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)

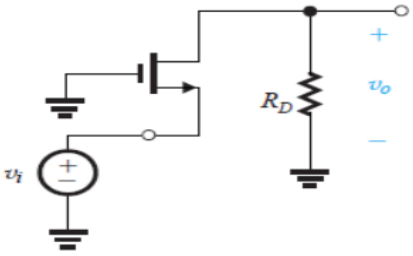
Mode of Exam
OFFLINE
SET B

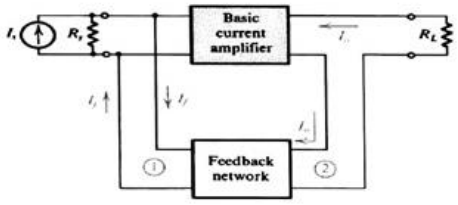
Test: CLAT- 2 | **Date: 24-05-2022**
Course Code & Title: 18ECC201J – Analog Electronic Circuits | **Duration:** 2 periods
Year & Sem: II / IV | **Max. Marks:** 50

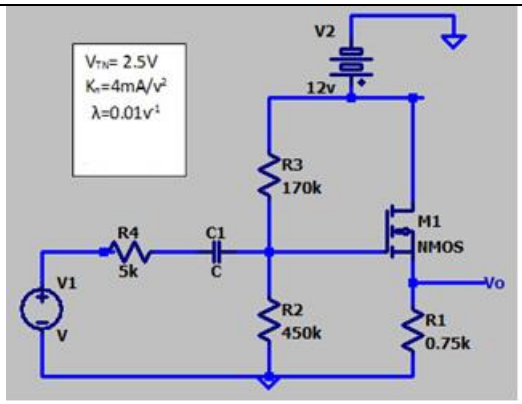
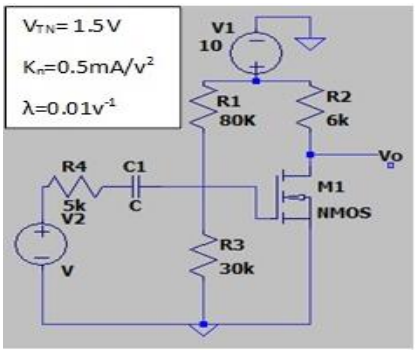
Course Articulation Matrix :

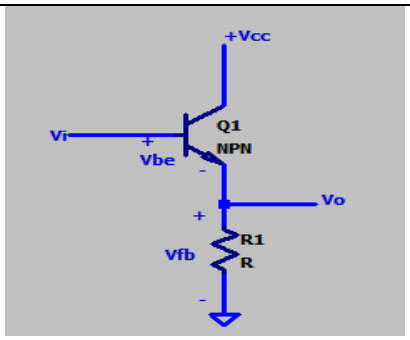
	18ECC201J - Analog Electronic Circuits	Program Outcomes (POs)													
		Graduate Attributes											PSO		
COs	Course Outcomes (COs)	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO-1 :	Analyze bipolar amplifier circuits and their frequency response.	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-
CO-2 :	Develop MOSFET amplifier 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	1	-

Part - A
(10 x 1 = 10 Marks)
Instructions: Answer ANY 5 Questions

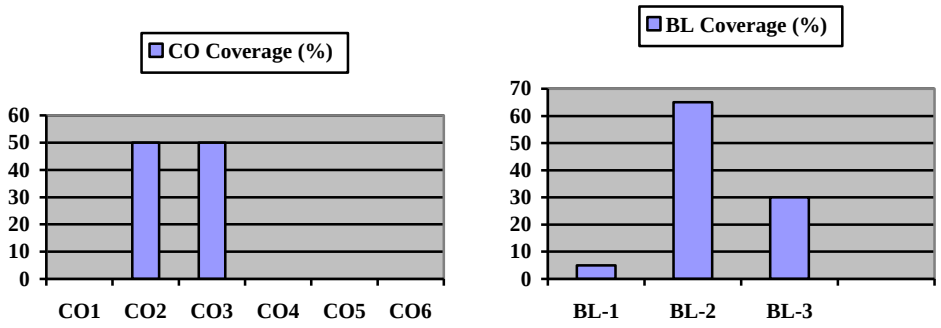
Q. No	Question	Marks	BL	CO	PO
1.	When a gate to source voltage of common source amplifier is at positive peak, drain to source voltage will be a. at positive peak b. at negative peak c. infinite d. zero	1	1	CO2	1
2.	What is the reason for connecting a capacitor in parallel with R_s? a. It blocks the noise b. For ac signal it acts a short circuit resulting in grounding source terminal c. It blocks the noise & for ac signal it acts a short circuit resulting in grounding source terminal d. To increase impedance	1	2	CO2	1
3.	The MOSFET in the following circuit is in_____ configuration.  a. common source b. common gate c. common drain d. common substrate	1	2	CO2	1
4.	The lower and upper cut off frequency of MOSFET amplifier is 35KHz and 45MHz respectively. The calculated Bandwidth is _____. a. 10MHz	1	2	CO2	2

