

EXTC - IV
LIC

2315118

Q. P. Code: 21793

[Total Marks: 80]

(3 Hours)

- (1) Question No. 1 is compulsory.
- (2) Solve any three questions from the remaining five.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary and mention the same in answer sheet.

Attempt any 4 questions:

- (a) How precision rectifiers are different than simple diode rectifiers? [05]
- (b) Compare ideal op-amp with practical op-amp. [05]
- (c) Find v_N , v_P , and v_O in the circuit of Fig. 1(c) if v_S is 9 V. [05]

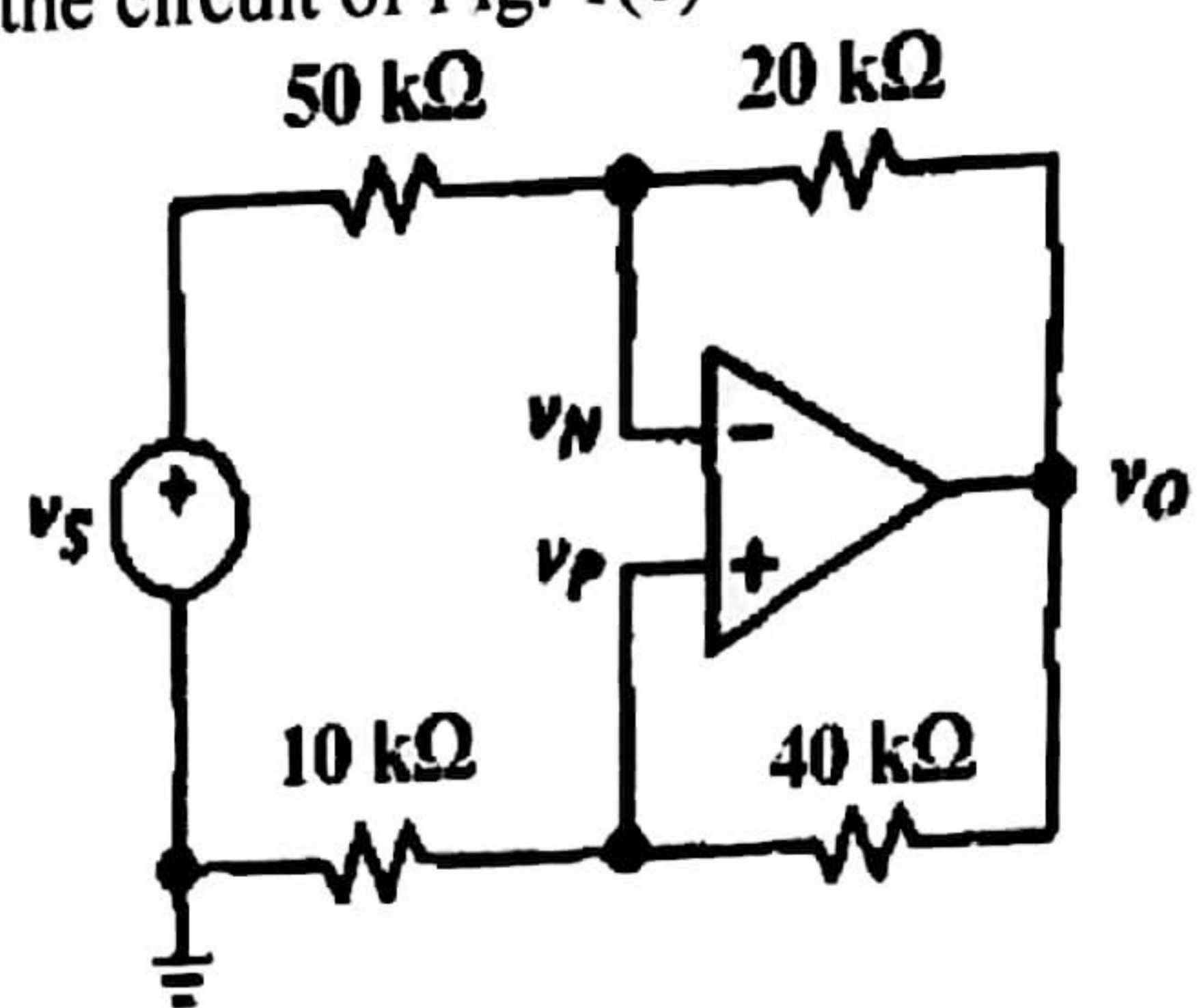


Fig. 1(c)

