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| **King Saud University**  **College of Computer and Information Sciences**  **Computer Science Department** | |  |
| **Course Code** | CSC 329 |  |
| **Course Title** | Computer Networks |
| **Section No.** |  |
| **Semester** | Spring 24 |
| **Exam** | Homework |
| **Date** | Submit before May 15th | |
| **Student Name** |  | |
| **Student ID** |  | |
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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Course Learning Outcomes** | | **Relevant question** | **Full mark** | **Student mark** | | **CLO 1** | **The ability to describe major networking terms, topologies, types, protocols, devices, and components.** |  |  |  | | **CLO2** | **The ability to explain the main services, type of addressing, and protocols associated with each layer of the OSI model.** |  |  |  | | **CLO 3** | **The ability to recognize signal types, characteristics, impairments, encoding methods, transmission media.** |  |  |  | | **CLO 4** | **The ability to recognize the functions and protocols of the data link layer (**framing, error control, flow control, medium access control.) |  |  |  | | **CLO 5** | **The ability to explain the functions and protocols of the network layer and to describe the different routing approaches:** ( datagram , VC , addressing, Routing). |  |  |  | | **CLO 6** | **The ability to compare the features of network components and to measure and analyze the time performances of a network.** |  |  |  | | | |
| **Feedback/Comments:** | | |

**Q1** (1 marks )

1. **Determine the correct class of the following IP addresses:**

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| --- | --- |
| **Address** | **Class?** |
| 191.107.2.10 |  |
| 172.16.16.15 |  |
| 200.200.5.2 |  |
| 3.3.57.0 |  |
| 131.107.2.89 |  |

1. **Which address class (es) will allow you to have more than 1000 hosts per network?**
2. **Which address class (es) will allow only 254 hosts per network?**

**Q2.** (1.5 marks )

**A company has a network address of 192.168.1.0 with a subnet mask of 255.255.255.0. The company wants to create 8 subnetworks.**

1. **Determine the class of this address.**
2. **How many bits must be borrowed from the host portion of the address?**
3. **Determine the new network mask.**
4. **Determine the address of the different subnets?**
5. **How many hosts can be connected to each subnet?**

**Q3.** (1 marks )

1. Briefly explain the difference between single-bit errors and burst errors. (3 marks)
2. Imagine that a noise event causes a burst error to occur that lasts for 1 ms (milli second).
   1. If data is being transmitted at 10 Mbps. How many data bits will be affected?
   2. If data is being transmitted at 100Mbps. How many data bits will be affected?

**Q4.** (1.5 marks )

1. What is MAC address? how many bits are used to code the MAC address ?
2. What are ARP and RARP protocols?
3. Can frames collide in CSMA and how? What is the problem in CSMA that CSMA/CD is trying to resolve?
4. How can CSMA/CA avoid collision?