# Question Paper: TOTAL

Total Marks: 100

Time: 3 Hours

Instructions:

1. Attempt all questions

2. Read each question carefully before answering

**1.** Write about different measures to control automobile pollution. *[10 Marks]*

**2.** Define Nyquistâ€™s theorem and Shannonâ€™s theorem. *[10 Marks]*

**3.** Explain in detail the different methods of separating base flow from a hydrograph. *[10 Marks]*

**4.** For a buck converter with given parameters, determine its duty cycle, inductor current, and capacitor voltage ripple. *[10 Marks]*

**5.** Explain the importance of Forward Error Correction (FEC) in data communication. *[10 Marks]*

**6.** Explain the advantages of canal lining and describe Kennedyâ€™s silt theory. *[10 Marks]*

**7.** Draw the VLSI design flow diagram and explain. *[10 Marks]*

**8.**   
A certain crop is grown in an area of 3000 hectares, fed by a canal system. The field capacity of soil is 26%, optimum moisture is 12%, permanent wilting point is 10%, effective depth of the root zone is 80 cm, and the relative density of soil is 1.4. If the frequency of irrigation is 10 days and the overall efficiency is 23%, calculate:   
  
(i) The daily consumptive use   
  
(ii) The required water discharge in mÂ³/sec in the canal   
  
 *[10 Marks]*