Total No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

IT3CO10 Computer Networks

Programme: B.Tech. Branch/Specialisation: IT

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. At which layer, the trailer usually contains bits used for error detection? **1**
(a) Network (b) Session (c) Transport (d) Data Link

ii. The protocol data unit of data link layer is- **1**
(a) Datagram (b) Frame (c) Segment (d) Bit

iii. In a sliding window ARQ scheme, the transmitter's window size is 'N' and the receiver's window size is 'M'. The minimum number of sequence numbers (distinct) required to ensure correct operation of the ARQ scheme is- **1**
(a) Min(M, N) (b) Max(M,N)
(c) M+N (d) M*N

iv. CRC stands for- **1**
(a) Cyclic redundancy check (b) Code repeat check
(c) Code redundancy check (d) Cyclic repeat check

v. In Ethernet, what is the access control strategy used- **1**
(a) CSMA/ CD (b) CSMA/ CA
(c) token passing (d) None of these

vi. The size of TYPE field in the ethernet frame is- **1**
(a) 4 byte (b) 2 byte (c) 8 byte (d) 1 byte

vii. In IP, checksum is calculated at- **1**
(a) Source (b) Routers
(c) Source and routers (d) None of these

viii. Which of the following layer is responsible for routing? **1**
(a) Physical layer (b) Data link layer
(c) Network layer (d) Transport layer

P.T.O.

ix. What mechanism is used by TCP to provide flow control as segments travel from source to destination? **1**
(a) Sequence number (b) Session establishment
(c) Window size (d) Acknowledgement

x. Which of the following uses UDP as the transport layer protocol? **1**
(a) HTTP (b) Telnet (c) SMTP (d) DNS

Q.2 i. Define layering principle. **2**
ii. Explain the function of each layer of ISO-OSI model. **8**
OR iii. Explain connection-oriented and connection-less services with example. **8**

Q.3 i. What is relation between sender window size and available sequence numbers? **2**
ii. Explain various framing techniques with example. **8**
OR iii. What is Go-Back-N Protocol? Explain with example. **8**

Q.4 i. Explain slotted aloha with diagram. **2**
ii. Explain CSMA/CD protocol with its Back-off algorithm. **8**
OR iii. Explain IEEE 802.3 frame format. **8**

Q.5 i. What is network mask? Give an example. **2**
ii. What is routing? Explain RIP with its message format. **8**
OR iii. Explain the header of IPV4 datagram. **8**

Q.6 Attempt any two:
i. Explain TCP congestion control algorithm with example. **5**
ii. Explain file transfer protocol. **5**
iii. What is pseudo header? Why it is added for checksum calculation at UDP. **5**

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Marking Scheme
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Q.1	i.	At which layer, the trailer usually contains bits used for error detection? **d) Data Link**	**1**
	ii.	The protocol data unit of data link layer is **b)Frame**	**1**
	iii.	In a sliding window ARQ scheme, the transmitter's window size is 'N' and the receiver's window size is 'M'. The minimum number of sequence numbers (distinct) required to ensure correct operation of the ARQ scheme is: **c) M+N**	**1**
	iv.	CRC stands for a) **cyclic redundancy check**	**1**
	v.	In Ethernet, what is the access control strategy used a) **CSMA/ CD**	**1**
	vi.	The size of TYPE field in the ethernet frame is **b) 2 byte**	**1**
	vii.	In IP, checksum is calculated at c) **source and routers**	**1**
	viii.	Which of the following layer is responsible for routing. **(c) network layer**	**1**
	ix.	What mechanism is used by TCP to provide flow control as segments travel from source to destination? **c) Window size**	**1**
	x.	Which of the following uses UDP as the transport layer protocol? **d) DNS**	**1**
Q.2	i.	Define Layering Principle **1 mark for one principle**	**2**
	ii.	Explain the function of each layer of ISO-OSI model. **1 mark for on layer function explaination** **1 mark for diagram**	**8**
OR	iii.	Explain Connection-oriented and connection-less services with example. **Connection-oriented=3 mark** **connection-less =3 mark** **Example=2 marks**	**8**
Q.3	i.	What is relation between Sender window size and available Sequence numbers? **Relation=2 mark**	**2**
	ii.	Explain various framing techniques with example. **Byte oriented(2) +example(2)=4** **Bit oriented(2) +example(2)=4**	**8**
OR	iii.	What is Go-Back-N Protocol? Explain with example. **Explaination complete=4 marks** **example= 4 marks**	**8**
Q.4	i.	Explain slotted aloha with diagram. E**xplaination=1 mark** **diagram=1 mark**	**2**
	ii.	Explain CSMA/CD protocol with its Back-off algorithm. **CSMA/CD=4 MARKS** **back-off algorithm=4 marks**	**8**
OR	iii.	Explain IEEE 802.3 frame format. **2 marks for each field**	**8**
Q.5	i.	What is network mask.Give an example. **Definition=1 mark** **example= 1 mark**	**2**
	ii.	What is Routing? Explain RIP with its message format. **Routing=2 marks** **RIP msg format=2 marks** **explaination of fields=4 marks**	**8**
OR	iii.	Explain the header of IPV4 datagram.	**8**

		1/2 mark for each field	
Q.6		Attempt any two:	
	i.	Explain TCP Congestion control algorithm with example. **Algo=3marks** **example=2 marks**	**5**
	ii.	Explain File Transfer protocol. Protocol =2 marks working=3 marks	**5**
	iii.	What is Pseudoheader? Why it is added for checksum calculation at UDP. **Pseudoheader=2 marks** **reason=3 marks**	**5**

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