

[Time: 3 Hours]

[Marks:80]

Q.P.Code: 25661

- Instructions:** 1) Question No. 1 is compulsory.
 2) Answer **any three** from **remaining five**.
 3) Assume data where ever needed.

- 1 **Answer any four**
- a) State and prove Demorgans theorem. 5
- b) Explain in brief CMRR, slew rate. 5
- c) Convert following 5
- (i) 101101 to gray code
- (ii) $(CD8.4)_{16}$ to octal
- d) Convert SR to JK flip flop. 5
- e) Explain in brief types of registers. 5
- 2 a) Explain 555 timer working as astable multivibrator. 10
- b) Explain first order low pass filter. Design a low pass filter at a cut off frequency of 1kHz with a pass band gain of 2. Also plot the frequency response curve. Assume $C=0.01\mu F$. 10
- 3 a) Design a mod-5 synchronous counter using JK flip flop without lockout. 10
- b) Minimize the expression using K map and implement using NAND gates only. 10
- $$F = \Sigma(0,5,9,12,13,14,15) + d(1,2,3,4)$$
- 4 a) Explain successive approximation type ADC. 10
- b) Explain TTL logic families. 10
- 5 a) Implement following expression using (i) 8:1 Mux (ii) 4:1 Mux 10
- $$F(A,B,C) = \Sigma(0,2,5,6,7)$$
- b) Explain ideal and practical differentiator. 10
- 6 a) Design and implement 3bit gray to binary code converter. 10
- b) Explain Schmitt trigger with necessary waveforms. 10