- (d) Design a circuit for $V_O = 2V_1 - 3V_2$ using single op-amp and few resistors. [05]
- (e) Explain how a resistor can be simulated by a switch capacitor circuit. [05]
- (a) Design a voltage regulator using IC 723 to give $V_o = 4$ V to 32 V and output current of 2 A. [10]
- (b) Explain R-2R ladder type digital to analog convertor. [10]
- (a) Explain analog to digital conversion using successive approximation method. [10]
- (b) Draw a neat circuit diagram of a RC phase shift oscillator using op-amp. Derive its frequency of oscillation. What are the values of R and C for frequency of oscillation to be 1 kHz? [10]
- (a) What is an instrumentation amplifier? Draw a neat circuit of an instrumentation amplifier using 3 op-amps. Derive its output voltage equation. [10]
- (b) With the help of a neat diagram and voltage transfer characteristics explain the working of an inverting Schmitt trigger. Derive the expressions for its threshold levels. [10]
- (a) Draw the circuit diagram of a square and triangular waveform generator using op-amp and explain its working with the help of waveforms. [10]

- (b) Analyze the circuit given in Fig. 5(b). Draw the waveforms at output v_o and across the capacitor C . Comment on the duty cycle of output wave. Take diode D as an ideal diode and assume R_A is equal to R_B .

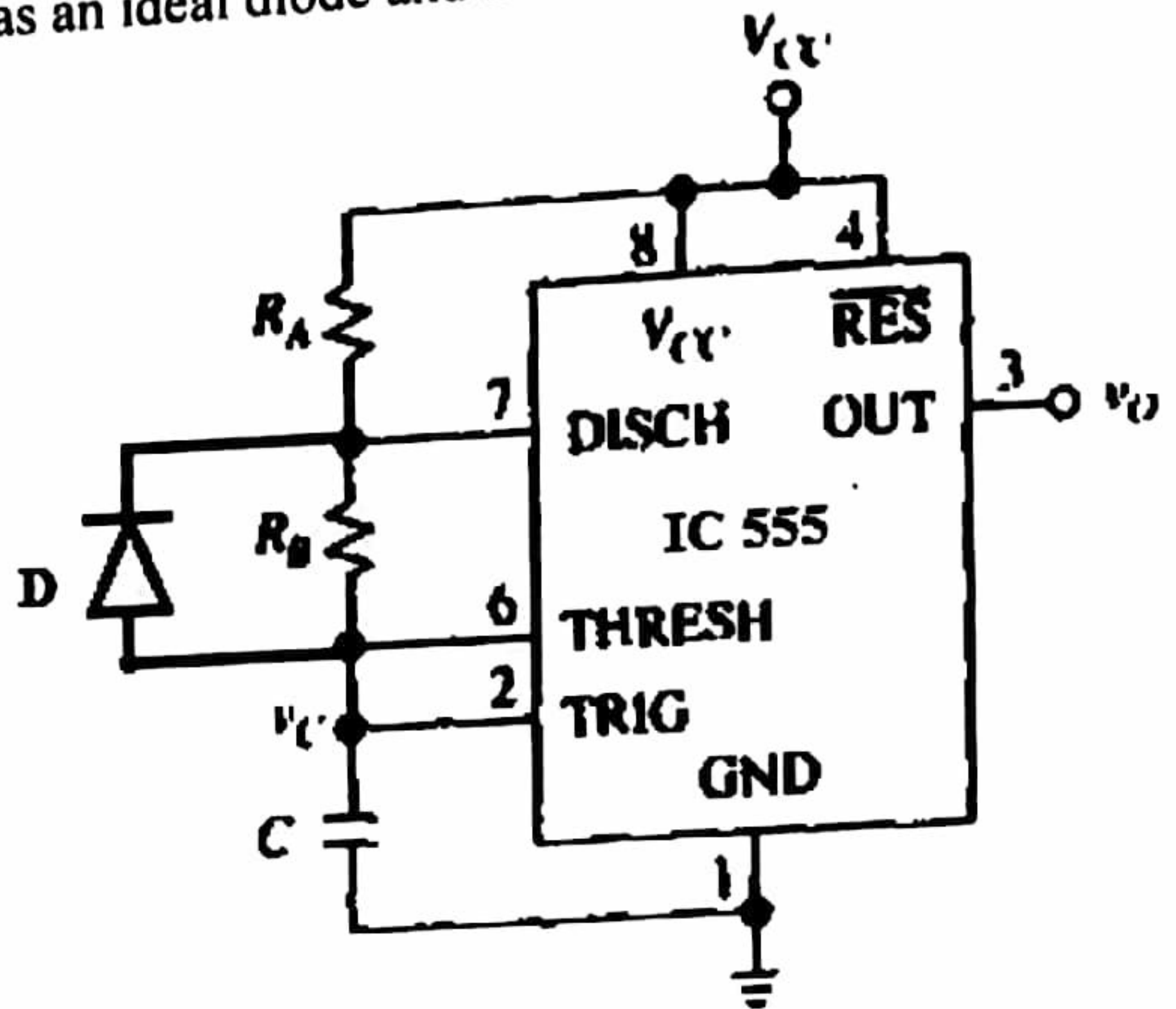


Fig. 5(b)

Q.6

Short notes on: (Attempt any four)

- Sample and hold circuit.
- Three terminal fixed voltage regulator.
- Monolithic switching regulator.
- XR2206 waveform generator.
- Wilson current source.
