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## CHAPTER 10

# *IGMP*

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### 10.1 MULTIPLE-CHOICE QUESTIONS

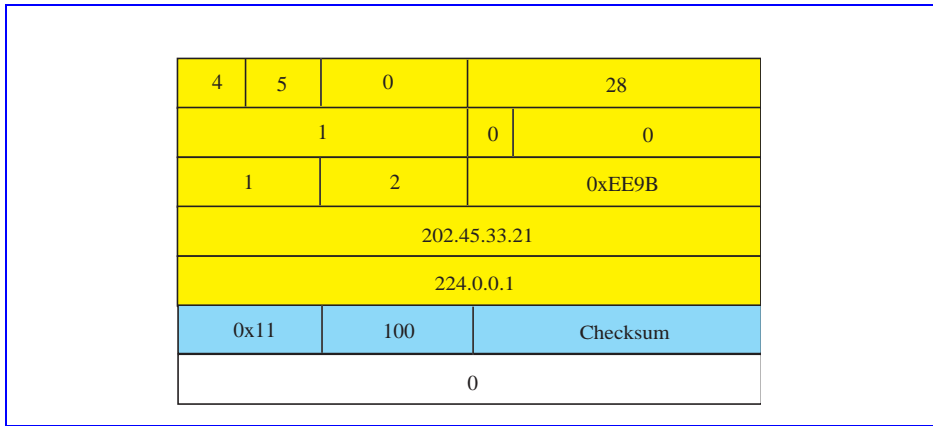
- |       |       |       |       |      |
|-------|-------|-------|-------|------|
| 1. d  | 3. b  | 5. d  | 7. b  | 9. b |
| 11. c | 13. c | 15. a | 17. c |      |

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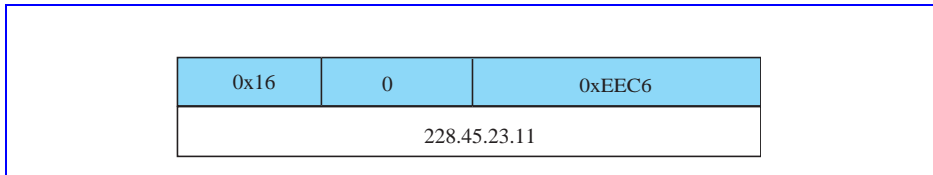
### 10.2 EXERCISES

19. There is no need for a report message to travel outside of its own network because its only purpose is to inform the next higher router in the spanning tree of group membership. There is no need for a query message to travel outside of the local network because its only purpose is to poll the local network for membership in any groups.
21. 00000001 00000000 01011110 00011000 00111100 00001001
23. The host must send as many as five different report messages at random times in order to preserve membership in five different groups.
25. See Figure 10.1.
27. See Figure 10.2.
29. See Figure 10.3.
31. If the router cannot find the groupid in its table, it drops the packet.
33. No action should be taken.
35. When the host receives the request from the process, it should create a new entry in its group table setting the state for the group to Delaying and its reference count to 1. It should also set a timer. When the timer expires, it should send a report message to the router. See Figure 10.4
37. When the router receives the report from the host, it should create a new entry in its group table setting the state for the group to Delaying. It should also set a timer.

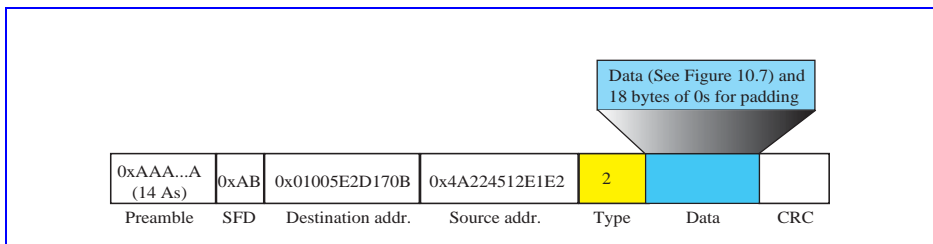
**Figure 10.1** Exercise 25



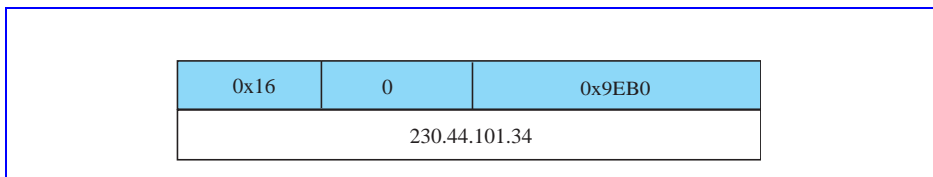
**Figure 10.2** Exercise 27



**Figure 10.3** Exercise 29

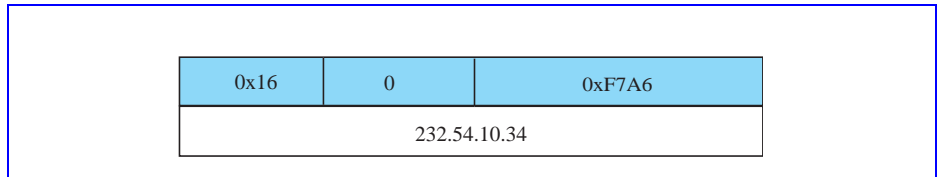


**Figure 10.4** Exercise 35



When the timer expires, it should send a report message to the next higher router in the spanning tree. See Figure 10.5.

39. When the router receives the report about groupid 225.32.56.8 (a new membership), it should create a new entry in its group table setting the state for the group to Delaying. It should also set a timer. When the timer expires, it should send a

**Figure 10.5** Exercise 37

report message to the next higher router in the spanning tree to indicate the new member of that group. Since the groups 225.4.6.7 and 226.34.12.9 are both listed in the group table, no action needs to be taken for these groups. Since there was no response for groups 225.11.6.8, 226.23.22.67, and 229.12.4.89, they should all be removed from the group table (have their state marked Free).

- 41.
- a. This is a membership report.
  - b. The checksum is 0xF9C0 (11111001 11000000).
  - c. The groupid is 225.42.19.20
43. Yes there is an error. The message is a leave report but its groupid field is all 0s – it should indicate a groupid. Also, the checksum does not reflect the contents of the packet.
45.  $2^{28} = 268,435,456$
- 47.
- a. 00000001 00000000 01011110 00010010 01001000 00001000  
(0x01005E124808)
  - b. 00000001 00000000 01011110 00010010 01001000 00001000  
(0x01005E124808)
  - c. 00000001 00000000 01011110 00010010 00000110 01011000  
(0x01005E120658)
  - d. 00000001 00000000 01011110 01011000 00001100 00001000  
(0x01005E580C08)
- a and b represent the same Ethernet address.
49. Type field = 4 bits  
No version field in IGMPv2.  
Version 1 is compatible with version 2. There is a state variable for each interface that describes which version of IGMP is running.  
For more information see <http://www.faqs.org/rfcs/rfc2236.html>.

