**University of Mumbai**

**Examinations Summer 2022**

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Rev2019

Examination: Third Year Semester VI

Course Code: ECC 602 and Course Name: Computer Communication Network

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 **QUESTION BANK**

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| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**  |
| 1. | RJ-45 UTP Cable has ……. Cables. |
| Option A: | 5 pair |
| Option B: | 4 pair |
| Option C: | 2 pair |
| Option D: | 3 pair |
|  |  |
| 2. | Which OSI layer allows the transmission and reception of data segments to a session layer in addition to the provision of flow control, sequence numbering and message acknowledgment? |
| Option A: | Network Layer |
| Option B: | Session Layer |
| Option C: | Transport Layer  |
| Option D: | Application Layer |
|  |  |
| 3. | A Link Control Protocol (LCP) is used for ………. |
| Option A: | Establishing, configuring and testing the data-link connection |
| Option B: | Establishing and configuring different network-layer protocols |
| Option C: | Testing the different network-layer protocols |
| Option D: | Provides for multiplexing of different network-layer protocols |
|  |  |
| 4. | Which transport layer protocol is used by DHCP? |
| Option A: | RSVP |
| Option B: | TCP |
| Option C: | DCCP |
| Option D: | UDP |
|  |  |
| 5. | TCP groups a number of bytes together into a packet called ………… |
| Option A: | Packet |
| Option B: | Buffer |
| Option C: | Segment |
| Option D: | Stack |
|  |  |
| 6. | When 2 or more bits in a data unit has been changed during the transmission, the error is called……... |
| Option A: | random error |
| Option B: | burst error |
| Option C: | inverted error |
| Option D: | double error |
|  |  |
| 7. | The computation of the shortest path in OSPF is usually done by……... |
| Option A: | Bellman-ford algorithm |
| Option B: | Routing information protocol |
| Option C: | Dijkstra’s algorithm |
| Option D: | Distance vector routing |
|  |  |
| 8. | Connection establishment in TCP is done by which mechanism? |
| Option A: | Flow control |
| Option B: | Three-Way Handshaking |
| Option C: | Forwarding |
| Option D: | Synchronization |
|  |  |
| 9. | In IPv4 header format, the header size is? |
| Option A: | 20 to 60 bytes |
| Option B: | 20 bytes |
| Option C: | 60 bytes |
| Option D: | Depends on the MTU |
|  |  |
| 10. | If you wanted to have 12 subnets with a Class C network ID, which subnet mask would you use? |
| Option A: | 255.255.255.252 |
| Option B: | 255.255.255.255 |
| Option C: | 255.255.255.240 |
| Option D: | 255.255.255.248 |
|  |  |
| 11. | Which transmission media are widely used in the backbone of networks? |
| Option A: | Unshielded Twisted Pair (UTP) |
| Option B: | Shielded Twisted Pair (STP) |
| Option C: | Optical Fiber |
| Option D: | Wireless |
|  |  |
| 12. | In Go-Back-N ARQ, if 5 is the number of bits for the sequence number, then the maximum size of the receive window must be……… |
| Option A: | 1 |
| Option B: | 16 |
| Option C: | 15 |
| Option D: | 31 |
|  |  |
| 13. | Protocols in which the desire to transmit is broadcast before the actual transmission are called as |
| Option A: | Reservation Protocol |
| Option B: | Aloha Protocol |
| Option C: | Bit Map protocol |
| Option D: | TCP Protocol |
|  |  |
| 14. | Find the class of address 14.23.120.8. |
| Option A: | Class B |
| Option B: | Class C |
| Option C: | Class A |
| Option D: | Class D |
|  |  |
| 15. | HTTP is \_\_\_\_\_\_\_\_ protocol. |
| Option A: | Application Layer |
| Option B: | Transport Layer |
| Option C: | Network Layer |
| Option D: | Data Link Layer |
|  |  |
| 16. |  \_\_\_\_\_\_\_ allows you to connect and login to a remote computer |
| Option A: | TELNET |
| Option B: | FTP |
| Option C: | HTTP |
| Option D: | SMTP |
|  |  |
| 17. | Bytes of data being transferred in each connection are numbered by TCP. These numbers start with a …… |
| Option A: | Fixed number |
| Option B: | Zero |
| Option C: | One |
| Option D: | Randomly generated number |
|  |  |
| 18. | Which of the following control fields in TCP header is used to specify whether the sender has no more data to transmit? |
| Option A: | FIN |
| Option B: | RST |
| Option C: | SYN |
| Option D: | PSH |
|  |  |
| 19. | In which technique station transmits with a probability of 1 when it finds the channel idle. |
| Option A: | 1 persistent |
