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Reg. No.

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III Semester B.Sc. Degree Examination, March/April - 2021

ELECTRONICS P3

Linear Integrated Circuits & 'C' Programming

(CBCS) (F+R)

Paper : III (EL-301T)



Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Answer **all** questions from Part - A, any **five** questions from Part - B and any **four** questions from Part - C.

Answer all questions of part A in any one page, the same question answered multiple times will not be considered for evaluation.

PART - A

1. Answer All the sub divisions : (15×1=15)
- i. Integrated circuits are generally made of _____
 - a) Silicon
 - b) Germanium
 - c) Copper
 - d) None of these
 - ii. Which specification of an OPAMP indicates how fast the output voltage can change with respect to change in input
 - a) Open loop Voltage gain
 - b) Slew rate
 - c) Bandwidth
 - d) Input Offset voltage
 - iii. A certain non - inverting amplifier has $R_i = 1k\Omega$ and $R_f = 100k\Omega$. The closed - loop voltage gain is :
 - a) 100,000
 - b) 1000
 - c) 101
 - d) 100
 - iv. The feedback path in on OPAMP differentiator consists of :
 - a) Resistor
 - b) Capacitor
 - c) Series resistor and capacitor
 - d) Parallel resistor and capacitor

[P.T.O.]



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xii. Which of the following operator is not a relational operator in C?

- | | |
|-------|-------|
| a) == | b) <= |
| c) /= | d) != |

xiii. Maximum number of elements in the array declaration `int[4][6]` is :

- | | |
|-------|-------|
| a) 16 | b) 36 |
| c) 24 | d) 12 |

xiv. The keyword used to transfer control from a function back to the calling function is :

- | | |
|------------|-----------|
| a) switch | b) goto |
| c) go back | d) return |

xv. Which operator connects the structure name to its member name?

- | | |
|--------------------------|------------------------|
| a) logical operator (&&) | b) dot operator (.) |
| c) pointer operator (&) | d) Arrow operator (->) |

PART - B

Answer any five questions.

(5×7=35)

2.
 - a) Mention two advantages and disadvantages of ICs.
 - b) Draw the relevant diagrams and explain the steps involved in the fabrication of a transistor in monolithic IC. (2+5)
3.
 - a) Mention ideal characteristics of an Op-Amp.
 - b) With the circuit, obtain an expression for the output voltage of an Op-Amp integrator. (3+4)
4.
 - a) Draw circuit of a comparator using Op-Amp.
 - b) With a circuit diagram, explain the working of a First - order high pass filter. Write the expression for voltage gain and cut-off frequency. (2+5)
5. With the circuit diagram, explain the working of Astable Multivibrator using IC 555. Write the expression for the frequency of oscillation. Draw the output waveform. (7)
6.
 - a) Explain the different primary data types used in C language.
 - b) Differentiate postfix and prefix increment operators in C. (5+2)

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(7)

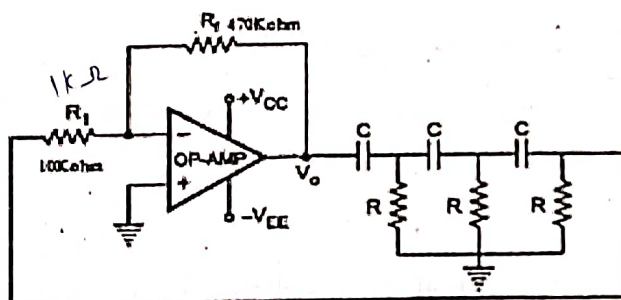
7. Explain the following string functions in C with an example. (7)
- | | |
|---------------|---------------|
| a) strcmp () | b) strcpy () |
| c) strcat () | d) strlen () |
8. Mention the different Looping statements in C. Explain any two types, each with an example. (7)
9. a) What is structure in C? Illustrate with an example, the syntax for declaration and initialisation of structure.
- b) A union has a member variables of data type int and float. What will be the total size of the union variable. Justify. (5+2)

PART - C

Answer any **Four** questions.

(4×5=20)

10. Design and draw an inverting adder using an Op-Amp to satisfy the output expression $V_{out} = -(V_1 + 2V_2 + 4V_3)$. Assume $R_f = 10k\Omega$.
11. For the given circuit configuration, calculate the output frequency. Given $R = 1k\Omega$, $C = 0.1\mu F$, $R_1 = 10k\Omega$, $R_f = 470k\Omega$. Name the circuit.



12. Design an adjustable voltage regulator using LM317 to achieve output voltage, $V_o = 5V$ to $10V$. Assume $R_1 = 240\Omega$, $V_{ref} = 1.25V$. Draw the circuit.
13. Write a C program to generate the Fibonacci series upto a given limit.
14. Write a C program to find the GCD of given two integer numbers.
15. Write a C program to find minimum and maximum of N elements.

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