

Roll No. _____

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SIIS 193 B - 15
B.Sc. IIIrd Semester Degree Examination
Electronics
(Electronic Circuits)
Paper - 3.3

Time :3 Hours

Maximum Marks : 80

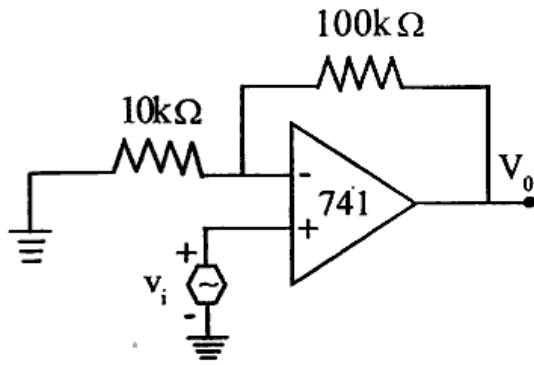
Instructions to candidates :

1. Answer **all** questions from section -A
2. Answer any **five** questions from section - B
3. Answer any **four** questions from section - C

Section - A

1. Choose the correct answer (1×5=5)
 - i) The positive clipper is that which removes the ----- half - cycles of the input voltage
 - a) Negative
 - b) Positive
 - c) Both positive and negative
 - d) None of the above.
 - ii) If BARKHAUSEN criterion is not fulfilled by an oscillator circuit , it will
 - a) Stop oscillating
 - b) Produce damped waves continuously
 - c) Become an amplifier
 - d) Produce high frequency whistles.

iii) Calculate the input voltage for this circuit if $V_o = 11\text{ V}$



- a) 1
- b) 10
- c) 100
- d) 1000

iv) Active filters are constructed by use of :

- a) Resistance and capacitance
- b) Resistors and inductors
- c) Resistor , capacitor and Op - Amps .
- d) Inductors and capacitors.

v) LM 317 is a

- a) Fixed positive voltage regulator
- b) Fixed negative voltage regulator
- c) Adjustable -ve voltage regulator
- d) Adjustable +ve voltage regulator

2. Fill in the blanks .

(1×5=5)

- i) If dc supply of 10 V is fed to a differentiating circuit then output will be _____
- ii) Astable multivibrator has _____ state stable .
- iii) The slew rate of $\mu\text{A} 741$ Op - Amp is _____

- iv) Basically , a scalar changer is a _____
- v) In IC 555 , pin 4 represents _____

3. State true or false . (1×5=5)

- i) A clamping circuits adds AC components to the signal .
- ii) Positive feedback increases amplifier gain .
- iii) The unit of slew rate is volts/ms.
- iv) An all - pass filter is a combination of low pass and highpass filter.
- v) An IC 555 timer has 8 pins.

Section - B

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

- 4. Derive an expression for RC integrator
- 5. Derive an expression for gain of negative voltage feed back amplifier.
- 6. With neat circuit diagram explain Op - Amp used as voltage to current converter.
- 7. Derive an expression for voltage gain of non - inverting Op - amp.
- 8. Design a High - pass filter at a cut off frequency of 1 kHz and pass band gain of 2.
- 9. Draw the DIP structure of IC 555, and name the different pins .
- 10. Explain in brief negative voltage regulator .

Section - C

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

- 11. a) Explain in brief linear and non - linear waveshaping. (4)
- b) With neat diagram , explain the operation of + ve and - ve clampers and draw the waveforms . (6)
- 12. a) What is multivibrator ? (2)
- b) Explain the construction and working of Bistable multivibrator using transistor. (8)
- 13. a) Draw the schematic symbol of OP - amp and mention its ideal characteristics. (6)

- b) Explain the following (4)
- i) CMRR
 - ii) Slew rate
14. a) With neat circuit diagram, derive an expression for closed loop voltage gain of differential amplifier. (6)
- b) Mention the advantages of negative feedback. (4)
15. a) Point out the importance of active filters over passive filters. (5)
- b) Briefly explain switching regulators. (5)
16. a) Explain working of schmitt trigger using IC 555 (5)
- b) Draw the diagram of A stable multivibrator using IC 555 . Explain its operation . (5)
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