

University of Mumbai
Examination June 2021

Examinations Commencing from 1st June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2019

Examination: BE Semester IV

Course Code: ITC402 and Course Name: Computer Network and Network Design

Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|------------|--|
| 1. | OSI stands for |
| Option A: | Open system interconnection |
| Option B: | Operating system interface |
| Option C: | Optical service implementation |
| Option D: | Open service internet |
| 2. | Which topology is most fastest topology? |
| Option A: | Star |
| Option B: | Hybrid |
| Option C: | Mesh |
| Option D: | Bus |
| 3. | Which medium has the highest transmission speed? |
| Option A: | Coaxial Cable |
| Option B: | Optical fiber cable |
| Option C: | Twisted pair cable |
| Option D: | Electrical cable |
| 4. | A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 011111000100, then the input bit-string is |
| Option A: | Output = 01111100100 |
| Option B: | Output = 011111100100 |
| Option C: | Output = 011111001100 |
| Option D: | Output = 011111111 |
| 5. | In CSMA/CD, the frame transmission time (T_t) should be _____ the propagation time(T_p) |
| Option A: | $T_t > T_p$ |
| Option B: | $T_t \geq 2T_p$ |
| Option C: | $T_t > 2T_p$ |
| Option D: | $T_t > 1/T_p$ |
| 6. | What is the total vulnerable time value of pure Aloha? |
| Option A: | $1/2 T_{fr}$ |
| Option B: | T_{fr} |
| Option C: | $2 * T_{fr}$ |
| Option D: | $4 * T_{fr}$ |

| | |
|-----------|--|
| 7. | A subset of a network that includes all the routers but contains no loops is called _____ |
| Option A: | spanning tree |
| Option B: | cost tree |
| Option C: | path tree |
| Option D: | special tree |
| 8. | In IPv6, the _____ field in the base header restricts the lifetime of a datagram. |
| Option A: | version |
| Option B: | next-header |
| Option C: | hop limit |
| Option D: | neighbour-advertisement |
| 9. | The term _____ means that IP provides no error checking or tracking. IP assumes the unreliability of the underlying layers and does its best to get a transmission through to its destination, but with no guarantees. |
| Option A: | Reliable delivery |
| Option B: | Connection oriented delivery |
| Option C: | Best effort delivery |
| Option D: | Worst delivery |
| 10. | OSPF protocol uses which algorithm? |
| Option A: | Distance Vector |
| Option B: | Path Vector |
| Option C: | Link State Routing |
| Option D: | RIP |
| 11. | Which of the following transport layer protocols is used to support electronic mail? |
| Option A: | SMTP |
| Option B: | IP |
| Option C: | TCP |
| Option D: | UDP |
| 12. | In TCP, one end can stop sending data while still receiving data. This is called a _____ termination. |
| Option A: | half-close |
| Option B: | half-open |
| Option C: | full-close |
| Option D: | Full open |
| 13. | Which of the following functionalities must be implemented by a transport protocol over and above the network protocol? |
| Option A: | Recovery from packet losses |
| Option B: | Detection of duplicate packets |
| Option C: | Packet delivery in the correct order |
| Option D: | End to end connectivity |
| 14. | In TCP, if the ACK value is 200, then byte _____ has been received successfully. |
| Option A: | 199 |

| | |
|------------|---|
| Option B: | 200 |
| Option C: | 201 |
| Option D: | 202 |
| | |
| 15. | The second phase of JPEG compression process is _____. |
| Option A: | DCT transformation |
| Option B: | Quantization |
| Option C: | lossless compression encoding |
| Option D: | None of the choices are correct. |
| | |
| 16. | During an FTP session the data connection may be opened _____. |
| Option A: | only once |
| Option B: | only two times |
| Option C: | Five times |
| Option D: | as many times as needed |
| | |
| 17. | The protocol data unit (PDU) for the application layer in the Internet stack is _____. |
| Option A: | segment. |
| Option B: | datagram. |
| Option C: | message. |
| Option D: | frame. |
| | |
| 18. | A table of a router normally contains addresses belonging to _____ protocol. |
| Option A: | a single |
| Option B: | Two |
| Option C: | Three |
| Option D: | multiple |
| | |
| 19. | The first address assigned to an organization in classless addressing _____. |
| Option A: | must be a power of 2 |
| Option B: | must be a power of 4 |
| Option C: | must belong to one of the A, B, or C classes |
| Option D: | must be evenly divisible by the number of addresses |
| | |
| 20. | An organization is granted a block of classless addresses with the starting address 199.34.32.0/27. How many addresses are granted? |
| Option A: | 4 |
| Option B: | 8 |
| Option C: | 16 |
| Option D: | 32 |
| | |
| Q2. | Solve any Two out of Three 10 marks each |
| A | Explain the OSI Model in brief with suitable figure |
| B | What is a sliding window? Explain Go back N protocol in detail |
| C | What do you mean by switching? What are the types of switching techniques |

| | | | | | | | | | | | | |
|-------------|--|----------------------|--------|-----|----|----|----|-------------|-----|-----|-----|-----|
| Q3. | Solve any Two out of Three | 10 marks each | | | | | | | | | | |
| A | What is congestion and what are causes of congestion? | | | | | | | | | | | |
| B | Compare TCP and UDP. | | | | | | | | | | | |
| C | Consider five source symbols of a discrete memory less source. Their probabilities are given below. Find the Huffman code for each symbol. | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Symbol</td> <td>M1</td> <td>M2</td> <td>M3</td> <td>M4</td> </tr> <tr> <td>probability</td> <td>0.4</td> <td>0.3</td> <td>0.2</td> <td>0.1</td> </tr> </table> | | Symbol | M1 | M2 | M3 | M4 | probability | 0.4 | 0.3 | 0.2 | 0.1 |
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| probability | 0.4 | 0.3 | 0.2 | 0.1 | | | | | | | | |

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| Question Number | Correct Option (Enter either 'A' or 'B' or 'C' or 'D') |
|------------------------|---|
| Q1. | A |
| Q2. | C |
| Q3. | B |
| Q4 | A |
| Q5 | B |
| Q6 | C |
| Q7 | A |
| Q8. | C |
| Q9. | C |
| Q10. | C |
| Q11. | C |
| Q12. | A |
| Q13. | D |
| Q14. | A |
| Q15. | B |
| Q16. | D |
| Q17. | C |
| Q18. | A |
| Q19. | D |
| Q20. | D |