

Reg. No.

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B.E / B.TECH. DEGREE EXAMINATION, MAY 2023

Fourth Semester

EC18403 - ANALOG INTEGRATED CIRCUITS AND ITS APPLICATIONS

(Electronics and Communication Engineering)

(Regulation 2018A)

TIME: 3 HOURS

MAX. MARKS: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Infer the DC and AC characteristics of operational amplifiers and its effect on output and their compensation techniques.	3
CO 2	Elucidate and design the linear and non-linear applications of an Opamp and special application Ics	4
CO 3	Classify and comprehend the working principle of data converters.	3
CO 4	Illustrate the function of application specific ICs such as Analog multiplier,PLL and its application in communication.	3
CO 5	Explain the working of multivibrators using IC 555,the special function ICs such as Voltage regulators	3

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

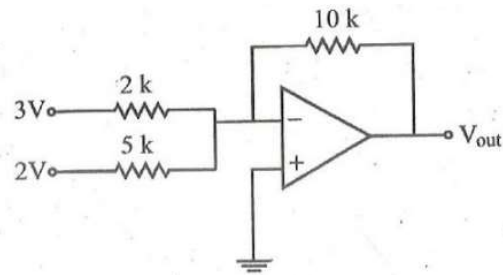
	CO	RBT LEVEL
1. State the significance of current mirror circuit.	1	2
2. How does ideal characteristics of opamp create Virtual ground concept?	1	3
3. How can you implement a zero crossing detector using Opamp?	2	3
4. What are the disadvantages of Ideal differentiator using Opamp?	2	2
5. What is the largest value of output voltage from an 8bit DAC that produces 1V for a digital input of 01100110?	3	3
6. In binary ladder network of DAC, if the value of smaller resistance is 10KΩ, what is the value of other resistance?	3	3
7. Build a square rooter of a signal using Multiplier IC.	4	3
8. List the basic building blocks of PLL.	4	2
9. Categorize the types of multivibrator.	5	3
10. Give the significance of Optocoupler.	5	2

PART- B (5 x 14 = 70 Marks)

	Marks	CO	RBT LEVEL
11. (a) List and illustrate basic building blocks of Opamp.	(14)	1	3
(OR)			
(b) Explain Ideal and Non-ideal DC characteristics of Opamp.	(14)	1	3
12. (a) Examine the operation of Schmitt trigger and Precision full wave rectifier using Opamp with its nonlinear property.	(14)	2	4

(OR)

- (b) (i) Examine the operation of Opamp base Logarithmic amplifier and deduce the expression of V_o . (10) 2 4
 (ii) Find V_o for the given circuit. (4) 2 4



13. (a) Demonstrate the working of R-2R Ladder type DAC with neat circuit diagram. (14) 3 3

(OR)

- (b) Draw and develop the circuit diagram of Dual slope Analog to Digital Converter and explain its operation. (14) 3 3

14. (a) Examine PLL characteristics & Derive Lock-in range and Capture range. (14) 4 4

- (b) (i) Show that PLL can be used as Frequency Synthesizer. (4) 4 4
 (ii) Build the Gilbert Multiplier cell and explain its operation. (10) 4 4

15. (a) (i) Construct and demonstrate the operation of Astable Multivibrator using 555 Timer using neat circuit diagram (10) 5 3
 (ii) Determine the frequency of oscillation of Astable Multivibrator if $R_A=2K\Omega, R_B=6K\Omega$ and $C=0.1\mu F$. (4) 5 3

(OR)

- (b) Summarize the working principle of IC 723 general purpose regulator. (14) 5 3

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

16. Compute V_o for the given circuit. (10) 2 3

