

## Advance Computer Network (315321)

MSBTE Diploma · K-Scheme · Computer Engineering Sem 5 — Important Questions (unit-wise)

**Based on MSBTE papers W-2025 and S-2026 available on [msbte.ac.in](https://msbte.ac.in)** (the only two K-scheme papers of this subject so far) and the K-scheme syllabus. Practice guidance only — **not a prediction of the exam**. With only two papers, **High** = asked in both papers, **Medium** = asked in one paper, **Low** = in the syllabus but not asked yet.

**Paper pattern (both papers):** 3 hours, 70 marks, six questions.

| Q.1                        | Q.2                        | Q.3                        | Q.4                        | Q.5                        | Q.6                        |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| any 5 of $7 \times 2 = 10$ | any 3 of $4 \times 4 = 12$ | any 3 of $4 \times 4 = 12$ | any 3 of $5 \times 4 = 12$ | any 2 of $3 \times 6 = 12$ | any 2 of $3 \times 6 = 12$ |

| Unit           | 1  | 2  | 3  | 4  | 5  |
|----------------|----|----|----|----|----|
| Syllabus marks | 12 | 16 | 14 | 14 | 14 |

### Unit I — Internet Architecture and Network Layer (12 marks)

| # | Question / topic                                                                                                                                                                                                                                                                            | Marks | Asked in                                              | Probability   |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------|---------------|
| 1 | Subnet addressing / subnet address / class, network, host, first & last address of an IP (numerical)<br>• Justify subnet addressing's role in improving network management<br>• State the subnet address<br>• For IP 193.168.10.1 find class, network, host, first, last and subnet address | 2, 6  | W-25 Q6 a (6 M)<br>S-26 Q1 a (2 M)<br>S-26 Q6 c (6 M) | <b>High</b>   |
| 2 | IPv4 header — fields (version, TTL, addresses) and fragmentation<br>• Describe fields of IPv4 header: version, TTL, source & destination address<br>• State the concept of fragmentation in IPv4                                                                                            | 2, 6  | W-25 Q5 a (6 M)<br>S-26 Q1 g (2 M)                    | <b>High</b>   |
| 3 | ARP — address mapping process with neat diagram<br>• Illustrate the ARP address mapping process with neat diagram<br>• Explain ARP with neat diagram                                                                                                                                        | 4     | W-25 Q2 a (4 M)<br>S-26 Q4 a (4 M)                    | <b>High</b>   |
| 4 | Differentiate IPv4 and IPv6<br>• Differentiate between IPv4 and IPv6 (any 4 points)                                                                                                                                                                                                         | 4     | S-26 Q3 c (4 M)                                       | <b>Medium</b> |
| 5 | Roles of ICANN<br>• List the key roles of ICANN                                                                                                                                                                                                                                             | 2     | W-25 Q1 a (2 M)                                       | <b>Medium</b> |
| 6 | Structure of Internet and intranet; role of ISPs                                                                                                                                                                                                                                            | —     | —                                                     | Low           |
| 7 | IPv6 header format                                                                                                                                                                                                                                                                          | —     | —                                                     | Low           |
| 8 | Supernetting                                                                                                                                                                                                                                                                                | —     | —                                                     | Low           |
| 9 | RARP (physical to logical mapping); ARP/RARP message format                                                                                                                                                                                                                                 | —     | —                                                     | Low           |

