

COMPUTER NETWORK

Q1. What is the hexadecimal address of the ipaddress 192.41.6.20 ?

- (A) 192CB (B) CBA 5 (C) C0290614 (D) C498

Q2. Which of the following protocols are connection oriented ?

- (A) UDP (B) TCP (C) SMTP (D) ICMP

Q3. Television channels are 6 M Hz wide. How many bits/sec can be sent if four-level digital signal is used. Assume the channel is noiseless

- (A) 30 Mbps (B) 12 Mbps (C) 20 Mbps (D) 24Mbps

Q4. If a message has 20 bits word, then determines the smallest number of redundant bits required to detect and correct 1 bit error.

- (A) 5 (B) 10 (C) 34 (D) 23

Q5. Which of the following routing algorithms can land in count to infinity problem?

- (A) Flooding (B) Selective flooding (C) Goback N (D)Distance vector.

Q6. For class C network subnetting, how many bits I has to borrow from host part to network part, so that each subnet shall support at most two computers only.

- (A) 6 (B) 60 (C) 10 (D) 4

Q7. If a signal consists of 16 discrete levels and is transmitted over a noise less channel of band width 3-kHz. Then determine maximum allowable data rate of the channel.

- (A) 24000 bps (B) 30 KHZ (C) 2 MB (D) 3 GB

Q8. A system has n-layer protocol hierarchy. Applications generate message of length M bytes. At each of the layers, an h-bytes header is added. What fraction of bandwidth is filled with header ?

- (A) Mn (B) $nh/(nh+M)$ (C) 2M (D) 2n

Q9. What is the size of an ATM cell?

- (A) 53 octets (B) 23 octets (C) 34 octets (D) 100 Mhz

Q10. Slow start and Fast recovery is a congestion management policy corresponds to which of the following protocol?

- (A) UDP (B) SMTP (C) TCP (D) http

Q11. For TCP termination procedure how many messages are exchanged between sender and receiver?

- (A) 4 (B) 3 (C) 12 (D) 1

Q12: Suppose a channel was operating 1Mhz using FDM. If we switch over into CDMA technology using chip sequence size is 8 bits. Then what additional band width will be required to implement CDMA?

- (A) 8Mhz (B) 4Mbps (C) 2Mbps (D) 10 KHZ

Q13. Which protocol is used to retrieve mails from mailbox

- (A) POP3 (B) E-mail (C) SNMP (D) ICMP

DATA STRUCTURE

Q1. What is the relation between front and rear parameters of a circular queue of maximum size 'n' to conclude that the queue is full?

- (A) $(rear+1)\%n=front$ (B) $rear=front$ (C) $rear-1=front$ (D) $front=front* rear$

Q2. What is value of the following prefix expression?

$+, -, *, 2, 3, 5, /, \uparrow, 2, 3, 4$

- (A) 7 (B) 3 (C) 56 (D) 2

- Q3. Which data structure is used to calculate factorial of a number using recursion?
 (A) stack (B) tree (C) queue (D) Hashing
- Q4. How many disk movements are required to solve the Tower of Hanoi puzzle with 7 disks?
 (A) 64 (B) 7 (C) 128 (D) 14
- Q5. If a connected graph has all edges have equal weight. Then which of the following algorithm can efficiently solve the single source shortest path problem
 (A) BFS (B) Dijkstra (C) DFS (D) Krushkal
- Q6. How many binary search trees can be constructed using exactly 4 keys?
 (A) 24 (B) 20 (C) 13 (D) 11
- Q7. If u and v are non-adjacent vertices of a connected graph with n -nodes, then the sufficient condition for the graph to be Hamiltonian is
 (A) $d(v) + d(u) < n$ (B) $d(v) + d(u) \geq n$ (C) $d(v) = d(u)$ (D) $2d(v)$
- Q8. What is the worst number of comparisons required to insert a key to a 2-3-4 tree having n -keys:
 (A) $3 \log n$ (B) n (C) $\log n$ (D) $7n$
- Q9. How many rotations are required to balance a tree if it was constructed with keys in the order 9, 15, 13, 14?
 (A) 4 (B) 7 (C) 5 (D) 3
- Q10. If a hash table size is 5, and keys are 0, 1, 2, 4, 3, 13, 50, 24. Then how many collisions will occur in division remainder hashing?
 (A) 3 (B) 5 (C) 13 (D) 50

DMS

- Q1. What is the minimal expression of the following Boolean expressions “ $xy' + x'y + x'y'$ ”?
- Q2. Find the solution of the recurrence relation $(a_n)^2 - (a_{n-1})^2 = 1, n \geq 1, a_0 = 1$.
 (A) $a_n = \sqrt{n+1}$ (B) $n * n$ (C) $a_n = 2^n$ (D) $a_n = 2^n + n$
- Q3. How many committees of five people can be chosen from 20 men and 12 women if at least three women must be in each committee?
- Q4. How many elements you will have in a symmetric group S_4 ?
- Q5. Find the least upper bound and greatest lower bound of the set $\{3, 9, 12\}$ if exist, in the poset $(\mathbb{Z}^+, |)$. Where $|$ is a divide relation.
 (A) 3, 36 (B) 3, 12 (C) 3, 9 (D) 12, 3
- Q6. Give an example of non-abelian group having an abelian subgroup.
- Q7. Draw the hasse diagram and find the maximal and minimal elements of the poset $(\{2, 4, 5, 10, 12, 20, 25\}, |)$. Where $|$ denotes the divide relation.
- Q8. Find the minimum number of students in a class to be sure that three of them are born in the same month.
- Q9. Let $A = \{1, 2, 3, 4\}$ and $R = \{(1, 2), (2, 3), (3, 4), (2, 1)\}$, then find the transitive closure of R
- Q10 How many positive integers not exceeding 1000 are divisible by 7 or 11.

ANSWER TO MODEL QUESTIONS

NETWORKING

1 – C

2 – (B) , (C)

3 – (D).

4 – A

5 – D

6 – A

7 – A

8 – B

9 – A

10 – A

13 – A

DATA STRUCTURE

1 – A

2 – B

3 – A

4 – C

5 – A

6 – A

7 – B

8 – A

9 – A

10 – A

DMS

1 – $x'+y'$

2 – A

3 –

$C(12,3)*C(20,2)+C(12,4)*C(20,1)+C(12,5)*C(20,0)$

4 – 24

5 – A

6 – Ans S_3

7 – Ans : min={2,5} max={12,20,25}

8 – Ans 25.

9 – Ans:

{(1,1),(1,2),(1,3),(1,4),(2,1),(2,2),(2,3),(2,4).
(3,4)}

10 – Ans: $140+90-12=220$