

Seat No.	
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[5352]-536

S.E. (Elect. E&amp;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.

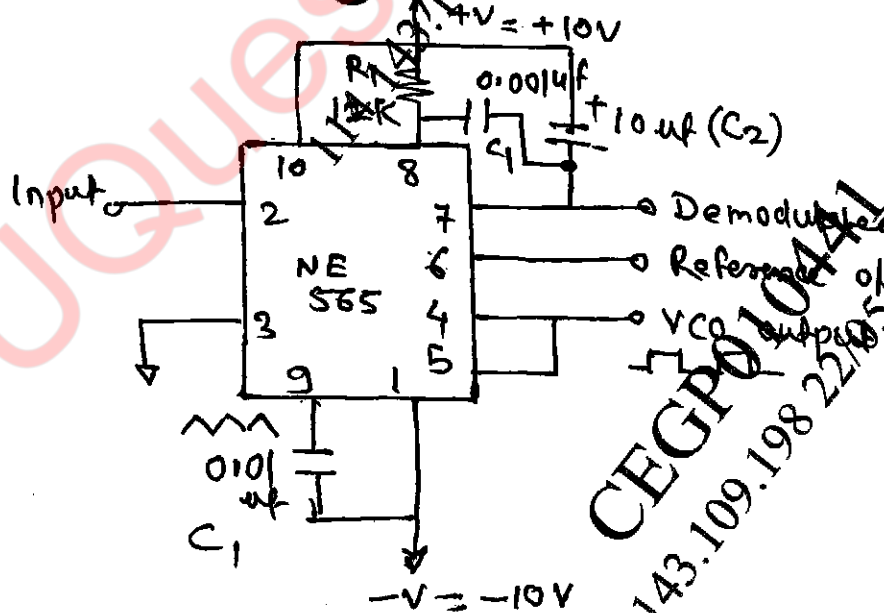
(b) Design a practical integrator for to operate at  $f_0 = 4$  kHz  
and gain is equal to 2. [6]

Or

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

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- (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]
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]