

Roll No. \_\_\_\_\_

[Total No. of Pages : 3

**"SIIS 208 B-2K12**  
**B.Sc. IIIrd Semester Degree Examination**  
**Electronics**  
**Electronic Circuits**  
**Paper - 3.3**

Time : 3 Hours

Maximum Marks : 80

***Instructions to Candidates.***

- 1) Answer **all** questions in Section-A
- 2) Answer any **five** question from Section -B
- 3) Answer any **four** question from Section - C

**Section - A**

1. Choose the correct answer.

**(1×5=5)**

- i) A triangular waveform can be generated by
  - a) Differentiating a square waveform
  - b) Integrating a square waveform
  - c) Differentiating a sinusoidal waveform
  - d) Integrating a sinusoidal waveform.
- ii) A colpitts oscillator uses
  - a) Tapped Coil
  - b) Inductive feedback
  - c) Tapped capacitance
  - d) No tuned LC circuit
- iii) Since input resistance of an ideal Op-Amp is infinite
  - a) Its output resistance is zero
  - b) Its output becomes independent of load resistance
  - c) Its input current is zero
  - d) It becomes a current controlled device
- iv) The feedback path in an Op-Amp integrator consists of
  - a) A resistor
  - b) A capacitor

- c) A resistor and a capacitor in series
- d) A resistor and a capacitor in parallel.
- v) Active filters are constructed by use of
  - a) Resistance and capacitance
  - b) Resistors and inductors
  - c) Resistors, capacitors and Op-Amps.
  - d) Inductors and capacitors

2. Fill in the blanks. (1×5=5)

- i) Negative feedback occurs when feedback voltage and input voltage are out ..... with each other
- ii) An Op-Amp is a ..... IC.
- iii) Differential amplifier, amplifies ..... signals.
- iv) Schmitt trigger generates ..... waves.
- v) A Bistable multi vibrator has two absolutely ..... states.

3. State whether the following statements are true or false. (1×5=5)

- i) Clipping subtracts where as clamping adds voltage to a ac signal.
- ii) Wien bridge oscillator produces an exceedingly good sine wave output
- iii) The gain of an practical Op-Amp is around 10.
- iv) Op-Amp differentiator converts ramp voltage into DC voltage.
- v) LM 317 is a negative voltage regulator.

### Section - B

Answer any five of the following : (5×5=25)

- 4. With neat circuit diagram explain the working of positive clipper.
- 5. What is oscillator? Explain Barkhausen criteria for oscillators.
- 6. What is an Op-Amp? What are the characteristics of an ideal Op-Amp.
- 7. With neat circuit diagram. Explain the working of summing (adder) amplifier.
- 8. In a negative feedback amplifier  $A=100$ ,  $B=0.04$  and  $V_i = 50$  mV. Find
  - i) Gain with feedback
  - ii) Output voltage
  - iii) Feedback factor
  - iv) Feedback voltage.
- 9. With neat circuit diagram, explain the working of phase shift oscillator using Op-Amp.
- 10. Explain the working of Schmitt trigger using IC 555 timer.

**Section - C**

Answer any **four** of the following :

**(4×10=40)**

11. What is integrator? Show that the output from RC integrating circuit is integral of its input. Sketch the input and output wave forms of following i/ps.
  - a) Square wave
  - b) Rectangular wave.
12. What is multivibrator? Explain the construction and working of Astable multivibrator using transistor.
13. Define the Op-Amp parameters.
  - i) Input bias current
  - ii) Input offset current
  - iii) Input offset voltage
  - iv) Input and O/P resistance
  - v) CMRR
14. Derive an expression for closed loop voltage gain of an inverting operational amplifier.
15. What is an active filter? Derive an expression for cut-off frequency and pass band gain of high pass filter.
16. Draw the functional block diagram of IC 555 timer and explain it.