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Entrance Exam. For Ph. D. (CSE)

Q1. In a universal hashing table of size 50 Given only that the hash value for the key "Bunty" is 25, the probability that the hash value for "Shunty" is 25?
   a. 1/25
   b. 1/50
   c. 1/2
   d. 1/4

Q2. The relation "is an ancestor of" in a rooted tree, is always
   a. Symmetric
   b. Transitive
   c. A and B
   d. Neither A nor B

Q3. An Ethernet frame is 32 bytes long. How many extra bytes should be added to the frame before transmission? [Question ID = 2771]
   a. 32 bytes [Option ID = 11082]
   b. 48 bytes [Option ID = 11083]
   c. 64 bytes [Option ID = 11084]
   d. 16 bytes [Option ID = 11081]

Q4. What is the output printed by the following code

```
Int main ()
{
    int i,j;
    float result = 10000;
    for(i=1;i<=3;i++)
            for(j=4;j>1;j=j/2);
                    result = result/j;
    cout<<result;
}
```
   a. Infinity [Option ID = 11048]
   b. 13 [Option ID = 11046]
   c. 10000[Option ID = 11047]
   d. 13.28 [Option ID = 11045]

Q5. Consider the following pseudocode that operated on a non-empty queue Q as uses a stack S:

```
func(Queue *Q){
Stack S;
while(!isEmpty(Q)){
Elem=dequeue(Q);
Push(S,elem);
```

```
} while(!isEmpty(S))){
Elem=pop(S);
Enqueue(Q,elem);
}
}
```

Then func does the following:

a. Empties the input queue Q. [Option ID = 93491]

b. Reverses the input queue Q. [Option ID = 93493]

c. Double the number of elements in the input queue Q. [Option ID = 93492]

d. Keeps the input queue Q as it was before the function call. [Option ID = 93490]

Q6. Which of the following inter-process communication mechanism is most efficient in an operating system? [Question ID = 2772]

a. Semaphore [Option ID = 11087]

b. Shared memory [Option ID = 11085]

c. Message Passing [Option ID = 11086]

d. Message queue [Option ID = 11088]

Q7. This examination paper has 100 multiple-choice questions of one mark each, with each question having four choices only one of which is correct. Each incorrect answer fetches - 0.25 mark. Suppose you choose all your answers randomly with uniform probability. Then the expected mark you obtain is [Question ID = 2759]

a. 6.25 [Option ID = 11036]

b. 0 [Option ID = 11033]

c. 37.5 [Option ID = 11035]

d. 17.5 [Option ID = 11034]

Q8. Which of these is a disadvantage of DRAM memory? [Question ID = 2766]

a. It requires periodic refreshing. [Option ID = 11063]

b. None of these [Option ID = 11064]

c. It is made of silicon. [Option ID = 11062]

d. Memory is stored off-chip. [Option ID = 11061]

Q9. What is the output of the following C++ code segment (assuming that the space occupied by an int variable is 2 and a pointer variable is 4)?

```
int a[] = {43,56,12,61,39},*ap=a;
cout << (ap[4] – ap[1])<<""<< (&ap[4] - &ap[1])<<""<<(*(ap+4)-*(ap+1));
```

a. 5 3 5 [Option ID = 11058]

b. -17 6 -17 [Option ID = 11059]

c. -17 3 -17 [Option ID = 11060]

d. 5 6 5 [Option ID = 11057]

Q10. A CPU has 32 bit address lines and 16 bit datalines. The maximum primary memory addressing capacity of the CPU is [Question ID =2768]

a. 4 MB [Option ID = 11072]

b. 2 GB [Option ID = 11070]

c. 64 KB [Option ID = 11069]

d. 4 GB [Option ID = 11071]

Q11. RAID is used for

a. Fault tolerance and Performance in multiple disks

b. Used for generating speed of data access

c. Resource sharing tool

d. Rotating disks for access

Q12. The natural join is equal to :

a. Comtination of Union and Cartesian product

b. Combination of selection and Cartesian product

c. Combination of projection and Cartesian product

d. Cartesian Product

Q13. A database trigger is:

a. A statement that is executed by user when debugging an application program

b. A condition the system tests for the validity of the database user

c. A statement that is executed automatically by the system as a side effect of modification on the database

d. A statement that enables to start any DBMS

Q14. How many elements can be sorted in O(logn) time using Heap sort?

a. O(1)

b. O(n/2)

c. O(logn/log(logn))

d. O(logn)

Q15. Heap sort algorithm is the same as of which of the following algorithms, except for the fact that it uses the heap data structure

a. Bubble Sort

b. Shell Sort

c. Merge Sort

d. Selection Sort

Q16. The postfix expression ABC+*DE*/ is equivalent to which of the following prefix expression?

