Final Assessment Test – July 2023

Course: **BCSE308L** - **Computer Networks**

Class NBR(s): **0789/0793/0797/0799/0801/0803/0805/ 0806/0808/0810/0811/0814/0820/0822/0824/0826/ 0828/0831/0834/0837/0839/0841/0948/0949/1264/ 1368**

Slot: **D1+TD1**

VIT
Vellore Institute of Technology

Time: **Three Hours**

Max. Marks: **100**

KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE

Answer <u>ALL</u> Questions

(10 X 10 = 100 Marks)

1. a) A defence organization is planning to have the network built for their newly constructed office. There are 3 scientists working on confidential projects. Each scientist has a team of 5 engineers. Sketch a suitable topology with justification. **[6]**

   b) A company is hiring freshers to work on the Application layer and Transport layer. Identify any 4 protocols with their purpose, which the candidate has to be familiar to be eligible for the job. **[4]**

2. a) 5 equal sized datagrams belonging to the same message travel to the destination one after another. However they travel through different paths as shown in the following table. The delay for each switch (including waiting and processing) is 5, 10, 15, 10 and 20 ms respectively. Assume that the propagation speed is $2*10^8$ m/s. Compute the order in which the datagrams arrive at the destination and the delay for each. Ignore any other delays in transmission. **[6]**

Datagram	Path length	Visited switches
1	3200km	1,3,5
2	11,700km	1,2,5
3	12,200km	1,2,3,5
4	10,200km	1,4,5
5	10,700km	1,4,3,5

   b) Discuss the various phases in Circuit switching. **[4]**

3. A software developer was given a task to write a code to send 8 frames.(assuming every 4th frame is getting lost). He has the option to choose either of the three algorithms, Stop & Wait, Go back 3 or Selective Repeat. Justify your answer with the timing diagram.

4. a) In a wireless communication system, a sensor node is transmitting temperature data of 7 bits to a base station. To ensure reliable transmission, Hamming code with even parity is applied to each temperature data. The data received on the receiving end is 01010111101. Identify any error and mention the steps to correct it. **[6]**

b) A girl faces an uncomfortable situation while she is travelling in a bus. She immediately alerts her parents using the safety device attached in her mobile phone. Identify the type of connectivity/standards employed in the device with its features. **[4]**

5. a) The data captured from Wireshark tool is given below. Show the IPv4 header format with values given. **[8]**
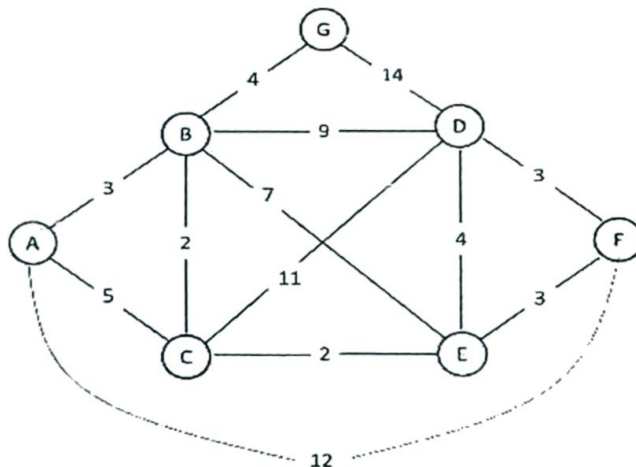   OX4500004da548000080110000c0a82b7fc0a82b01

   b) Analyse if the data is fragmented or corrupted with justification. **[2]**

6. A network uses the 172.12.0.0 class B address. There is a requirement to support 459 hosts per subnet, while accommodating the maximum number of subnets.
   Construct the subnet mask and the IP layout for 4 valid subnets with details of the first address, range of address and the broadcast address.

7. Evaluate the shortest path of all the links to A using Dijikstras algorithm.

8. Client A sends a request to abd.org to get the IP address of vit.edu. Analyse both the Resolution techniques to locate the IP address along with the diagrams.

9. Differentiate closed loop and open loop congestion control by quoting 2 mechanisms from each method.

10. With the rise of IoT devices getting connected on Internet, the possibilities of data being attacked also increases. Recommend any 5 cloud computing security measures.

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