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SIIS 191 B-14
B.Sc. IIIrd Semester Degree Examination
Electronics
(Electronic Circuits)
Paper : 3.3

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates :

1. Section A : Answer all questions
2. Section B : Answer any FIVE questions
3. Section C : Answer any FOUR questions

SECTION - A

I Choose the correct answer

(5×1=5)

- i) In an differentiator circuit the RC product should be
 - a) $RC > T$
 - b) $RC < T$
 - c) $RC = T$
 - d) None of these
- ii) In an amplifier the -ve feed back increases the
 - a) Gain
 - b) Band width
 - c) Distortion
 - d) all above
- iii) Hartley oscillator tank circuit consists.
 - a) Inductive F.B
 - b) Capacitive F.B
 - c) Resistive F.B
 - d) None of these
- iv) OP - amplifier differentiator converts ramp voltage in to.
 - a) Sine voltage
 - b) Cosine voltage
 - c) D.C voltage
 - d) None of these
- v) In band pass filter.
 - a) f_L is equal to f_H
 - b) f_L is greater than f_H
 - c) f_H is less than f_L
 - d) None of these

2. Fill in the blanks (5×1=5)

- i) The o/p of an integrator is triangular wave when the i/p is _____ wave
- ii) In an amplifier the negative feed back improves the _____ of the gain .
- iii) In non-inverting op-amplifier , If $R_f = R_i$ then the gain is _____
- iv) In phase shift oscillator using op-amp the RC network provides the total phase shift of _____
- v) A bistable multivibrator has _____ stable states .

3. State whether the following statements are True or False (5×1=5)

- i) Clamper circuit removes a portion of the i/p signal.
- ii) The typical i/p offset current for the op-amp 741 is 20nA .
- iii) The potential at the virtual ground is zero .
- iv) Schmitt trigger converts sine wave to square wave .
- v) Ic 555 timer consists of three comparators .

SECTION - B

Answer any FIVE of the following

- 4. Derive an expression for RC- differentiator. (5×5=25)
- 5. With neat diagram explain the operation of colpitt's oscillator.
- 6. Give the ideal characteristics of an operational amplifier.
- 7. With neat diagram derive an expression for inverting op-amplifier.
- 8. With circuit diagram explain the operation of Schmitt trigger using op-amplifier .
- 9. Find the frequency of astable multivibrator using 555 timer,
If $R_A = R_B = 10K\Omega$ & $C = 0.1\mu f$
- 10. In brief explain LM-317 positive voltage regulator.

SECTION - C

Answer any four of the following (10×4=40)

- 11. With neat diagram explain the operation of +ve & -ve clippers and draw the wave forms(10)
- 12. a) Derive an expression for voltage gain of -ve feedback amplifier. (5+5)
- b) Draw the circuit and explain the operation of phase shift oscillator using transistor.

13. What is differential amplifier ? Explain Emitter coupled differential amplifier **10**
14. a) With circuit diagram show that op-amplifier as a difference amplifier
b) Explain the operational amplifier as an integrator **(5+5)**
15. a) Explain the operation of comparator using op-amplifier.
b) Explain the operation of first order low pass filter. **(5+5)**
16. a) Draw the DIP structure of IC - 555, and name the different pins
b) Draw the frequency response curves for different types of filters . **(5+5)**
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