| Option B: | P persistent |
| Option C: | Non persistent |
| Option D: | K persistent |
|  |  |
| 20. | Which of the following routing algorithms cannot be used for network layer design? |
| Option A: | Shortest path algorithm |
| Option B: | Distance vector routing |
| Option C: | Link state routing |
| Option D: | Error-correction protocol |
|  |  |
| 21. | TCP packet is encapsulated in a…… |
| Option A: | UDP Datagram |
| Option B: | IP Datagram |
| Option C: | TCP Segment |
| Option D: | Frame |
|  |  |
| 22. | Encryption and Decryption are the functions of the following layer of OSI mode |
| Option A: | Transport |
| Option B: | Session |
| Option C: | Data link layer |
| Option D: | Presentation |
|  |  |
| 23. | Header size of the ICMP message is \_\_\_\_\_\_\_\_\_ |
| Option A: | 8-bytes |
| Option B: | 8-bits |
| Option C: | 16-bytes |
| Option D: | 16-bits |
|  |  |
| 24. | Which of the following file transfer protocols use TCP and establishes two virtual circuits between the local and remote server? |
| Option A: | FTP |
| Option B: | TFTP |
| Option C: | TELNET |
| Option D: | NFS |
|  |  |
| 25. | Typically the TCP port used by SMTP is \_\_\_\_\_\_\_\_\_ |
| Option A: | 25 |
| Option B: | 35 |
| Option C: | 50 |
| Option D: | 15 |
|  |  |
| 26. | By using which of the following gives us constant time delay? |
| Option A: |  FDM Technique |
| Option B: |  WDM Technique |
| Option C: |  Synchronous TDM Technique |
| Option D: |  CDM Technique |
|  |  |
| 27. | Frame relay has error detection at the \_\_\_\_\_\_ |
| Option A: |  physical layer |
| Option B: |  data link layer |
| Option C: |  network layer |
| Option D: |  Transport layer |
|  |  |
| 28. | The number of layers in ISO OSI reference model is \_\_\_\_\_\_\_\_\_\_ |
| Option A: | 5 |
| Option B: | 7 |
| Option C: | 6 |
| Option D: | 10 |
|  |  |
| 29. | In Byte stuffing a special byte is added to the data section of frame when there is a character with the same pattern as the |
| Option A: | Flag |
| Option B: | Error |
| Option C: |  Sender  |
| Option D: | Destination |
|  |  |
| 30. | In HDLC protocol , the frames sent by the secondary station are called |
| Option A: |  commands |
| Option B: |  responses |
| Option C: |  data |
| Option D: |  inputs |
|  |  |
| 31. | Which multiple access technique is used by IEEE 802.11 standard for wireless LAN? |
| Option A: |  CDMA |
| Option B: |  CSMA/CA |
| Option C: |  ALOHA |
| Option D: |  CSMA/CD |
|  |  |
| 32. | What are the common protocols associated with the network layer? |
| Option A: |  Address Resolution Protocol |
| Option B: |  Reverse Address Resolution Protocol |
| Option C: |  Internet protocol |
| Option D: |  Neighbour Discovery Protocol |
|  |  |
| 33. | Connection establishment in TCP is done by which mechanism? |
| Option A: |  Flow control |
| Option B: |  Three-Way Handshaking |
| Option C: |  Forwarding |
| Option D: |  Synchronization |
|  |  |
| 34. | Following is not the function of the MAC sublayer : |
| Option A: |  Control of access to media |
| Option B: |  Unique addressing to the stations directly connected to LAN |
| Option C: |  Error Detection |
| Option D: |  Flow control operation |
|  |  |
| 35. | Which of this is not a guided media? |
| Option A: |  Fiber optical cable |
| Option B: |  Coaxial cable |
| Option C: |  Wireless LAN |
| Option D: |  Copper wire |
|  |  |
| 36. |   The TCP segment begins with a \_\_\_\_\_\_\_\_\_\_\_fixed format header. |
| Option A: |  16 byte |
| Option B: |  20 byte |
| Option C: |  32 byte |
| Option D: |  64 byte |
|  |  |
| 37. | TCP process may not write and read data at the same speed, So we need \_\_\_\_\_\_\_\_\_\_ for storage. |
| Option A: |  Packets |
| Option B: |  Buffers |
| Option C: |  Segments |
| Option D: |  Stacks |
|  |  |
| 38. |  Which of the following tasks is not done by data link layer? |
| Option A: |  Framing |
| Option B: |  Error Control |
| Option C: |  Flow Control |
| Option D: |  Channel Coding |
|  |  |
| 39. |  The frame type that refers to High-level Data Link Control error detection field is  |
| Option A: | Frame check sequence field |
| Option B: | Control field |
| Option C: | flag field |
| Option D: | Information field |
|  |  |
| 40. |  \_\_\_\_\_\_\_\_\_\_ work at the network layer of the OSI model. |
| Option A: |  Bridges |
| Option B: |  Hubs |
| Option C: |  Routers |
| Option D: |  Gateways |
|  |  |

