

**B. TECH. SEM - III (COMPUTER ENGG.) 2014 COURSE) (CBCS) :**  
**WINTER - 2017**

**SUBJECT : FUNDAMENTALS OF DATA COMMUNICATION**

Day : **Friday** Time : **10.00 AM TO 01.00 PM**  
Date : **12/01/2018** **W-2017-2027** Max. Marks : 60

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**N.B.:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Draw neat and labeled diagrams **WHEREVER** necessary.
  - 4) Assume suitable data if necessary.
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- Q.1** a) Define the following terms: **i) Bit interval ii) Baud rate iii) Bit rate.** [05]  
b) What is the function of start and stop bits in asynchronous transmission? [05]

**OR**

- a) Calculate the maximum bit rate of channel having bandwidth 1600 Hz if: [05]  
**i) S/N ratio is 0db ii) S/N ratio is 20 db**  
b) State the advantages, disadvantages and application of parallel transmission. [05]

- Q.2** a) Explain natural PAM sampling and flat topped PAM sampling. [05]  
b) Write a short note on: TDM and FDM. [05]

**OR**

- a) Explain sampling theorem and its importance in data communication. [05]  
Comment on the aperture effect in relation to flat top sampling.  
b) Find the Nyquist rate and Nyquist interval for the signal. [05]  
 $X(t) = 5\cos 1000\pi t \cos 4000\pi t$ .

- Q.3** a) Explain the following terms with reference to information theory: [05]  
**i) Entropy ii) Information rate iii) Channel capacity.**  
b) Write a short note on : CRC block codes. [05]

**OR**

- a) Generate the CRC code for the data word: 1100 10101 the divisor is 10101. [05]  
b) Write a short note on : stop and wait ARQ system. [05]

- Q.4** a) Describe in detail about  $x.25$ . [05]  
b) Compare circuit switching and packet switching. [05]

**OR**

- a) With neat sketch describe ISO-OSI reference model. [05]  
b) Write a short note on : PSTN. [05]

- Q.5** a) State and explain advantages, disadvantages and applications of optical fibers. [05]  
b) Describe various losses in optical fibers. [05]

**OR**

- a) Write a short note on: Infrared transmission. [05]  
b) With neat sketch explain the basic optical fiber transmission system. [05]

- Q.6** a) With neat diagram describe cell structure in cellular system. [05]  
b) Write a short note on : Frequency reuse. [05]

**OR**

- a) State the FCC standards for cellular communication. [05]  
b) Write a short note on : DSS/SS. [05]

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