23SSP418

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc (SS) DEGREE EXAMINATION DECEMBER 2025
(Fourth Semester)

Branch – **SOFTWARE SYSTEMS (Five Years Integrated)**

COMPUTER NETWORKS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Question No.	Question	K Level	CO
1	Which device is used to connect multiple networks together? a) Switch b) Router c) Hub d) Bridge	K1	CO1
2	Which topology has all nodes connected to central hub? a) Ring b) Mesh c) Star d) Bus	K1	CO1
3	In circuit switching, a dedicated path is established between: a) Sender and Router b) Sender and Receiver c) Router and Switch d) Switch and Hub	K1	CO2
4	Which method can detect burst errors efficiently a) Checksum b) Cyclic Redundancy Check (CRC) c) Parity check d) Flow Control	K1	CO2
5	Which of the following flow control techniques? a) Stop-and-Wait b) Distance Vector c) Dijkstra's Algorithms d) Subnetting	K1	CO2
6	Error detection is mainly done using: a) IP Address b) Parity Bits c) MAC Address d) Subnet mask	K2	CO2
7	Which routing algorithm uses the shortest path to determine the route? a) Distance Vector b) Link State c) Flooding d) Random Routing	K2	CO3
8	Which control is an example of a distance vector routing protocol? a) OSPF b) RIP c) IS-IS d) BGP	K2	CO3
9	What is the default port number for HTTP in TCP? a) 20 b) 21 c) 80 d) 443	K2	CO4
10	Which protocol in the transport layer provides reliable, connection-oriented communication? a) UDP b) TCP c) IP d) ICMP	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	Classify different types of computer networks.	K2	CO1
	(OR)		
11.b.	Explain the role of network topology in deciding the type of network used.		
12.a.	Construct a scenario to compare the performance of circuit switching vs. packet switching in data communication.	K3	CO1
	(OR)		
12.b.	Explain the process of error detection using parity bits. Construct an example showing how even parity and odd parity can detect a single-bit error.		
13.a.	Analyze the difference between Go-Back-N and selective repeat ARQ protocols. Give examples where each would be performed.	K3	CO2
	(OR)		
13.b.	Discuss the role of switches an hubs in a LAN. Analyze their impact on network performance and efficiency.		
14.a.	What is TCP/IP model? Explain the function and protocol and services of each layer? Compare it with OSI model.	K4	CO2
	(OR)		
14.b.	What is IP addressing? How it is classified? How is subnet addressing is performed?		
15.a.	Examine the role of DNS in network applications.	K4	CO3
	(OR)		
15.b.	Compare and analyze HTTP and FTP.		

SECTION –C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Analyze the OSI model. Give examples from each layer.	K4	CO1
17	Analyze the working of multiplexing techniques and explain how they improve channel efficiency.	K4	CO2
18	Evaluate the effectiveness of Stop-and-Wait ARQ versus Sliding Window ARQ in terms of efficiency and error control in high speed networks.	K5	CO3
19	Compare and contrast distance vector routing and Link-state routing.	K5	CO4
20	Propose a transport protocol that combines the benefits of TCP. Explain its working, advantages and possible applications.	K6	CO5

Z-Z-Z END