## Code No.

N-3572

## Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2022

## CSS

## COMPUTER SCIENCE/COMPUTER SCIENCE (ARTIFICIAL INTELLIGENCE)

## General Instructions

1. The Question Paper is having two Parts - Part ' $A$ ' Objective type (60\%) \& Part ' $B$ ' Descriptive type (40\%).
2. Objective type questions which carry 1 mark each are to be ( $\checkmark$ ) 'tick marked' in the response sheets against the appropriate answers provided.
3. 8 questions are to be answered out of 12 questions carrying 5 marks each in Part ' $B$ '.
4. Negative marking : 0.25 marks will be deducted for each wrong answer in Part ' $A$ '.

Time: 2 Hours
Max. Marks : 100
To be filled in by the Candidate

| Register <br> Number | in Figures |  |  |  |  |  |  |  |  |
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PART - A
(Objective Type)
Choose appropriate answer from the options in the questions. One mark each.
( $60 \times 1=60$ marks)

1. Which of the following statements is true?
a) Stack works on the principle of LIFO
b) PC points to the last instruction that was executed
c) ROM is a Read/Write memory
d) All instruction affect the flags

2. In the absolute addressing mode
a) the operand is inside the instruction
b) the location of the operand is implicit
c) the register containing the address of the operand is specified inside the instruction
d) the address of the operand in inside the instruction
3. A micro program control unit is required to generate a total of 25 control signals. Assume that during any microinstruction, at most two control signals are active. Minimum number of bits required in the control word to generate the required control signals will be
a) 2
b) 2.5
c) 10
d) 12
4. SELECT operation in SQL is equivalent to
a) The selection operation in relational algebra
b) The projection operation in relational algebra, except that SELECT in SQL retains duplicates
c) The projection operation in relational algebra
d) The selection operation in relational algebra, except that SELECT in SQL retains duplicates
5. Given the relations
employee (name, salary, deptno) and department (deptno, deptname, address)
Which of the following queries cannot be expressed using the basic relational algebra operations
$(U,-, x, \pi, \sigma, p) ?$
a) Department address of every employee
b) Employees whose name is the same as their department name
c) The sum of all employees salaries
d) All employees of a given department
6. Which normal form is considered adequate for normal relational database design?
a) 2 NF
b) 5 NF
c) 4 NF
d) 3 NF
7. A file is organized so that the ordering of the data records is the same as or close to the ordering of data entries in some index. Then that index is called
a) Dense
b) Sparse
c) Clustered
d) Unclustered
8. A full adder can be made out of
a) two half adders
b) two half adders and a OR gate
c) two half adders and a NOT gate
d) three half adders
9. Which device has one input and many outputs?
a) Multiplexer
b) Flip flop
c) Demultiplexer
d) Counter
10. For the min-term $Y=\sum m(1,3,5,7)$ the complete expression is
a) $Y=A B C+A B$
b) $Y=A B C+A B C+A B C A B C$
