B.Tech Sem – IV(2007 Course) (Electronics) : WINTER - 2018

SUBJECT: LINEAR INTEGRATED CIRCUITS

Day : Friday
Date : 16/11/2018

W-2018-2761

Time : 02.30 PM TO 05.30 PM
Max. Marks: 80

N. B. :

1) **Q. No.1** and **Q. No. 5** are **COMPULSORY**. Out of remaining attempt **Any TWO** questions from each section.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in the **SEPARATE** answer book.
4) Neat diagrams must be drawn **WHEREVER** necessary.

SECTION-I

Q.1 **a)** Discuss the working of Widlar current source with neat circuit diagram. **(05)**

b) Draw the neat circuit diagram of an instrumentation amplifier using three OPAMP. **(04)**

c) Discuss the operation of peak detector using OPAMP. **(05)**

Q.2 **a)** Define the term input offset voltage and how it will be nullify using internal and external compensation techniques for an OPAMP. **(07)**

b) Define following parameters of an OPAMP. Also state their ideal values. **(06)**
i) Input offset voltage ii) Bias current iii) Open loop gain

Q.3 **a)** Draw circuit diagram of basic integrator. Derive its output equation and draw the output waveforms for sine and square wave input. **(07)**

b) Draw the circuit diagram of peaking amplifier and discuss its operation in detail. **(06)**

Q.4 **a)** Discuss schmitt trigger circuit with different UTP and LTP levels and derive an expression for V_{LT}, V_{UT} and hysteresis. **(07)**

b) Compare schmitt trigger and comparator. **(06)**

SECTION-II

Q.5 **a)** Draw a neat circuit diagram of a voltage divider circuit using multiplier IC and discuss its operation. **(05)**

b) Define following terms for PLL: **(04)**
i) Capture range ii) Lock range

c) State and explain any one application of V to I converter. **(05)**

Q.6 **a)** With neat circuit diagram, discuss the working of an astable multivibrator using an OPAMP and derive the expression for its frequency. **(07)**

b) Draw pin diagram for IC 8038 and state the function of each pin in detail. **(06)**

Q.7 **a)** Discuss frequency synthesizer using PLL with circuit diagram. **(06)**

b) Draw functional block diagram of IC 555 and state its applications. **(07)**

Q.8 **a)** Explain with neat circuit diagram of V to I converter for floating load. **(07)**

b) Describe I to V converter application in photodiode detector. **(06)**

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