

**B.Tech. Electronics and Communication
Engineering (BTECVI)****Term-End Examination****December, 2012****BIEL-012 : ANALOG AND MIXED MODE VLSI
DESIGN***Time : 3 hours**Maximum Marks : 70*

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- Note :** (i) Attempt *any seven* questions.
(ii) Assume suitable missing data, if any.
(iii) Use of scientific calculator is permitted.
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1. Discuss the following DAC specifications : **10**
(a) Resolution (b) DNL
(c) INL (d) Dynamic Range
Find the value of 1LSB and V_{FS} for a 4 bit and
8 bit DAC with $V_{REF}=5V$.

2. Explain charge scaling DAC and discuss related **10**
mismatch errors.

3. With a neat block diagram of two step flash ADC **10**
explain its working.

4. What is the need of compensation in opamp **10**
design? Discuss any scheme.

5. Why is the decimation filter used in data converters? Describe decimation and averaging circuit operation. 10
6. Explain the purpose of each stage of comparator with neat schematic. 10
7. Explain in detail : Floor-planning; power supply and grounding issues in mixed signal layouts. 10
8. With a neat process flow diagram, explain submicron CMOS technology and bring out the differences as compared to CMOS technology. 10
9. Explain how MOSFET behaves as capacitor. Also discuss floating MOS capacitor. 10
10. Write short on *any two* of the following. 2x5=10
- (a) Clock feedthrough and charge injection.
 - (b) Delay and adder element
 - (c) Sample and hold characteristics
 - (d) Interpolating filters.
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