	b. 80MHz c. 45MHz d. 5MHz				
5.	The _____ region produces the maximum voltage gain in a single-stage FET amplifier. a. low-frequency b. high-frequency c. mid-frequency d. corner frequency	**1**	**2**	**CO2**	**1**
6.	Name the feedback topology given below.  a. Series-Series b. Shunt-Series c. Shunt-Shunt d. Series-Shunt	**1**	**2**	**CO3**	**2**
7.	_____ connection increases both input and output impedance. a. Series-Series b. Shunt-Series c. Shunt-Shunt d. Series-Shunt	**1**	**2**	**CO3**	**1**
8.	The trans-resistance amplifier uses _____ feedback a. Series-Series b. Shunt-Series c. Shunt-Shunt d. Series-Shunt	**1**	**2**	**CO3**	**1**
9.	The phase shift network will produce a phase shift of 180 degrees at a. three different frequencies b. one frequency c. two different frequencies d. infinitely many frequencies	**1**	**2**	**CO3**	**1**
10	In clapp oscillator voltage is divided by using _____. a. resistors b. capacitors c. inductors d. voltage dividing circuits are not used	**1**	**2**	**CO3**	**1**
Part – B (4 x 10 = 40 Marks)					
SECTION B1 Instructions: Answer ANY 2 Questions					
11	Calculate the small signal voltage gain of the source follower circuit shown in Fig A.	**10**	**3**	**CO2**	**2**

	 **Fig A**				
12	Draw the circuit of the n-channel common source amplifier and derive the expression for the input resistance , output resistance and voltage gain.	**10**	**3**	**CO2**	**2**
13	a. Explain the impact of output coupling capacitor in frequency response of an amplifier with necessary diagram. b. Determine the input and output resistance of CS amplifier shown below. 	**5** **5**	**2** **3**	**CO2** **CO2**	**2** **3**
SECTION B2 **Instructions: Answer ANY 2 Questions**					
14	a. Draw the current series feedback topology and derive the expression for the transfer gain, input resistance , output resistance with feedback. b. Explain the Barkhausen Criterion for an oscillator.	**8** **2**	**3** **2**	**CO3** **CO3**	**2** **2**
15	a. For a given circuit, identify the type of feedback topology and derive the expression for the transfer gain, input resistance and output resistance with feedback.	**8**	**3**	**CO3**	**3**

	 b. Compare Colpitts and Hartley oscillator.	**2**	**2**	**CO3**	**1**
16	a. A tank circuit contains an inductance of 1mH.Compute the range of tuning capacitor value if the resonant frequency ranges from 540Khz – 1650 KHz.	**4**	**3**	**CO3**	**3**
	b. Explain the working of Wein bridge oscillator with neat diagram, write the expression for frequency of oscillation and the condition for oscillation.	**6**	**2**	**CO3**	**2**

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



Approved by the Course Coordinator **Signature of the Question paper setter**

Evaluation Sheet

Name of the Student: **Register No.:**

Part- A (10 x 1= 10 Marks)					
Q. No	**CO**	**PO**	**Maximum Marks**	**Marks Obtained**	**Total**
1	**CO4**	**1**	**1**		
2	**CO4**	**1**	**1**		
3	**CO4**	**1**	**1**		
4	**CO4**	**2**	**1**		
5	**CO4**	**1**	**1**		
6	**CO5**	**2**	**1**		
7	**CO5**	**1**	**1**		
8	**CO5**	**1**	**1**		
9	**CO5**	**1**	**1**		
10	**CO5**	**1**	**1**		
Part- B (4 x 10= 40 Marks)					
11	**CO4**	**3**	**10**		
12	**CO4**	**2**	**10**		
13.a	**CO4**	**2**	**5**		
13.b	**CO4**	**3**	**5**		
14.a	**CO5**	**2**	**8**		
14.b	**CO5**	**2**	**2**		
15.a	**CO5**	**3**	**8**		
15.b	**CO5**	**1**	**2**		
16.a	**CO5**	**3**	**4**		
16.b	**CO5**	**2**	**6**		

Consolidated Marks:

CO	Maximum Marks	Marks Obtained
2		
3		
Total		

PO	Maximum Marks	Marks Obtained
1		
2		
3		
Total		

Signature of Course Teacher

Signature of the Course Coordinator **Signature of the Academic Advisor**