

GANPAT UNIVERSITY**B. Tech. Semester: VIII (Mechatronics) Engineering****Regular Examination May – June 2013****Mechatronics System Integration & Networking (MC804)****Time: 3 Hours****Total Marks: 70**

- Instruction:**
- 1 Start a new question from new page.
 - 2 Draw the figure with full indication.
 - 3 Answer to the two sections must be written in separate answer sheet.

Section - I

- Que. – 1 [12]
- (a) If a small firm needs to create network of seven computers. Select a suitable topology. How many cables are needed? How many ports are needed for each device? Draw the network? (05)
 - (b) Discuss bitwise AND operation and do $(130.100.40.100) \text{ AND } (255.128.100.0)$ (04)
 - (c) An address in a block is given as 180.30.8.45. Find the number of addresses in the block, the first address and the last address. (03)

OR

- Que. – 1 [12]
- (a) Draw hybrid topology with a ring back bone and five bus networks. What are the advantages of bus and ring network? (05)
 - (b) Discuss bitwise OR operation and do $(140.110.160.1) \text{ OR } (255.20.140.0)$ (04)
 - (c) In a block addresses, we know the IP address of one host is 170.40.75.16/26 what is the first address and last address in this block? (03)

- Que. – 2 [11]

A block of address starting with 190.100.0.0/16 (65536 addresses). Distributes these addresses to three group of customers as follows:

- First group has 64 customers; each need approximately 256 addresses
- Second group has 128 customers; each need approximately 128 address
- Third group has 128 customers; each need approximately 64 addresses

Design the sub block and find out how many addresses are still available after this allocation.

OR

- Que. – 2 [11]

- (a) A block of address starting with 120.60.4.10/20 (1048576 addresses). Distributes these blocks to 100 organizations with each organization receiving 16 addresses only. Design the sub blocks and give the slash notation for each sub blocks. Find out how many addresses are still available after this allocation. (08)
- (b) If the first address in a range is 122.15.17.0 and there are 1024 addresses in the range, what is the last address? (03)

- Que. – 3 Write following [12]

- (a) Discuss MAC sub layer and Auto negotiation for fast Ethernet (04)
- (b) Discuss Frame format. (04)
- (c) Briefly discuss Logical address. (04)

Section – II

Que. – 4

- (a) Explain Subnet Mask with example [12]
- (b) $(x^3 + x^2 + x + 1) \times (x^2 + 1)$ (06)
- (c) $(x^3 + x^2 + x + 1) - (x^4 + x^2 + x + 1)$ (03)

OR

Que. – 4

- (a) Discuss Super netting with suitable example [12]
- (b) $(x^5 + x^2 + 1) \times (x^3 + x^2 + 1)$ (06)
- (c) $(x^6 + x^3 + x + 1) - (x^4 + x^2 + x + 1)$ (03)

Que. – 5

- (a) What is hamming distance? Explain minimum hamming distance with suitable example. [11]
- (b) Discuss simple parity check code. (05)

OR

Que. – 5

- (a) Explain block coding [11]
- (b) Show the simulation of division in CRC encoder for 1001100 (06)

Que. – 6

Write Following:

- (a) We need a dataword of at least 16 bits. Find the values of k and n in Hamming code C(n,k) with $d_{min}=3$. [12]
- (b) Explain Huffman codes (04)
- (c) Basics of wireless LAN (04)

END OF PAPER