Total No. of Questions—8] [Total No. of Printed Pages—3

Seat No.	

[5352]-536

S.E. (Elect./E&TC) (II Sem.) EXAMINATION, 2018

INTEGRATED CIRCUITS

(2015 PATTERN)

Time : Two Hours Maximum Marks : 50

N.B. :— (*i*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Your answers will be valued as a whole.

(*v*) Assume suitable data, if necessary.

1. (*a*) Explain the following op-amp parameters : [6]

(*i*) Input offset voltage

(*ii*) CMRR

(*iii*) Slew Rate.

(*b*) Design a practical integrator for to operate at f_b = 4 kHz and gain is equal to 2. [6]

Or

2. (*a*) Draw equivalent circuit of op-amp with its ideal transfer curve. [6]

P.T.O.

(*b*) Draw the circuit diagram of practical differentiator and write equation for output voltage (V_o). [6]

3. (*a*) Draw circuit diagram and its input and output waveform for peak detector. [6]

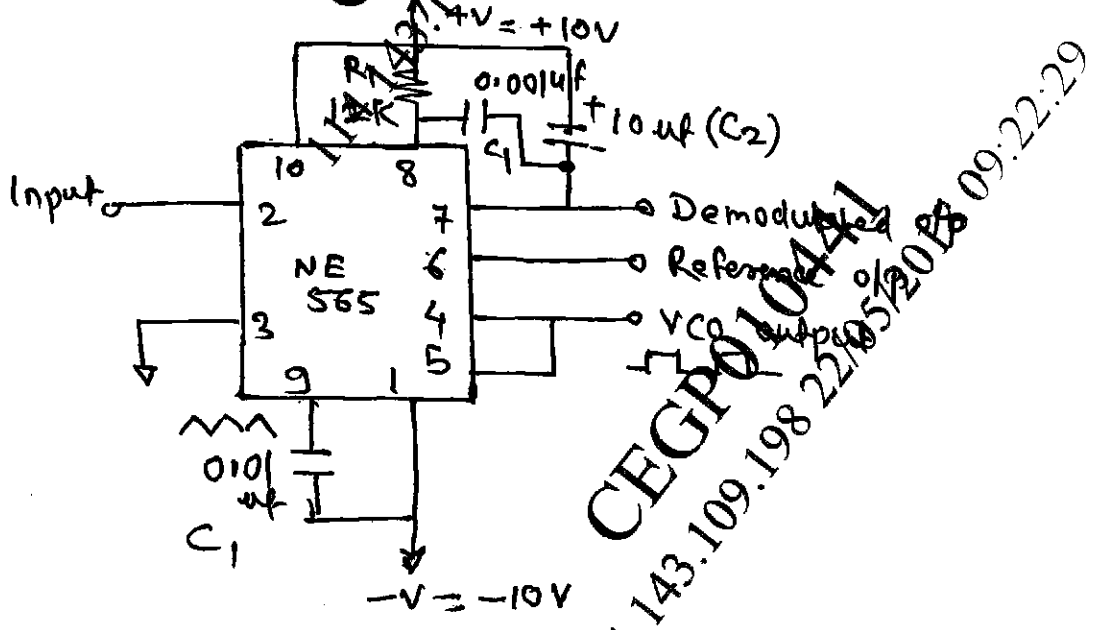
(*b*) Draw circuit diagram for R-2R ladder DAC and write its output equation. [6]

Or

4. (*a*) Write short note on characteristic of comparator. [6]

(*b*) Draw circuit diagram of Binary weighted DAC and write its output equation. [6]

5. (*a*) Calculate free running frequency F_{out}, the lock range F_t and the capture range F_c for the given circuit. [7]



(*b*) Explain the working principle of oscillator with the help of its block diagram. [6]

Or

6. (*a*) Draw circuit diagram of frequency multiplier using PLL and explain its operation. [7]

(*b*) Draw circuit diagram of phase shift oscillator and explain its operation. [6]

7. (*a*) Design a first order low pass filter with high cut-off frequency of 1 kHz and pass band gain is 3. Draw the circuit diagram with its component values. [7]

(*b*) Draw circuit diagram of second order high pass filter. [6]

Or

8. (*a*) Design a first order high pass filter with low cut-off frequency of 6 kHz with pass band gain is 2. Draw the circuit diagram with its component values. [7]

(*b*) Draw circuit diagram of second order low pass filter. [6]