c) $Y=A B C+A B C+A B C+A B C$
d) $Y=A B C+A B C+A B C+A B C$
11. A latch is sensitive
a) both level and edge
b) edge
c) level
d) leading edge
12. If you want to implement a mechanism that automates the IP configuration including IP address, Subnet mask, default gateway and DNS information which protocol will you use to accomplish this
a) SMTP
b) SNMP
c) DHCP
d) ARP
13. Which of the following is private IP address
a) 192.168 .24 .43
b) 168.172 .19 .39
c) 172.15 .14 .36
d) 12.0 .01
14. Which statements are true regarding ICMP Packets?
I. They acknowledge receipt of a TCP segment
II. They guarantee datagram delivery
III. They provide host with information about networks problems
IV. They are encapsulated within IP data grams
a) I only
b) III and IV
c) II and III
d) II, III and IV
15. A receiving host has failed to receive all of the segments that it should acknowledge. What can be the host do, to improve the reliability of this communication session?
a) Send a different source port number
b) Restart the virtual circuit
c) Decrease the sequence number
d) Decrease the window size
16. Which of the following are types of flow control
I. Buffering
II. Cut-through
III. Windowing
IV. Congestion avoidance
a) I and II
b) I, II and IV
c) II only
d) III only
17. Phishing isa form of
a) Spamming
b) Impersonation
c) Identification Theft
d) Scanning
18. The ability to inject packets into the Internet with a false source address is known as
a) Man in the middle attack
b) IP Phishing
c) IP Sniffing
d) IP Spoofing
19. The equivalent postfix expression for the infix expression $\left(A+B^{\wedge} D\right) /(E-F)+G$ is:
a) $\left(A B D^{\wedge}+E F-/ G+\right)$
b) $\left(\mathrm{ABD}+^{\wedge} E \mathrm{~F}-/ \mathrm{G}+\right)$
c) $\left(\mathrm{ABD}^{\wedge}+E \mathrm{~F} /-\mathrm{G}+\right)$
d) $\left(\mathrm{ABDEF}+{ }^{\wedge}-\mathrm{G}+\right)$
20. The complexity of enqueue operation is
a) $\mathrm{O}(\log \mathrm{n})$
b) $O(n \log n)$
c) $O(n)$
d) $\mathrm{O}(1)$
21. Which one of the following algorithm is used to find all pairs of shortest distances in a graph?
a) Dynamic programming
b) Backtracking
c) Greedy
d) Divide and Conquer
22. Which type of traversal of binary search tree outputs the value in sorted order?
a) Pre-order
b) Post-order
c) In-order
d) None
23. Which of the following sorting algorithms has the lowest worse-case complexity?
a) Merge sort
b) Bubble sort
c) Quick sort
d) Selection sort
24. In a circular linked list organization, insertion of a record involves modification of
a) One pointer
b) No pointer
c) Multiple pointers
d) Two pointers
25. In programming language terminology, "CALL BY VALUE" refers to the fact that:
a) A function call can return a value.
b) When a function is called, arguments are copied into local storage.
c) Functions can indirectly modify the value of external variables.
d) Every argument passed to a function must have a value.
26. If for an algorithm time complexity is given by $0(1)$ then complexity of it is:
a) Exponential
b) Polynomial
c) Constant
d) Variable
27. Which of the following is not a topological sorting of the given graph?

