STG 602

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**B.VOC (Software Technologies) Sem – VI**
**EXAMINATION APRIL 2023**
**Computer Networks**

[Time: 2 Hours]                                                    [Max. Marks:60]

**Instructions:**   1) All questions are compulsory.
                    2) Figures to the right indicate full marks.
                    3) Draw neat sketches wherever necessary.

**Q1** Answer **any five** from the following.                                    5x2=10
   a) What are LAN networks? List out its advantages & disadvantages.
   b) Differentiate between Ring & Star topology.
   c) Given a CIDR representation 100.10.50.35/27. Find the range of IP addresses in CIDR block.
   d) Explain the internet working types.
       i) Intranet      ii) Extranet
   e) How composite signals can be decomposed into its individual frequencies?
   f) What is single parity check? Compute it for the bit stream 1011011.
   g) For a bit stream 01110011, sketch the waveforms for the following encoding techniques.
       i) Manchester          ii) NRZ-I

**Q2** Answer **any five** from the following.                                    5x2=10
   a) Explain burst error with an example. Also show the number of corrupted bits.
   b) Distinguish between Routers & Switches.
   c) Explain types of Network Address Translation.
   d) What is open loop congestion control? Write any two of its policies.
   e) Explain how connection is established in TCP.
   f) Write a short note on IMAP.
   g) What is Digital Signature? List out its advantages.

**Q3**   A) Explain why Fiber optic cables are more attractive.                    05
                                    **OR**
         A) Explain OSI reference model in detail. List out the services of each layer.   05
         B) Explain various transmission modes used in physical layer.            05

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Q4    A) A 4-bit with binary value 1001 is to be encoded using an even parity Hamming code. What is the binary value after encoding? If there is an error in the third bit of the message, then check whether it can be detected?    **05**

**OR**

A) Explain in brief 10Base5(Thick Ethernet) implementation for standard Ethernet.    **05**

B) Explain Go-Back-n ARQ protocol used in datalink layer.    **05**

Q5    A) What are adaptive and non-adaptive routing algorithms? List & explain its types.    **05**

**OR**

A) What is ICMP protocol? Explain how error reporting is done in ICMP.    **05**

B) Explain the TCP segment header format & explain the following fields: Sequence Number, Acknowledgment Number, Header Length, Window Size.    **05**

Q6    A) What is Quality of Service (QoS)? Why is there a need to use QoS? Also, give types of solutions.    **05**

**OR**

A) Write a brief note on Firewall.    **05**

B) Explain the types of cryptography techniques used in network security.    **05**