a. */*A+BCDE

b. /*A+BC*DE

c. /+*ABC*DE

d. */+*ABCDE

Q17. In operating systems when does multi-level feedback scheduling becomes FCFS?

a. When the time for migration is infinite

b. When the priority is same for all processes

c. When time slice is same

d. Quantum of time needed by each process is same

Q18. In databases, spurious tuples may occur due to
   i. Bad normalization
   ii. Theta joins
   iii. Updating tables from joins other than theta joins
      a. (ii) only
      b. (i) and (ii) only
      c. (i) and (iii) only
      d. (ii) and (iii) only

Q19. Select 'NORTH', CUSTOMER from CUST DTLS where REGION='N' order by CUSTOMER Union select 'EAST' CUSTOMER from CUST _DTLS where REGION = 'E' order by CUSTOMER. The above is'
   a. Not an error
   b. Error – the string in single quotes 'NORTH' and 'EAST'
   c. Error – the string should be in double quotes
   d. Error – ORDER by clause

Q20. Normalization of database is needed to
   a. Reduce data error
   b. Elimination data redundancy
   c. Make more accurate data
   d. None of these

Q21. When the transaction finishes the final statement, it enters into
   a. Active state
   b. Committed state
   c. Partially committed state
   d. Abort state

Q22. Given FD:{A->B, B->D, C->D} of the relation R={A,B,C,D}, Candidate key will be
   a. A
   b. B
   c. AB
   d. None of these

Q23. An architecture in which data is sent in a rhythmic fashion is known as
   a. Systolic array
   b. Linear array
   c. Chordal ring
   d. None of these

Q24. The number of machine instructions to be executed in the program is called the
   a. Cycle
   b. Time period
   c. Instruction count

d. None of these

Q25. An n-dimensional hypercube has

    a. n n nodes

    b. n nodes

    c. 2 n

    d. None of these

Q26. The regular expression (a/b)* abb denotes

    a. All possible combinations of a's and b's

    b. Set of all strings ending with abb

    c. Set of all strings starting with a and ending with abb

    d. None of these

Q27. Which if the following is used for grouping of characters into tokens?

    a. Parser

    b. Code optimization

    c. Code generator

    d. Lexical analyzer

Q28. The regular expression representing the set of all strings over(x,y) ending with xx beginning with y is

    a. $xx(x+y)*y$

    b. $y(x+y)*xx$

    c. $yy(x+y)*x$

    d. $y(xy)*xx$

Q29. Symbol table can be used for

    a. Checking type compatibility

    b. Suppressing duplicate error messages

    c. Storage allocation

    d. All of them

Q30. The graph that shows basic blocks and their successor relationship is called

    a. DAG

    b. Flow chart

    c. Control graph

    d. Hamiltonian graph

Q31. The method which merges the bodies of two loops is

    a. Loop unrolling

    b. Loop ramming

    c. Constant folding

    d. None of these

Q32. The peep-hole optimization

    a. Is applied to a small part of the code

    b. Can be used to optimize intermediate code

c. Can be applied to a portion of the code that is not contiguous

d. All of these

Q33. Which of the following is not loop optimization?

    a. Induction variable elimination

    b. Loop unrolling

    c. Loop jamming

    d. Loop heading

Q34. Optimization(s) connected with x:=x+0 is/are

    a. Peephole and algebraic

    b. Reduction in strength and algebraic

    c. Peephole only

    d. Loop and peephole

Q35. Which of the following is false?

    a. Segmentation suffers from external fragmentation

    b. Paging suffers from internal fragmentation

    c. Virtual memory is used only in multi-user system

    d. Segmented memory can be paged

Q36. To enable a process to be larger than the amount of memory allocated to it, one can use A.

    a. Overlays

    b. Paging

    c. Compaction

    d. Swapping

Q37. Which of the following page replacement algorithms suffers from Belady's anomaly?

    a. Optimal replacement

    b. LRU

    c. FIFO

    d. Both A and B

Q38. Virtual memory means

    a. The job size is not bounded by physical memory limit

    b. The job size is bounded by the physical memory limit

    c. Independent of physical memory limit

    d. None of these

Q39. Page fault occurs when

    a. The page in corrupted by application software

    b. The page is not in main memory

    c. The page is in main memory

    d. One tries to divide a number by

Q40. Thrashing

    a. Reduces page I/O

    b. Decreases the degree of multiprogramming

c. Implies excessive page I/O
d. Improves the system performance

Course: CSE

Answer Key

Question	Answer	Question	Answer
1	B	21	C
2	B	22	D
3	A	23	A
4	C	24	C
5	B	25	C
6	B	26	B
7	A	27	D
8	A	28	B
9	C	29	D
10	D	30	B
11	A	31	B
12	C	32	A
13	C	33	D
14	C	34	C
15	D	35	C
16	B	36	A
17	B	37	C
18	C	38	A
19	D	39	B
20	B	40	C