



SN – 392

III Semester B.Sc. Examination, Nov./Dec. 2017  
(Semester Scheme) (CBCS) (2015-16 and Onwards)  
(F+R)  
**ELECTRONICS – III**  
**Linear Integrated Circuits and C – Programming**

Time : 3 Hours

Max. Marks : 70

**Instructions :** Answer **all** questions from Part – A, **any five** questions from Part – B and **any four** questions from Part – C.

**Note :** Answer **all** questions of Part – A in **any one** page, the **same** question answered multiple times will **not** be considered for evaluation.

PART – A

Answer **all** the subdivisions.

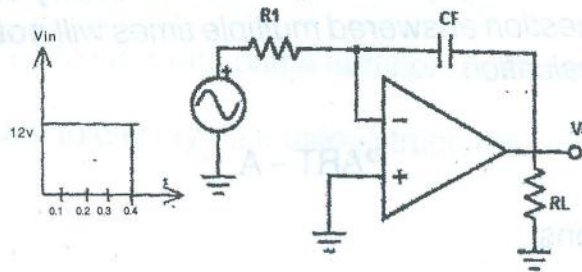
(15x1=15)

1. i) Limitations of Integrated Circuits are
  - a) Limited power rating
  - b) Cannot integrate high value capacitors
  - c) High temperature coefficient
  - d) All the above.
- ii) The ideal value of Slew Rate in an op-amp is
  - a) 0
  - b)  $\infty$
  - c) 90 V/ $\mu$ s
  - d) Very high value
- iii) What happens due to mismatch between two terminals of an op-amp ?
  - a) Input offset voltage
  - b) Output offset voltage
  - c) Both a) and b)
  - d) None of the above.
- iv) Common mode voltage gain of an ideal op-amp is
  - a)  $> 1$
  - b)  $= 1$
  - c)  $< 1$
  - d)  $= 0$ .
- v) A band pass filter has
  - a) Two stop bands and one pass band
  - b) One stop band and two stop bands
  - c) One stop band and one pass band
  - d) Only pass band

P.T.O.



- vi) The feedback path in an op-amp differentiator consists of
- Resistor
  - Capacitor
  - Series resistor and capacitor
  - Parallel resistor and capacitor
- vii) The purpose of a comparator is to
- Amplify input voltage
  - Detect the occurrence of changing input voltage
  - Compare two input voltages
  - Maintain a constant output when the DC input voltage changes
- viii) What will be the output waveform for the circuit when the input is a square wave? Assume that the op-amp is initially nulled.



- Triangular wave
  - Unit step wave
  - Ramp wave
  - Square wave
- ix) The range of values of an unsigned integer variable is
- 32767 to +32768
  - 0 - 65535
  - 0 - 65536
  - 1 - 65536
- x) Type casting is a method of \_\_\_\_\_ type conversion.
- Explicit
  - Implicit
  - Operator precedence
  - Format specifier
- xi) Let  $a = 1$ ,  $c = 5$  then the expression  $b = (a++) + (--c)$  evaluates as
- $b = 6$
  - $b = 5$
  - $b = 7$
  - 4
- xii) Which of the following is not a decision making statement?
- While
  - If-else
  - Switch-case
  - Nested if-else
- xiii) The `exit()` function terminates the execution of
- Program
  - Loop
  - Current statement
  - Stack



- xiv) A structure in C language means
  - a) Predefined data type
  - b) Function
  - c) User-defined data type
  - d) None of the above
- xv) A structure contains
  - a) Arrays of individual members
  - b) Individual structures as its elements
  - c) Structure variables
  - d) Structure members

**PART - B**

Answer **any five** questions : **(5×7=35)**

- 2. a) Classify ICs based on scale of integration.
- b) Explain the significance of CMRR and Slew rate in an op-amp. **(3+4)**
- 3. a) Derive the expression for voltage gain of a non-inverting amplifier with a circuit diagram.
- b) Mention the different op-amp ICs. **(5+2)**
- 4. With a circuit diagram, explain the working of Wien Bridge Oscillator. Write the expression for frequency of Oscillations. **7**
- 5. a) Draw the circuit diagram of a small signal half wave rectifier.
- b) Explain the working of an Astable Multivibrator with a circuit diagram. Draw relevant waveforms. **(2+5)**
- 6. What are library functions in C ? Explain any three string functions with illustrations. **7**
- 7. a) Explain the break statement with an example.
- b) Explain the working of for loop with an example. **(3+4)**
- 8. a) Distinguish between while and do-while statements with an example.
- b) Write down the syntax to access array elements. **(5+2)**
- 9. Explain how to initialize structure variables with an example. What is a major difference between the structure and union declaration ? **7**



## PART - C

Answer any four questions :

(4×5=20)

10. Design an inverting adder circuit using op-amp to satisfy the equation.  
 $V_0 = -(6 V_1 + 2 V_2 + 12 V_3)$ . Given  $R_F = 240 \text{ K}\Omega$ . 5
11. Design a high pass filter, with cut-off frequency of 10 KHz with a pass band gain of 4. Given  $R_F = 10 \text{ K}\Omega$  and  $C = 0.1 \mu\text{F}$ . 5
12. Draw an astable multivibrator, with  $R_1 = 1 \text{ K}\Omega$ ,  $R_2 = 100 \text{ K}\Omega$  and  $C = 0.01 \mu\text{F}$ . Calculate the  $T_{on}$ ,  $T_{off}$  and Frequency of Oscillations. 5
13. Write a C program to find the GCD of two numbers. 5
14. Write a C program to generate prime numbers upto an integer N. 5
15. Write a C program to display date using structures. 5