

**2021**

**COMPUTER SCIENCE — HONOURS**

**Paper : CC-8**

**(Data Communication, Networking and Internet technology)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer **question no. 1** and **any four** from the rest.

1. Answer **any five** questions : 2×5
- (a) Highlight the main differences between LAN and WAN.
  - (b) Name the different layers of TCP/IP protocol.
  - (c) Briefly explain how checksum is estimated.
  - (d) What is Network Address Translation (NAT)?
  - (e) What are different techniques of error detection during data transmission?
  - (f) What is URL?
  - (g) What is statistical TDM?
  - (h) Optical guided data transmission is more advantageous than wireless transmission. Justify your answer.
2. (a) Explain Frequency Division Multiplexing (FDM) with proper illustrations.  
(b) Write short notes on QAM. 5+5
3. (a) What is channelization? Explain FDMA with example.  
(b) Explain the difference between Dialup modem and ADSL. 5+5
4. (a) What is Nyquist rate of sampling?  
(b) Find Nyquist rate for the signal :  $m(t) = 2 \sin (4 \pi t) \cos (2\pi t)$ .  
(c) How SNR is related to shannon capacity?  
(d) Among serial and parallel transmission which one is faster? Explain briefly with reasons. 2+3+2+3
5. (a) Name the layers of the OSI model. Briefly state their functions.  
(b) Write the functions of RARP protocol. 7+3

**Please Turn Over**

6. (a) What are the main differences between Router and Switch?  
(b) What are the advantages and disadvantages of STAR topology?  
(c) A signal received that has values of -1, 0, 1. Is this an analog or a digital signal? 4+4+2
7. (a) Write short notes on Mail access protocols with proper examples.  
(b) What is process to process delivery? Explain with suitable example. 5+5
8. (a) Why is co-axial cable superior to twisted-pair cable?  
(b) Name the advantages of optical fibre over twisted-pair and coaxial cable.  
(c) What is the purpose of cladding in an optical fibre? 4+4+2
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