DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER IV [IT]
SUBJECT: (IT407) COMPUTER AND COMMUNICATION NETWORKS

Examination	**: First Sessional**	**Seat No.**	**: _____**
Date	**: 12/01/2018**	**Day**	**: Friday**
Time	**: 10:00 to 11:15**	**Max. Marks**	**: 36**

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.

(a) You have total 15 frames to transmit using stop and wait algorithm and every 4th data frame is lost on the link. Assuming no ACK frame lost. How many frames you need to transmit in total? **[2]**

(b) Explain the types of network based on distance. **[2]**

(c) Differentiate connection oriented and connection less services. **[2]**

(d) Given the output after byte-stuffing: FLAG A B ESC ESC C ESC ESC ESC FLAG ESC FLAG D FLAG. What is the original data? **[1]**

(e) What is the difference between bit rate and baud rate? Explain with suitable example. **[2]**

(f) What is multiplexing and de-multiplexing? Why do we need it? **[2]**

(g) Choose the best matching between Group 1 and Group 2. **[1]**

Group-1	Group-2
P. Data link	1. Ensures reliable transport of data over a physical point-to-point link
Q. Network layer	2. Encoder/decodes data for physical transmission
R. Transport layer	3. Allows end-to-end communication between two processes
	4. Routes data from one network node to the next

Q.2 Attempt ***Any Two*** from the following questions. **[12]**

(a) Given 1101011011 data frame and generator polynomial $G(x) = x^4 + x + 1$. Derive the frame to be transmitted. Also show the validation done by receiver. **[6]**

(b) What is the purpose of Sequence number and Acknowledgement number in stop-n-wait ARQ protocol for data transmission using noisy channel. **[6]**

(c) An 8-bit byte with binary value 10101001 is to be encoded using an even-parity Hamming code. What is the binary value after encoding? If fourth data bit is in error after send, how can we detect and correct that error. **[6]**

Q.3 (a) Compare TCP/IP with OSI Model. **[8]**

(b) If the data blocks are: 01010011 11010010 10111101 00011101 01101001 10111110. How will you send data to control error using checksum? **[4]**

OR

Q.3 (a) A sender needs to transmit an email of size 2.5 Kb on a channel having b/w of 1 Gbps. The distance between the sender and receiver is 1000 Km and speed of signal is 2.4×10^8 m/s. Calculate the time required to receive the email (assume zero processing time). Also find the % of channel capacity used (Bandwidth utilization) in transmission. **[4]**

(b) Write note on guided Transmission media in detail. **[8]**