01237

Printed Pages – 4 **MCA – 301**

(Following Paper ID and Roll No. to be filled in your Answer Book)	
PAPER ID : 1429	**Roll No.**

MCA

THIRD SEMESTER EXAMINATION, 2005-2006

COMPUTER NETWORKS

Time : 3 Hours *Total Marks : 100*

Note : *(i) Answer **ALL** questions.*

(ii) All questions carry equal marks.

(iii) In case of numerical problems assume data wherever not provided.

(iv) Be precise in your answer.

1. Attempt ***any two*** parts :

(a) Answer the following questions : **3+2+5**

(i) Explain the architecture and interface of ISDN.

(ii) Differentiate between N-ISDN and B-ISDN.

(iii) Compare TCP/IP reference model with OSI.

(b) Answer the following questions : **5+5**

(i) "Fiber can handle much higher bandwidth than copper wires and due to low attenuation repeaters are needed only about every 30 km on long lines and is not affected by power surge". Justify the statement.

(ii) What is electromagnetic spectrum ? Explain wireless transmission technology used in remote controls.

(c) Differentiate between the following : 5+5

(i) LAN, WAN and MAN

(ii) Space division switch and time division switch.

2. Attempt *any two* parts :

(a) Answer the following questions : 6+4

(i) How is Go Back N ARQ is different from Selective Repeat ARQ.

(ii) If the bit string 0111101111101111110 is bit stuffed. What is the O/P string ?

(b) Answer the following questions : 6+4

(i) Explain frame format for HDLC and FDDI.

(ii) What is the remainder obtained by dividing x^7+x^5+1 by the generator polynomial x^3+1 ?

(c) Answer the following questions : 6+4

(i) How are collision free protocols different from CSMA protocol ? What is Binary countdown ? Explain.

(ii) The code 11110101101 is received using Hamming encoding algorithm. What was the original code sent ?

3. Attempt *any two* parts : 10x2=20

(a) State optimality principle. Also explain count-to-∞ problem and justify the statement "It reacts rapidly to good news but leisurely to bad news". This problem occurs in what type of routing algorithm ?

(b) Compare virtual circuit and datagram subnet. State principles of congestion control and congestion prevention policies.

(c) Answer the following questions : 2+3+3+2

(i) How is IPV6 different from IP protocol ?

(ii) Convert IP address whose hexadecimal representation is C22F1582 to dotted decimal notation ?

(iii) A class B network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts per subnet ?

(iv) Explain the purpose of subnetting.

4. Attempt *any two* questions : 10x2=20

(a) Answer the following questions : 4+3+3

(i) Why does UDP exist ? When will UDP be used instead of TCP ?

(ii) How is TCP connection managed and transmission established ?

(iii) Would it not have been enough to just let user processes to send raw IP packets ? Give reason in support to your answer.

(b) What are two-army problem and a three way handshake ? State the elements of transport protocols.

(c) A TCP connection is using a window size of 1000B and the previous acknowledgement number was 22,001. It receives a segment with acknowledgement number 24,001. Draw a diagram to show the situation of the window after and before the acknowledgement is received. If the window size is changed to 11000B and 9000B separately then what will be the situation.

5. Attempt *any two* parts : 10x2=20

(a) Answer the following questions : 4+6

(i) Why do we need Domain name space when we can directly use an IP address ?

(ii) Using RSA algorithm, encrypt and decrypt the message 'BE' with key pairs (3, 15) and (5, 15).

(b) Answer the following questions : 4+6

(i) When would you use JPEG, MPEG and GIF image formats ? What is MP3 ?

(ii) Use the following encryption algorithms to encrypt message "GOOD DAY".

(I) Replace each character with its ASCII code.

(II) Add a '0' bit to the left to make each character 8 bits long.

(III) Swap the first 4 bits with the last 4 bits.

(IV) Replace every 4 bits with its hexadecimal equivalent. What is the key in this method ?

- o 0 o -