Exam.Code:0976
Sub. Code: 7430

2072

M. Tech. (Microelectronics)

Second Semester

MIC-203: Analog and Mixed Signal Device Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.*

x-x-x

1. a) Write a short note on successive approximation multiplier with block diagram. (5x2)
   b) Explain about CMOS sample and Hold circuit.
   c) Define the resolution, settling time and conversion time of D/A converters
   d) Briefly explain about the current sinks.
   e) What are the performance limitations of converters?

Section-A

2. a) Derive the voltage gain and output impedance of source follower. (5)
   b) Calculate the voltage gain of the circuit shown Fig 1. Where the current source (I_o)is ideal. (5)

3. a) Explain the working and derive the output impedance of a Wilson MOS current Mirror. (5)
   b) Draw the circuit for regulated cascade current mirror and explain it's working (5)

4. Draw the small signal analysis of the following active current mirror circuit fig 2. Also find the Thevenin equivalent circuit. (10)

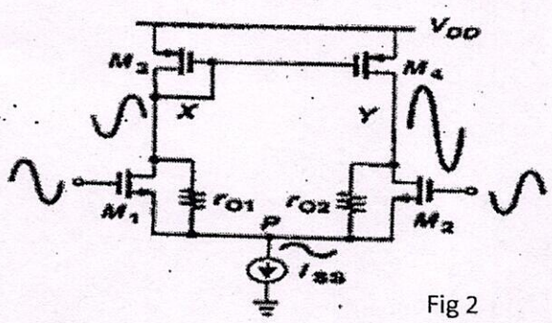

Fig 2

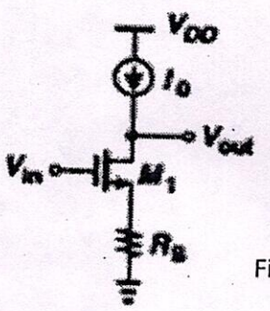

Fig 1

Section-B

5. a) Explain the Successive approximation A/D with block diagram. (5)
   b) Demonstrate how single and dual ADCs function by explaining their architecture and illustrating result performance. (5)

6. Explain in detail design parameters of op-amp with specifications. Also describe the compensation of op-amp. (10)

7. a). Derive the output impedance of differential amplifier with MOS current source load.(7)
   b). Write a short note on common mode response and its significance. (3)

x-x-x