

Hall Ticket Number:

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Code No. : 16442 N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**

*Accredited by NAAC with A++ Grade*

**B.E. (E.C.E.) VI-Semester Main & Backlog Examinations, May/June-2023**

**Computer Networks**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO	PSO
1.	For $n$ devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?	2	2	1	2	2
2.	What kind of arithmetic is used to add data items in checksum calculation? What kind of error is undetectable by the checksum?	2	1	1	1	2
3.	Distinguish between a Bridge and Router.	2	1	2	1	2
4.	What is the role of the address field in a packet traveling through a virtual-circuit network?	2	2	2	1	2
5.	What are the differences between classful addressing and classless addressing in IPv4?	2	1	3	1	2
6.	What is the difference between the delivery of a frame in the data link layer and the delivery of a packet in the network layer?	2	1	3	1	2
7.	Do port addresses need to be unique? Why or why not? Why are port addresses shorter than IP addresses?	2	2	4	1	2
8.	Discuss about Additive Increase and Multiplicative Decrease (AIMD).	2	1	4	1	2
9.	How does caching increase the efficiency of name resolution?	2	1	5	1	1
10.	Why is a connection establishment for mail transfer needed if TCP has already established a connection?	2	2	5	1	1
<b>Part-B (5 × 8 = 40 Marks)</b>						
11. a)	What are two reasons for using layered protocols? What are the possible advantages and disadvantages of using layered protocols?	4	2	1	1	2
b)	What is the remainder obtained by dividing $x^7 + x^5 + 1$ by the generator polynomial $x^3 + 1$ ?	4	4	1	2	2
12. a)	In the binary countdown protocol, explain how a lower-numbered station may be starved from sending a packet.	4	3	2	1	2

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b)	In an infinite-population slotted ALOHA system, the mean number of slots a station waits between a collision and a retransmission is 4. Plot the delay versus throughput curve for this system.	4	4	2	2	2
13. a)	Describe a way to reassemble IP fragments at the destination network layer.	4	1	3	1	2
b)	A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?	4	4	3	2	2
14. a)	Explain the Crash-Recovery service of the Transport layer with example operations.	4	2	4	1	2
b)	Discuss TCP header with neat diagram.	4	3	4	1	2
15. a)	In electronic mail, what are the tasks of a user agent? Explain.	4	2	5	1	1
b)	Message = 4 ; choose $p = 3$ and $q = 11$ . Compute the encrypted message value using RSA.	4	3	5	1	1
16. a)	Explain the bidirectional approach for the Go-Back-N ARQ Protocol using piggy-backing. Note that both parties need to use the same approach.	4	3	1	1	2
b)	Illustrate the Architecture and Protocol Stack of 802.11.	4	2	2	1	2
17.	Answer any <i>two</i> of the following:					
a)	What is the network address in a block of addresses? How can we find the network address if one of the addresses in a block is given? Explain with example.	4	3	3	1	2
b)	Why does UDP exist? Would it not have been enough to just let user processes send raw IP packets? Explain your answer.	4	2	4	1	2
c)	Explain the working of DES Algorithm.	4	2	5	1	1

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%

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