Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

****

**End Semester Examination – Nov/Dec– 2017**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **17CS3007** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ANALYSIS, ARCHITECTUREAND DESIGN OF NETWORKS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | List five major reasons for the importance of requirements analysis in network architecture and design. | CO1 | 10 |
| b. | Determine the suitable application categories such as mission-critical, rate-critical and real-time for the following requirements: Give reasons for each choice.   1. Processing telemetry data from a space shuttle launch and providing that data to mission control during launch. (Customer: NASA.) 2. Processing requests from automated teller machines throughout a city. (Customer: bank.) 3. Processing requests for Web pages from your servers. (Customer: Internet service provider). | CO2 | 10 |
| (OR) | | | | |
| 2. | a. | Figure shows the uptime (U) and down time (D) of the network for 6 weeks. Assume the total uptime and down time is equal to 1800 hours and 408 hours respectively. Determine the availability of the network. | CO2 | 10 |
| b. | Examine the hierarchy and diversity characteristics of high performance computer networks. | CO1 | 10 |
| 3. | a. | With neat Sketch discuss the template of Requirement specification Map. Prepare a requirement analysis for a company LAN. | CO1 | 10 |
|  | b. | Categorize each of the following requirements as user, application, device, or network.   1. Database servers must run brand XYZ software. 2. Teleconferencing requires at least 350 Kb/s capacity. 3. Users must be able to submit print jobs of up to 25 MB in size. 4. Each access network should be able to service 200 corporate users | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Describe the suitable flow model for each set of devices and applications listed here. Label each flow as either a unidirectional or a bidirectional flow.   1. Client-server application: downstream : 1.2 Mb/s capacity, upstream: 15 Kb/s capacity 2. Streaming video from video server to a subscriber's PC: 300 Kb/s capacity, 40-ms delay (one way) 3. Downloading pages from the Web: downstream, 250 Kb/s capacity, 5-second delay; upstream, 100 Kb/s capacity 4. Transaction processing from point-of-sale (PoS) machine to server: upstream: 30 Kb/s capacity, 100-ms round-trip delay, downstream: 50 Kb/s capacity | CO3 | 8 |
|  | b. | Elucidate the various functions, capabilities and mechanisms of the component architecture. | CO3 | 12 |
| .5. | a. | Given network address is 192.168.124.0/24, develop a variable-length addressing scheme that best fits requirements given, with the following numbers of users:   | **Network Name** | **Users** | | --- | --- | | Engineering-CSE | 60 | | Engineering - ECE | 60 | | Engineering - Mech | 30 | | Engineering -Civil | 30 | | Operations1 | 15 | | Operations2 | 5 | | Sales | 4 | | CO4 | 10 |
|  | b. | Refer to the exhibit.     1. Identify the data sources and sinks in the given environment. 2. Discuss in detail about all possible traffic flows and its characteristics to improve the performance of the given network. 3. How the network environment improve the traffic flows? 4. How will you prioritize flows in the given network? | CO3 | 10 |
| (OR) | | | | |
| 6. | a. | Refer to the exhibit. Apply Link State Routing (LSR)algorithm to find a best path from the source node ‘D’ to destination node ‘C’.  http://www.mvankleij.nl/wp-content/uploads/2013/03/Topology-LS.png | CO4 | 10 |
|  | b. | With suitable examples, describe the three types of architectural models in your high performance network. |  | 10 |
| 7. |  | Refer to the performance requirements listed here. Discuss various performance mechanisms needed to support these requirement.  Requirement 1: A requirement to bill subscribers for network service and to provide accounting of subscriber billing information.  Requirement 2: Combining a customer's voice and data traffic over a common network. | CO5 | 20 |
| (OR) | | | | |
| 8. | a. | Develop a sample threat analysis for a network with which you are familiar. Show assets and potential threats that must be identified. | CO4 | 10 |
|  | b. | Elucidate the functionalities, syntax of the following commands  i. Ping ii. tracert iii.pathping | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Which of the following evaluation criteria most likely apply to equipment evaluations, which ones apply to service-provider evaluations, and which apply to both?   1. Available service-level agreements (SLAs) 2. Standards compliance (IETF) 3. Mean time between failure (MTBF) 4. Mean time between service outage (MTBSO) Hardware scalability | CO6 | 10 |
|  | b. | Explain in detail about the evaluation process applied to Vendors, Service providers and their equipments | CO6 | 10 |

ALL THE BEST