1. Suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with a maximum transmission unit of 200 bytes. Assume that the IP header is 20 bytes long. What are fragment offset values for divided packets?

A) 22, 44, 66, 88 B) 0, 22, 44

C) 0, 22, 44, 66 D) 22, 44, 66

2. In Ipv4, reassembly of the fragments is done at____?

A) Destination host only B) Intermediate routers only

C) Source host only D) Source and destination host

3. Host X sends a message to host Y, which has two intermediate networks in between them. A TCP message consisting of 2100 bytes is passed to IP for delivery across two hosts. The first network has an MTU of 1200 bytes, and the second network has an MTU of 400 bytes, excluding network overhead. Assume that the IP overhead per packet is 20 bytes. What is the fragmentation offset for the Last fragment that reaches the destination?

A) 250 B) 350 C) 450 D) 550

3. Consider the following statements about the functionality of an IP-based router. Which is/are True? [MSQ]

A) A router does not modify the IP packets during forwarding.

B) It is not necessary for a router to implement any routing protocol.

C) A router should reassemble IP fragments if the MTU of the outgoing link is larger than the size of the incoming IP packet.

D) Fragmentation is done at intermediate routers.

4. An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IP packet of size 4404 bytes with an IP header of length 20 bytes. The values of the relevant fields in the header of the third IP fragment generated by the router for this packet are

A) MF bit: 0, Datagram Length: 1444; Offset: 370

B) MF bit: 1, Datagram Length: 1424; Offset: 185

C) MF bit: 1, Datagram Length: 1500; Offset: 370

D) MF bit: 0, Datagram Length: 1424; Offset: 2960

5. The intermediate routers between the source and destination need the following information in the IP header_____?[MSQ]

A) Version B) Protocol

C) Identification Number D) Source IP Address

6. An IP datagram of size 1000 bytes arrives at a router. The router has to forward this packet on a link whose MTU (maximum transmission unit) is 100 bytes. Assume that the size of the IP header is 20 bytes. The number of fragments that the IP datagram will be divided into for transmission is _____.

A) 13

B) 14

C) 15

D) 16

7: Which of the following fields in the IPv4 datagram is unrelated to fragmentation?

A) Flags B) Offset C) TOS D) Identifier

8. The TTL field has a value of 10. How many routers (max) can process this datagram?

A) 10 B) 11 C) 12 D) 13

9. What should be the flag value to indicate the last fragment?

A) 0 B) 1 C) -1 D) 2

10. Which field helps to check the rearrangement of the fragments?

A) Offset B) TTL C) Identifier D) Flag

11. Consider two hosts, P and Q, connected through a router R. The maximum transfer unit (MTU) value of the link between P and R is 1500 bytes, and between R and Q is 820 bytes. A TCP segment of size 1400 bytes was transferred from P to Q through R, with an IP identification value of 0×1234. Assume that the IP header size is 20 bytes. Further, the packet can be fragmented, i.e., the Don't Fragment (DF) flag in the IP header is not set by P. Which of the following statements is/are correct? [MSQ]

A) TCP destination port can be determined by analysing only the second fragment.

B) If the second fragment is lost, P must resend the whole TCP segment.

C) Two fragments are created at R, and the IP datagram size of the second fragment is 620 bytes.

D) If the second fragment is lost, R will resend the fragment with the IP identification value 0×1234.

12. Fragmentation and Reassembly happen at ____ layer?

A) Network Layer B) Transport Layer

C) Data link Layer D) Presentation Layer

13. In an IPv4 datagram, the M bit is 0, the value of HLEN is 10, the total length is 400, and the fragment offset value is 300. The position of the datagram and the sequence numbers of the first and the last bytes of the payload, respectively, are_____?

A) Last fragment, 2400 and 2789

B) First fragment, 2400 and 2759

C) Last fragment, 2400 and 2759

D) Middle fragment, 300 and 689

14. Which of the following statements is/are TRUE fragmentation?[MSQ]

A) By using the identification number, we can determine which fragment belongs to which packet

B) By using the offset, we can determine the sequence of the fragments of that particular packet

C) By using the identification number, we can determine the sequence of the fragments of that particular packet

D) By using the offset, we can determine which fragment belongs to which packet

15. If a datagram of size 4000 bytes from the transport layer arrives at the network layer, it has to be forwarded through a link with a maximum capacity of 800 bytes. Then, calculate the number of fragments needed if the header size is 20 bytes. Also, calculate the data size of the last fragment.

A) 5 fragments, 100 bytes

B) 6 fragments, 100 bytes

C) 5 fragments, 200 bytes

D) 6 fragments, 200 bytes