		
6.a	1	5		
7.a	1	5		
7.b	1	5		
8.a	1	10		

Consolidated Marks:

CO	Marks Allotted	Marks Scored
CO1	25	
Total	25	

Approved by the Course Coordinator

SRM Institute of Science and Technology
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DEPARTMENT OF ECE

OFFLINE MODE
SET B

Academic Year: 2021-2022 (EVEN)

Unit: CLAT: 3
Course Code & Title: 18ECC201J - Analog Electronic Circuits
Year & Sem: II / IV

Date: 07-04-2022
Duration: 60 minutes
Max. Marks: 25

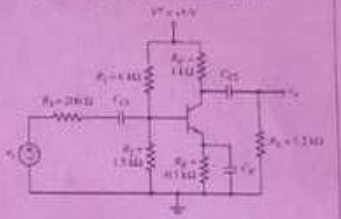
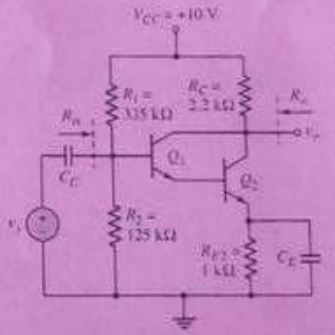
Course Articulation Matrix:

	Program Outcomes (POs)												PSOs		
CO#	Course Outcomes (COs)														
CO1															
CO2															
CO3															
CO4															
CO5															
CO6															

Part - A
(5 x 1 = 5 Marks)
Instructions: Answer any 5

Q. No.	Question	Marks	BL	CO	PO	PI Code
1	The negative sign in the formula of amplification factor in a transistor indicates _____ a. that I_E flows into transistor while I_C flows out it b. that I_C flows into transistor while I_B flows out it c. that I_B flows into transistor while I_C flows out it d. that I_C flows into transistor while I_B flows out it	1	1	1	1	
2	In CE configuration, if the I_C is 0.1mA, find the value of I_B when β is 50. a. 0.01 mA b. 0.25 mA c. 0.03 mA d. 0.02 mA	1	3	1	2	
3	_____ transistor amplifier configuration used for impedance matching. a. CE b. CB c. CC d. Cascode	1	1	1	1	
4	The line drawn between _____ and _____ is called Q point. a. Saturation point and Cutoff point b. Saturation and Active c. Cutoff and Active d. Saturation and Saturation	1	2	1	1	
5	For AC analysis of (i) / (ii) the _____ capacitances acts as open Circuit a. Coupling b. Bypass c. Stray d. Emitter	1	3	1	2	

Part - B
(3 x 10 = 30 Marks)
Instructions: Answer any TWO

6.	For the circuit given below with transistor parameters β =180 and $r_0 = \infty$, a. Determine the Q point values. b. Find the small signal parameters and voltage gain including the source resistance (R_s). 	4 6	3 2	1 1	3 3	
7.a	Draw the Darlington amplifier and derive the expression for the current gain and input resistance.	5	2	1	3	
7.b	Determine the value of input resistance for the given circuit. 	5	3	1	3	
8.a	Why common collector configuration is otherwise called as Emitter Follower?	2	2	1	2	

8 b.	Derive the output resistance for a common collector configuration with necessary diagram	8	2	1	3	

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions

Evaluation Sheet

Name of the Student:
Register No.:

		Part- A ALL FIVE (5x 1= 5 Marks)		
Q. No	CO	Marks Allotted	Marks Obtained	Total
1	1	1		
2	1	1		
3	1	1		
4	1	1		
5	1	1		
Part- B Any TWO (2 x 10= 20 Marks)				
6	1	10		
7.a	1	5		
7.b	1	5		
8.a	1	2		
8.b	1	8		

Consolidated Marks:

CO	Max. Marks Allotted	Marks Scored
CO1	25	
Total	25	

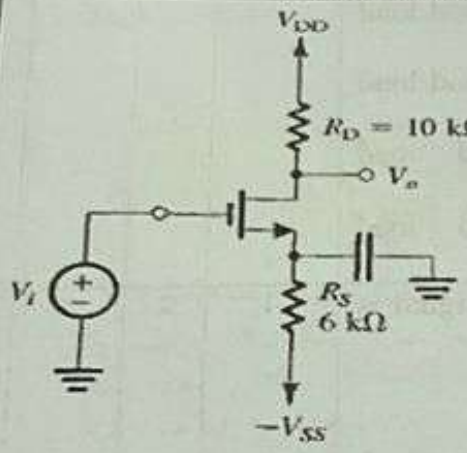
Approved by the Course Coordinator

Test: CLAT- II
Course Code & Title: 18ECC201J – Analog Electronic Circuits
Year & Sem: II / IV

Date: 24-05-2022
Duration: 2 Periods
Max. Marks: 50

Course Articulation Matrix:

	18ECC201J - Analog Electronic Circuits	Program Outcomes (POs)														
		Graduate Attributes												PSO		
COs	Course Outcomes (COs)	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO-1	Analyse bipolar amplifier circuits and their frequency response	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-2	Develop MOSFET amplifier circuits and their frequency response	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-3	Compile various negative feedback amplifier and oscillator circuits	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-4	Demonstrate the different classes of power amplifiers according to their performance characteristics	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-5	Construct the basic circuit building blocks that are used in the design of IC amplifiers, namely current mirrors and sources	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-6	Organize analog electronic circuits using discrete components to measure various analog circuits' performance	-	-	3	-	-	-	-	-	2	-	-	-	-	3	-

Q. No	Part-A (10*1=10 Marks)	Marks	BL	CO	PO
1	 The amplifier in the figure shown is biased to operate at I_D = 1mA and g_m = 1mA/V. Find the midband gain. a. 0.43 V/V b. 1.43 V/V c. 2.43 V/V d. 3.43 V/V	1	2	2	2
2	Thermal runaway is not possible in FET because as the temperature increases a. mobility decreases b. transconductance increases c. drain current increases d. mobility increases	1	1	2	1

3	Choose the voltage gain of Common Source (CS) amplifier. a. $g_m r_d$ b. $g_m r_s$ c. $-g_m R_D / (1+g_m R_s)$ d. $-g_m R_s / (1+g_m r_D)$	1	2	2	2
4	Which MOSFET amplifier circuit has low input impedance? a. Common Substrate b. Common Drain c. Common Gate d. Common Source	1	1	2	2
5	The midband gain of an amplifier can be calculated by assuming a. Coupling capacitor short circuit and load capacitor open circuit b. Coupling capacitor open circuit and load capacitor short circuit c. Both Coupling capacitor and load capacitor short circuit d. Both Coupling capacitor and load capacitor open circuit	1	2	2	1
6	A signal which is amplified to produce output signal is called _____ a. Feedback signal b. Error Signal c. Periodic signal d. Analog Signal	1	2	3	2
7	When the desensitivity factor increases, the stability of the amplifier _____ a. decreases. b. increases. c. fixed. d. gradually increases and falls.	1	2	3	1
8	_____ is reduced in the negative feedback amplifier a. Distortion b. Noise Sensitivity	1	2	3	1