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| **Questions** |  |
| A | **5 marks each** |
| 1 | Explain the persistent strategies of CSMA. |
| 2 | What is data transparency? How it can be overcome using bit stuffing. |
| 3 | An organization is granted the block 211.17.180.0/24. The administrator wants to create 32 subnets.i) Find the subnet mask.ii) Find the number of addresses in each subnet.iii) Find the first and last address in subnet 1.iv) Find the first and last addresses in subnet 32. |
| 4 | Explain Connection establishment in TCP using three way handshaking. |
| 5 | 1. The following is a dump of a TCP header in hexadecimal format :

05320017 00000001 00000000 500207FF 000000001. What is the source port number?
2. What is the destination port number?
3. What is the length of the header?
4. What is the type of segment?

What is the window size? |
| 6 | Compare between distance vector routing and link state routing. |
| 7 | Compare between Packet switching and Circuit Switching. |
| 8 | Explain the fields related to fragmentation in IP datagram. |
| 9 | Which is better, ADSL or Cable? Justify your answer. |
| 10 | Explain the features of TCP. |
| 11 | Draw the IPV4 header. |
| 12 | Explain Selective repeat ARQ protocol. |
| 13 | Differentiate between Bus Topology and Ring Topology. |
| 14 | Explain the functions of Data Link Layer. |
| 15 | Write a short note on slotted ALOHA.  |
| 16 | Compare Twisted pair cable, Coaxial cable and Fiber optical cable. |
| 17 | Write a short note on Bit Stuffing framing method. |
| 18 | Explain the TCP/IP model. |
| 19 | Explain Stop and Wait protocol for error free channel. |
| 20 | The following is a dump of a UDP header in hexadecimal format.  **CB84000D001C001C**1. What is the source port number?
2. What is the destination port number?
3. What is the total length of the user datagram?
4. What is the length of the data?

Is the packet directed from a client to a server or vice versa? |
| 21 | Write a short note on Adaptive tree walk Protocol |
| 22 | Write a short note on CSMA/CD. |
| 23 | A group of N stations share 100 Kbps slotted ALOHA channel. Each station output a 500 bits frame on an average of 5000 ms even if previous one has not been sent. What is the required value of N?.  |
| B | **10 marks each** |
| 24 | An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2400 customers as follows: i) the first group has 400 small businesses: each needs approximately 16 addresses ii) the second group has 2000 households: each needs 4 addresses Design the sub blocks and give the slash notation for each sub block. Find out how many addresses are still available after these allocations |
| 25 | Explain DHCP on the same and the different networks |
| 26 | Explain the various types of frames in HDLC. |
| 27 | Explain the OSI-RM model and functions of each layer. |
| 28 | Explain Go-Back-N ARQ and Selective Repeat ARQ. |
| 29 | Explain the different error reporting messages in ICMP with message format. |
| 30 | Explain in detail the physical media used for computer communication.  |
| 31 | Explain Congestion control in TCP. |
| 32 | Explain TELNET and SSH |
| 33 | Explain in brief DSL and HFC. |
| 34 | Explain the Transition States of TCP with neat diagram. |
| 35 | Draw IPv4 Header, and explain the meaning of various fields associated with it. |
| 36 | What are the Hardware network devices? Explain any four in details. |
| 37 | Explain Distance Vector Routing Algorithm. |
| 38 | Explain the classful addresses of IPV4 with net-id and host-id |
| 39 | Explain the concept of sending an E-mail using an appropriate application layer protocol. |
| 40 | Explain the transition states of DHCP with a neat diagram. |
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| **Question Number** | **Correct Option****(Enter either ‘A’ or ‘B’ or ‘C’ or ‘D’)** |
| Q1. | B |
| Q2. | C |
| Q3. | A |
| Q4 | D |
| Q5 | C |
| Q6 | B |
| Q7 | C |
| Q8. | B |
| Q9. | A |
| Q10. | C |
| Q11. | C |
| Q12. | A |
| Q13. | A |
| Q14. | C |
| Q15. | A |
| Q16. | A |
| Q17. | D |
| Q18. | A |
| Q19. | A |
| Q20. | D |
| Q21. | B |
| Q22. | D |
| Q23. | A |
| Q24. | A |
| Q25. | A |
| Q26. | C |
| Q27. | A |
| Q28. | B |
| Q29. | A |
| Q30. | B |
| Q31. | B |
| Q32. | C |
| Q33. | B |
| Q34. | B |
| Q35. | C |
| Q36. | B |
| Q37. | B |
| Q38. | C |
| Q39. | A |
| Q40. | A |