University of Mumbai
Examinations Summer 2022
Program: **Information Technology**
Curriculum Scheme: Rev2019
Examination: SE   Semester IV

Course Code: ITC402   Course Name: Computer Network and Network Design
Time: 3 hrs
Max. Marks: 80

Q1.	Choose the correct option for the following questions. All the questions are compulsory and carry equal marks
1.	Which layer is responsible for the process to process delivery in the OSI Model?
Option A:	network layer.
Option B:	transport layer.
Option C:	session layer.
Option D:	data link layer.
2.	In TCP, if the ACK value is 400, then byte _____ has been received successfully.
Option A:	399
Option B:	400
Option C:	401
Option D:	402
3.	A three-layer switch is a
Option A:	repeater
Option B:	link-layer switch
Option C:	router
Option D:	LAN switch
4.	The checksum field in the TCP segment is
Option A:	optional
Option B:	user dependent
Option C:	depends on the type of data
Option D:	mandatory
5.	What is the maximum size of data that the application layer can pass on to
Option A:	Any size
Option B:	2^{16} bytes-size of TCP header
Option C:	2^{16} bytes
Option D:	1500 bytes
6.	Which transmission media provides the highest transmission speed in a network?
Option A:	Co-axial cable
Option B:	Twisted pair cable
Option C:	Optical fibre
Option D:	Electrical cable
7.	When does the station B send a positive acknowledgement (ACK) to station A in Stop and Wait protocol?
Option A:	only when station B receives frame with errors
Option B:	when retransmission of old packet in a novel frame is necessary

Option C:	Never
Option D:	only when no error occurs at the transmission level
8.	The Internet Protocol (IP) is _____ protocol.
Option A:	a reliable
Option B:	a connection-oriented
Option C:	a reliable and connection-oriented
Option D:	an unreliable
9.	In _____ routing, the least cost route between any two nodes is the route with the minimum distance.
Option A:	Path vector
Option B:	Link state
Option C:	Distance vector
Option D:	Path vector and link state
10.	Which of the following compression method is not lossless?
Option A:	run-length coding
Option B:	dictionary coding
Option C:	arithmetic coding
Option D:	predictive coding

Q2	Solve any Two Questions out of Three 10 marks each
A	Write in brief about the different Guided Transmission Media
B	Desrcibe the OSI Reference Model in detail with appropriate figures
C	What do you mean by Routing? Explain any routing protocol in detail

Q3	Solve any Two Questions out of Three 10 marks each
A	What is congestion and what are the causes of congestion?
B	Compare TCP and UDP.
C	Consider five source symbols of a discrete memoryless source. Their probabilities are given below. Find the Huffman code for each symbol.

Symbol	M1	M2	M3	M4
probability	0.4	0.3	0.2	0.1

Q4	Solve any Two Questions out of Three 10 marks each
A	Write a note on TCP timers.
B	Compare lossless and lossy compression.
C	Explain SNMP protocol.

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Q3	Solve any Two Questions out of Three 10 marks each
C	Consider four source symbols of a discrete memoryless source. Their probabilities are given below. Find the Huffman code for each symbol.

Symbol	M1	M2	M3	M4
probability	0.4	0.3	0.2	0.1