



Cloud Computing

Assignment- Week 0

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 10

Total mark: 10 X 1 = 10

QUESTION 1:

Which of the following ports is a registered port in network paradigm?

- a) 20
- b) 1020
- c) 36255
- d) 58628

Correct Answer: (c)

Detailed Solution: Ports with numbers 0–1023 are called system or well-known ports, ports with numbers 1024 – 49151 are called user or registered ports, and ports with numbers 49152 – 65535 are called dynamic, private or ephemeral ports. Here only the port with number 36255 is a registered port.

QUESTION 2:

Which device uses a logical addressing system?

- a) Hub
- b) Router
- c) Bridge
- d) Switch

Correct Answer: (b)

Detailed Solution: Router uses logical addressing system.

QUESTION 3:

Which of the following is FALSE?

- a) Kernel level threads cannot share the code segment.
- b) User level threads are not scheduled by the kernel.
- c) Context switching between user level threads is faster than context switching between kernel level threads.
- d) When a user level thread is blocked, all other threads of its process are blocked.

Correct Answer: (a)

Detailed Solution: Kernel-level threads can share code segments. So, A is FALSE. User level threads are scheduled by the thread library and the kernel is not involved. So, B is TRUE. Context

switching between user level threads is faster as they have no actual context-switch, nothing is saved while for kernel level threads, Registers, PC and SP must be saved and restored. So, C is TRUE. When a user level thread is blocked, all other threads of its process are blocked. So, D is TRUE.

QUESTION 4:

In classful addressing, the IP address 192.2.255.255 belongs to which class?

- a) Class A
- b) Class B
- c) Class C
- d) Class D

Correct Answer: (c)

Detailed Solution: In Class C, IP addresses range from 192.0.0.x to 223.255.255.x where x is a positive integer between 0 and 255.

QUESTION 5:

Consider a system with 2 level caches. The access times of Level 1 cache, Level 2 cache, and main memory are 2 ns, 25 ns, and 200 ns, respectively. The hit rates of Level 1 cache, Level 2 cache and main memory are 0.6, 0.8 and 1, respectively. What is the average access time of the system, ignoring the search time within the cache?

- a) 20.5 ns
- b) 25.2 ns
- c) 24 ns
- d) 22.5 ns

Correct Answer: (b)

Detailed Solution: Average access time = $[H_1 * T_1] + [(1-H_1) * H_2 * T_2] + [(1-H_1)(1-H_2) * H_m * T_m]$

H_1 = Hit rate of level 1 cache = 0.6

T_1 = Access time for level 1 cache = 2 ns

H_2 = Hit rate of level 2 cache = 0.8

T_2 = Access time for level 2 cache = 25 ns

H_m = Hit rate of Main Memory = 1

T_m = Access time for Main Memory = 200 ns

QUESTION 6:

Increasing the RAM of a computer typically improves performance because:

- a) Larger RAMs are faster
- b) Fewer page faults occur
- c) Fewer segmentation faults occur

- d) Virtual memory increases

Correct Answer: (b)

Detailed Solution: When RAM size is bigger, the page table would have more entries of pages, which increases the probability of a page being present in the page table, hence the number of page faults is lower.

QUESTION 7:

Match the following columns for the TCP/IP protocol stack:

Protocol	TCP/IP Layer
1. IP 2. UDP 3. SMTP 4. PPP	A. Transport Layer B. Application Layer C. Data link Layer D. Network Layer

- a) 1-D, 2-A, 3-B, 4-C
b) 1-C, 2-A, 3-D, 4-B
c) 1-B, 2-C, 3-A, 4-D
d) 1-A, 2-C, 3-D, 4-B

Correct Answer: (a)

Detailed Solution: IP is a network layer protocol, UDP is a transport layer protocol, SMTP is an application layer protocol and PPP is a data link layer protocol. Hence option (a) is correct.

QUESTION 8:

Consider a system with byte-addressable memory, 32-bit logical addresses, 8 Kilobyte page size and page table entries of 4 Bytes each. The size of the page table in the system is:

- a) 1 MB
b) 512 KB
c) 4 MB
d) 2 MB

Correct Answer: (d)

Detailed Solution: For byte-addressable memory, 1 word = 1 Byte.

Logical address size = 2^{32} Bytes

Page size = 8 KB = 2^{13} Bytes

Page table entry size = 4 Bytes

$$\text{Number of pages} = \frac{2^{32}}{2^{13}} = 2^{19} \text{ Bytes}$$

$$\begin{aligned} \text{Page table size} &= \text{Number of pages} \times \text{Page table entry size} \\ &= 2^{19} \times 4 \\ &= 2^{21} \text{ Bytes} \\ &= 2 \text{ MB} \end{aligned}$$

QUESTION 9:

The transport layer protocols used for real time multimedia, file transfer, DNS and email, respectively are:

- a) TCP, UDP, UDP and TCP
- b) UDP, TCP, TCP and UDP
- c) TCP, UDP, TCP and UDP
- d) UDP, TCP, UDP and TCP

Correct Answer: (d)

Detailed Solution:

1. For real-time multimedia applications the packets must be delivered faster. Small packet losses are not important. Hence UDP is used.
2. For file transfer applications, FTP is used which relies on TCP.
3. Domain Name Server (DNS) generally employs UDP as its underlying transport layer protocol.
4. E-mail employs SMTP which also uses TCP.

Hence, option (d) is correct.

QUESTION 10:

In OSI network architecture, the routing is performed by:

- a) Network Layer
- b) Transport Layer
- c) Data Link Layer
- d) Session Layer

Correct Answer: (a)

Detailed Solution: In OSI network architecture, the routing is performed by the network layer.
