BRAINWARE UNIVERSITY

Course –BCA

COMPUTER NETWORKS (BCA301)

(Semester – 3)

Time allotted: 3 Hours **Full Marks : 70**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Questions) 10 x 1 = 10

1. *Choose the correct alternative from the following*

(i) Which layer handles the creation of data frames?

a) Data link b) Network

c) Transport d) Physical

(ii) Hamming distance between the two code words 10010101 and 00100111 is,

a) 5 b) 4

c) 10110010 d) 11001011

(iii) HDLC is an acronym for,

a) High-duplex line communication b) High-level data link control

c) Half-duplex digital link combination d) Host double-level circuit

(iv) UDP is called a _____transport protocol.

a) Connectionless, reliable b) Connection-oriented, unreliable

c) Connectionless, unreliable d) None of these

(v) The total number of links are required to connect n devices with Mesh topology is,

a) 2^n b) n(n)/2+1

c) n(n-1)/2 d) n

(vi) What is the class of IP addresses 127.0.0.1 ?

a) class A
b) class B
c) class C
d) class D

(vii) Default subnet for Class C is ,

a) 255.255.255.255
b) 255.255.255.0
c) 255.0.0.0
d) none

(viii) The address space of IPv4 is,

a) 2^{32}
b) 4
c) 12
d) 32

(ix) A major disadvantage of a star topology is,

a) The dependency of the topology on one single HUB.
b) The dependency of the topology on one single cable
c) There are no any router
d) There are no any IP addresses

(x) How many bit of error will be detected for d_{min} =3 ?

a) 2
b) 10
c) 3
d) 5

Group – B

(Short Answer Type Questions) 3 x 5 = 15

Answer any *three* from the following

2. Compare and contrast between OSI and TCP layered models? [5]
3. What is the bit staffing and why it is needed? What is the window size required for Go-back-N ARQ protocol and why? [3+2]
4. An address block is granted to an organization. We know that one of the address is 205.16.37.39/28. What is the first and last address of the given block? [5]
5. Describe different types of twisted pair cable, What are the differences between Unshielded Twisted-Pair Cable and Shielded Twisted-Pair Cable? [2+3]
6. Explain intradomain and interdomain routing protocol in brief with proper examples. [5]

Group – C

(Long Answer Type Questions) 3 x 15 = 45

Answer any *three* from the following

7. (a) For CRC, the given dataword is 1010011010 and the divisor is 10111.
i). Show the generation of the codeword at sender site.
ii). Check the codeword at the receiver site assuming no error. [9]

(b) Briefly discuss different unguided media that are used in computer network and make a comparison between them? [6]

8. (a) What is the difference between bit oriented and byte oriented protocol? Explain with proper example. [5]

(b) What are the advantages of IPv6 over IPv4? [5]

(c) Discuss, how CSMA provides a clear improvement over ALOHA? [5]

9. (a) Discuss the betterment of slotted ALOHA over pure ALOHA? [5]

(b) Explain stop & wait protocol. [3]

(c) What are the three criteria necessary for an effective and efficient network? [2]

(d) Explain different HDLC frame format with proper diagram. [5]

10. Write short notes on any three of the following: [5+5+5]
    i. Duties of the IETF and IRTF
    ii. DQDB
    iii. QoS in transport layer
    iv. Repeaters
    v. Ethernet Address