## Unit II — Routing Protocols (16 marks)

| #  | Question / topic                                                                                                                                                 | Marks | Asked in                           | Probability |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------|-------------|
| 1  | OSPF — features; compare OSPF and RIP<br>• Compare OSPF and RIP; justify OSPF's effectiveness in large network<br>• Describe features of OSPF (any four)         | 4, 6  | W-25 Q5 b (6 M)<br>S-26 Q2 d (4 M) | High        |
| 2  | RIP — characteristics, message format and features<br>• State the characteristics of RIP (any four)<br>• Describe the RIP message format along with its features | 4     | W-25 Q2 b (4 M)<br>S-26 Q4 c (4 M) | High        |
| 3  | Routing table — definition and use in a router<br>• Explain the use of a routing table in a router<br>• Define routing table                                     | 2     | W-25 Q1 c (2 M)<br>S-26 Q1 b (2 M) | High        |
| 4  | ICMP error-reporting messages with example<br>• Illustrate the use of ICMP error reporting messages with example                                                 | 6     | W-25 Q6 b (6 M)                    | Medium      |
| 5  | BGP — functions (path vector, inter-domain)<br>• Explain four functions of BGP                                                                                   | 4     | W-25 Q2 c (4 M)                    | Medium      |
| 6  | Distance vector routing with example<br>• Explain distance vector routing with example                                                                           | 4     | S-26 Q2 c (4 M)                    | Medium      |
| 7  | Static routing vs dynamic routing<br>• Distinguish dynamic and static routing (configuration, security, cost, protocols)                                         | 4     | S-26 Q3 a (4 M)                    | Medium      |
| 8  | Intra-domain multicast routing protocols (not listed in the K-scheme unit topics, but asked)<br>• List intra-domain multicast protocols; explain any one         | 4     | S-26 Q3 b (4 M)                    | Medium      |
| 9  | Purpose of queuing in routers<br>• State the purpose of queuing in routers                                                                                       | 2     | W-25 Q1 b (2 M)                    | Medium      |
| 10 | Intra-domain and inter-domain routing (definitions)<br>• Define inter-domain routing and intra-domain routing                                                    | 2     | S-26 Q1 e (2 M)                    | Medium      |
| 11 | Router architecture and switching                                                                                                                                | —     | —                                  | Low         |
| 12 | Link state routing (graphical representation, OSPF link types)                                                                                                   | —     | —                                  | Low         |
| 13 | Path vector routing                                                                                                                                              | —     | —                                  | Low         |
| 14 | ICMP message types and message format                                                                                                                            | —     | —                                  | Low         |

## Unit III — Transport Layer Protocols (14 marks)

| # | Question / topic                                                                                                                                                                 | Marks   | Asked in                                              | Probability |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------|-------------|
| 1 | UDP — header structure, features and applications<br>• Describe the structure of UDP header<br>• Describe TCP and UDP (shared question)<br>• State different applications of UDP | 2, 4, 6 | W-25 Q3 a (4 M)<br>W-25 Q5 c (6 M)<br>S-26 Q1 c (2 M) | High        |
| 2 | TCP — segment structure / description of TCP<br>• Describe TCP and UDP (shared question)<br>• Draw and explain TCP segment structure                                             | 4, 6    | W-25 Q5 c (6 M)<br>S-26 Q3 d (4 M)                    | High        |

|    |                                                                                                                                                                                                |   |                                    |        |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------|--------|
| 3  | SCTP — features / flow control<br>• Explain features of SCTP (any four)<br>• Describe flow control under SCTP                                                                                  | 4 | W-25 Q2 d (4 M)<br>S-26 Q2 b (4 M) | High   |
| 4  | Congestion control — open loop and closed loop methods<br>• Difference between open loop and closed loop congestion control<br>• Explain various congestion control methods of transport layer | 4 | W-25 Q3 b (4 M)<br>S-26 Q4 b (4 M) | High   |
| 5  | TLS — working and applications<br>• Explain working of TLS along with its applications                                                                                                         | 4 | S-26 Q2 a (4 M)                    | Medium |
| 6  | Connectionless vs connection-oriented service<br>• List two key differences between connectionless and connection-oriented services                                                            | 2 | W-25 Q1 d (2 M)                    | Medium |
| 7  | Process-to-process delivery: client/server, multiplexing and demultiplexing                                                                                                                    | — | —                                  | Low    |
| 8  | Ports and well-known ports                                                                                                                                                                     | — | —                                  | Low    |
| 9  | TCP three-way handshake                                                                                                                                                                        | — | —                                  | Low    |
| 10 | TCP flow control and error control                                                                                                                                                             | — | —                                  | Low    |

