S.Y. M.Sc. (Physics) Fourth Semester Old

MSC24105 - Paper-VII - Applied Electronics-II

P. Pages : 2 **GUG/W/18/2422**

Time : Three Hours * 1 8 9 3 * Max. Marks : 80

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1. Either

a) Explain pulse-code modulation. **4**

b) Explain quantization error. **4**

c) Discuss different type of noise. **8**

OR

e) Derive an expression for the transmitted signal in a QASK system. Give its geometrical representation of 16 signal. **8**

f) Derive an expression $\left(\frac{S_o}{N_o}\right)_{PSK,FSK} = 48dB$ for PCM. **8**

2. Either

a) Derive an expression $p_e = \text{erfc}\sqrt{\frac{d^2}{4\eta}}$ for QPSK. **8**

b) i) Find error probability, if there is 10% mistiming in bit synchronization while sampling and ii) Find error probability if local oscillator has a phase shift of $\pi/6$ radian with i/p signal iii) Find error probability when (i) & (ii) accrue. **8**

OR

e) Discuss design features of a communication Network. **10**

f) Explain TYMNET and ARPANET communication network. **6**

3. Either

a) Discuss internal microprocessor architecture of 8086. **10**

b) Explain Real and protected mode of memory addressing. **6**

OR

e) Discuss arithmetic and logic instructions. **10**

f) Explain minimum mode versus maximum mode. **6**

4. Either

a) Explain Hardware interrupt. **8**

b) Explain 8259 A Programmable Interrupt Controller (PIC). **8**

OR

e) Explain internal structure of 8254 Programmer Interval Timer (PIT) with diagram. **8**

f) Discuss basic DMA operation. **8**

5. Attempt all the questions.

a) Discuss comparison of BFSK and BPSK. **4**

b) Find error probability for coherent FSK when frequencies used are orthogonal Given, $E_s = 0.5 \times 10^{-8}$ $\eta / 2 = 10^{-9} W / Hz$. **4**

c) Explain instruction set. **4**

d) Explain the working of shared bus operation. **4**

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