Computer Network.

ASSIGNMENT.

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Subject : Computer Network. (CS-311).

Q1) consider sending IP datagram of size 1420 bytes, has MTU 542 bytes, 2nd link has 360 bytes. find no. of frag.

=>

If we are sending IP 1420 bytes

Fragment for 1st Link (MTU) = 542 bytes

IP header is 20 bytes

MTU = 542 each frag = 542 - 20

522 bytes of data

frag 1 : 522 bytes of data + 20 header = 542

frag 2 : 522 of data 20 header = 542

frag 3 : remaining 356 byte data 20 byte header = 376 bytes

For MTU = 360 bytes

first frags need to be fragmented as size exceeds 360

∴ max data = 360 - 20 = 340

Frag 1 : 342 has 322 byte data

frag 3 = 356 bytes

Total receiver rec = 4 for first 2 and 2 for third

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final = 4 (from first 2 original) + 2 (from 3rd) = 6 frags

Q2 A datagram is carrying 1024 bytes If there is no OPT^n info, find value of header length field.

=> Given that datagram is of 1024 bytes carrying
IP header is 20 bytes
Header length, no. of 4 byte words in header, hence header len is words
Total length field is
:
size of entire datagram (header + data)

so header length field = 5 and total length = 1044 bytes

Q.3 Given an IP packet of size 1600 bytes with a 30-byte header and the MTU of 1400 bytes.

So The IP header is 30 bytes, so the data portion is 0BJ bytes.

Each fragment can have a max. size of 1400 bytes (MTU), but 30 bytes are used for the header, so the data in each fragment can be at most 0BJ bytes.

no. of fragments = 0BJ fragments

1. fragment 1:
   Data size = 1370 bytes
   Header size = 30 bytes
   Total size = 1370 + 30 = 1400 bytes

2. fragment 2:
   Data size = 1570 - 1370 = 200 bytes
   Total size = 200 + 30 = 230 bytes
   offset = 0BJ

More fragments (MF) flag = 0 (last frag)

Q.4 The ISP is granted a block of addresses starting with 120.60.4.0/22. The task is to distribute these addresses to 100 org., each receiving 8 addresses.

So A/22 block means 0BJ addresses

Each org. needs 8 addresses. for 8 add., we need a/29 block. The first block of addresses is 120.60.4.0/29. The second block is 120.60.4.8/29. and so on.

Each org. gets a/29 block, and there are 100 org.

The total block has 1024 addresses, and 800 addresses are used.