#### Unit IV — Application Layer Protocols (14 marks)

| #  | Question / topic                                                                                                                                                            | Marks | Asked in                           | Probability |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------|-------------|
| 1  | PGP — security parameters / working with diagram<br>• List and explain any two security parameters of PGP<br>• Explain the working of PGP with suitable diagram             | 4, 6  | W-25 Q3 c (4 M)<br>S-26 Q6 b (6 M) | High        |
| 2  | FTP — anonymous FTP, advantages/disadvantages, transmission modes<br>• Three advantages and disadvantages of FTP and anonymous FTP<br>• State the transmission modes of FTP | 2, 6  | W-25 Q6 c (6 M)<br>S-26 Q1 f (2 M) | High        |
| 3  | POP3 / IMAP — message access protocols<br>• Explain the working of post office protocol<br>• Explain POP and IMAP                                                           | 4     | W-25 Q3 d (4 M)<br>S-26 Q4 d (4 M) | High        |
| 4  | Architecture of WWW<br>• With diagram explain architecture of WWW                                                                                                           | 6     | S-26 Q5 c (6 M)                    | Medium      |
| 5  | Static and dynamic web documents<br>• Explain static and dynamic web documents                                                                                              | 4     | W-25 Q4 a (4 M)                    | Medium      |
| 6  | HTTP response message format<br>• Describe the HTTP response message format                                                                                                 | 4     | S-26 Q4 e (4 M)                    | Medium      |
| 7  | DNS architecture<br>• Draw DNS architecture                                                                                                                                 | 2     | W-25 Q1 e (2 M)                    | Medium      |
| 8  | Role of SMTP in e-mail<br>• Explain the role of SMTP in electronic mail system                                                                                              | 2     | W-25 Q1 f (2 M)                    | Medium      |
| 9  | DNS name space, domain types and name resolution                                                                                                                            | —     | —                                  | Low         |
| 10 | TELNET and remote desktop                                                                                                                                                   | —     | —                                  | Low         |

|    |                                     |   |   |     |
|----|-------------------------------------|---|---|-----|
| 11 | HTTP transactions / request message | — | — | Low |
| 12 | PGP key rings and certificates      | — | — | Low |

## Unit V — Wireless Network Technologies (14 marks)

| # | Question / topic                                                                                                                                                                        | Marks | Asked in                           | Probability   |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------|---------------|
| 1 | SDN — working, architecture, applications<br>• Explain the working of SDN<br>• Explain SDN architecture, working, applications                                                          | 2, 6  | W-25 Q1 g (2 M)<br>S-26 Q5 b (6 M) | <b>High</b>   |
| 2 | Wireless networks — 3G to 5G evolution; types, working, benefits<br>• Describe the evolution of wireless networks from 3G to 5G<br>• Explain wireless network: types, working, benefits | 4, 6  | W-25 Q4 b (4 M)<br>S-26 Q5 a (6 M) | <b>High</b>   |
| 3 | VoIP — need, working and services<br>• State the need of VoIP protocol<br>• Explain VoIP, how VoIP works and its services                                                               | 2, 6  | S-26 Q1 d (2 M)<br>S-26 Q6 a (6 M) | <b>Medium</b> |
| 4 | RTSP in streaming media<br>• Explain the role of RTSP in streaming media                                                                                                                | 4     | W-25 Q4 c (4 M)                    | <b>Medium</b> |
| 5 | NFV — importance with example<br>• Illustrate the importance of NFV with example                                                                                                        | 4     | W-25 Q4 d (4 M)                    | <b>Medium</b> |
| 6 | Edge computing — challenges<br>• Describe any three challenges in edge computing                                                                                                        | 4     | W-25 Q4 e (4 M)                    | <b>Medium</b> |
| 7 | RTP and streaming of stored audio/video                                                                                                                                                 | —     | —                                  | Low           |
| 8 | NFV architecture and benefits                                                                                                                                                           | —     | —                                  | Low           |
| 9 | Edge computing components and applications                                                                                                                                              | —     | —                                  | Low           |

**Note:** This is a **study guide prepared by Ananda Technologies** only for practice and exam preparation, based on the pattern of previous MSBTE question papers and the K-scheme syllabus. It is **not an official MSBTE paper**, and it does **not** mean that these questions will come in the exam. Answers follow standard textbook points; marks shown are indicative. Free for students — [anandatechnologies.in](http://anandatechnologies.in)