b) How can an Input frequency be multiplied by π ? 8

5. a) With the help of a circuit diagram explain the operation of a static MOS memory cell. 12

b) How can the stored information be maintained even when the power is switched off ? 8

6. a) Explain the operation of a D/A converter using buffered weighted resistors. 12

b) Explain the operation of Bipolan switches used for DAC. 8

7. a) Explain the operation of a 3 bit ramp type ADC. 12

b) What are its relative merits and demerits ? 4

c) How can the demerit of the above be resolved ? 4

8. Write notes of on any *four* of the followings : 5×4

a) RTL'S

b) Tristate gates

c) ECL gates

d) CMOS'S gates

e) E PROM'S

f) DAC for a 3 bit signed number in 1's complement representation.

g) Parallel ADC

h) Sample/Hold circuits.

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INTER COMP. Sc. & ENGG. EXAMINATION, 2008

(2nd Semester, Old Syllabus)

DIGITAL CIRCUITS

Time : Three hours Full Marks : 100

Answer any ***five*** questions.

1. a) With the help of a circuit diagram explain the operation of an Integrated version of DTL gate. 12

b) Why does it perform better than the discrete version ? 4

c) What are its disadvantages ? 4

2. a) How can the disadvantages of the DTL gates a resolved in TTL gates ? 8

b) Explain the operation of a TTL gate. 12

3. a) Explain the operation of an MOS inverter. 10

b) How can NAND and NOR operations be performed by MOS devices ? 6

c) Realize $X = \overline{A \cdot B + (C + D)E}$ using a single MOS gate. 4

4. a) With the help of a black diagram explain the of operation of a PLL. 12