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[5668]-138

S.E. (E&TC/Electronics) (Sem. II) EXAMINATION, 2019

INTEGRATED CIRCUITS

(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :- (i) Answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6 and Q. 7 or Q. 8.

(ii) Figures to the right indicate full marks.

1. (a) Explain following op-amp parameters and give its ideal value : [6]
(i) Input offset voltage
(ii) Input bias current
(iii) Gain bandwidth product.

(b) Draw neat circuit diagram and explain voltage follower. [6]

Or

2. (a) Draw circuit diagram of current mirror circuit and explain in detail. [6]

(b) Draw circuit diagram of practical differentiator and its frequency response. Explain it over ideal differentiator. [6]

3. (a) Explain in detail with neat circuit diagram sample and hold circuit, also draw its input and output waveform. [7]

(b) Draw circuit diagram and explain D/A converter with binary weighted resistors and give output voltage equation $V_0 = ?$ [6]

P.T.O.

Or

4. (a) Explain in detail working of square wave generator with neat circuit diagram. Draw waveform of output voltage and capacitor voltage. Give equation of output frequency f_o . [7]
- (b) Draw and explain successive approximation A/D converter. [6]
5. (a) For PLL IC 565 give expression of free running frequency, lock range and capture range. [6]
- (b) Draw and explain Wein bridge oscillator. Also give frequency of oscillator $f_o = ?$ [6]

Or

6. (a) Draw block diagram and explain any one application of IC PLL 565 in detail. [6]
- (b) Draw and explain quadrature oscillator. Also give frequency of oscillation $f_o = ?$ [6]
7. (a) Draw circuit diagram of 2nd order HPF and explain in detail. [6]
- (b) Draw circuit diagram of 1st order wide band stop filter with its frequency response. [7]

Or

8. (a) Design 1st order LPF with $F_H = 1$ kHz having passband gain = 2, assume $C = 0.1 \mu\text{f}$. [6]
- (b) Draw neat circuit diagram of 1st order LPF with its frequency response. [7]