a) ABCDFE
b) ABFEDC
c) ABECFD
d) $A B C D E F$
28. What will the function rewind( ) do?
a) Reposition the file pointer to beginning of file
b) Reposition the file pointer stream to end of file
c) Reposition the file pointer to beginning of that line
d) Reposition the file pointer to a character reverse
29. What will happen, if in a C program you assign a value to an array element whose subscript exceeds the size of array?
a) The element will be set to 0
b) The compiler would report an error
c) The program may crash if some important data gets overwritten
d) The array size would appropriately increase
30. What is $x$ in the following program?
```
#include<stdio.h>
int main( )
{
    typedef char (* (*arrfptr [3]) [10]);
    arrfptr x;
    return 0;
        }
```

a) $x$ is a pointer
b) $x$ is array of three function pointer
c) $x$ is an array of three pointer.
d) Error in $x$ declaration
31. What will be Output of the program?
\#include<stdio. $h>$
int main()
\{
int $y=128$;
const int $x=y$;
printf("\%d/n", x);
return 0;
\}
a) 128
b) Garbage value
c) Error
d) 0
32. What does the following declaration mean? int (*ptr) [10];
a) Ptr is array of pointers to 10 integers.
b) Ptr is array of pointers to an array of 10 integers.
c) Ptr is array of 10 integers.
d) Ptr is a single pointer to 10 arrays.
33. Parsing is also known as
a) Syntax analysis
b) Lexical analysis
c) Semantic analysis
d) Debugging
34. Which Al technique enables the computers to understand the associations and relationships between objects and events?
a) Heuristic Processing
b) Cognitive Science
c) Relative Symbolism
d) Pattern Matching
35. Which one of the following cloud concepts is related to sharing and pooling the resources?
a) Service Replication
b) Security
c) Virtualization
d) Polimorphism
36. Dirty bit is used to show the
a) wrong page
b) page with corrupted data
c) page with low frequency occurrence
d) page that is modified after being loaded into cache memory
37. Which of the following data structure is used to represent hierarchical relationship among its elements?
a) Queue
b) Hash table
c) Tree
d) Graph
38. Which one is the accurate and efficient line-generating algorithm?
a) Midpoint algorithm
b) DDA algorithm
c) Bresenham's Line algorithm
d) Dijkstra Algorithm
39. DDA stands for
a) Direct differential analyzer
b) Data differential analyzer
c) Direct difference analyzer
d) Digital differential analyzer
40. In computer graphics which algorithm is used to detect hidden surfaces?
a) Sorting algorithm
b) Buffer algorithm
c) Object trace algorithm
d) Coloring Algorithm
41. In graphics, the number of vanishing points depends on
a) the number of axes cut by the projection plane
b) the centre of projection
c) the number of axes which are parallel to the projection plane
d) the perspective projections of any set of parallel lines that are not parallel to the projection plane
42. Anti-aliasing by computing overlap areas is referred as:
a) Area-sampling
b) Super-sampling
c) Pixel Phasing
d) Normalizing
43. What is compaction?
a) a technique for overcoming internal fragmentation
b) a paging technique
c) a technique for overcoming external fragmentation
d) a technique for overcoming fatal error
44. Which scheduler performs swopping of processes
a) Just in time Scheduler
b) Short term Scheduler
c) Long term Scheduler
d) Medium term Scheduler
45. Command interpreter is also known as
a) prompt
b) kernel
c) shell
d) command
46. Several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called a(n)
a) Shared Memory Segments
b) Entry Section
c) Race condition
d) Process Synchronization
47. Bankers algorithm is used?
a) To prevent deadlock
b) To deadlock recovery
c) To solve the deadlock
d) To do de-fragmentation
48. Which system call returns the process identifier of a tenninated child?
a) wait
b) exit
c) fork
d) get
49. The size of the address bus of 8086 microprocessor is
a) 8 bit
b) 20 bit
c) 24 bit
d) 28 bit
50. The advantage of memory mapped I/O over I/O mapped I/O is,
a) Faster
b) Many instructions supporting memory mapped I/O
c) Require a bigger address decoder
d) All the above
51. What does microprocessor speed depends on?
a) Addressing modes
b) Data bus width
c) Address bus width
d) Hard Disk capacity
52. Which interrupt has the highest priority?
a) RST6.5
b) TRAP
c) INTR
d) DMA
53. BHE of 8086 microprocessor signal is used to interface the
a) Even bank memory
b) Odd bank memory
c) $1 / 0$
d) DMA
54. What does RAD stand for?
a) Rapid Application Document
b) Rapid Application Development
c) Relative Application Development
Read Analysis Develop
55. Which of the following prototypes does not associated with Prototyping Model?
a) Domain Prototype
b) Vertical Prototype
c) Horizontal Prototype
d) Diagonal Prototype
56. The spiral model has two dimensions namely and
a) diagonal, angular
b) radial, perpendicular
c) radial, angular
d) diagonal, perpendicular
57. How is Incremental Model different from Spiral Model?
a) Progress can be measured for Incremental Model
b) Changing requirements can be accommodated in Incremental Model
c) Users can see the system early in Incremental Model
d) Coding can be done at first phase
58. Which of these is not an element of an object-oriented analysis model?
a) Behavioral elements
b) Class-based elements
c) Data elements
d) Scenario-based elements
59. The entity relationship diagram
a) depicts relationships between data objects
b) depicts functions that transform the data flow
c) indicates how data are transformed by the system
d) indicates system reactions to external events
60. Which one of the following is NOT desired in a good Software Requirement Specifications (SRS) document?
a) Functional Requirements
b) Non-Functional Requirements
c) Goals of Implementation
d) Algorithm for Software Implementation

## ANSWER SHEET - PART - A

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

# COMPUTER SCIENCE 

PART - B
(Descriptive Type)

Answer any eight questions. Each questions carries 5 marks. (8×5=40 Marks)

1. Explain CPU scheduling algorithm in detail.
2. Explain Stop and Wait ARQ and Selective Repeat ARQ.
3. How does DMA work explain with block diagram in detail?
4. What is an encoder? How is a computer keyboard encoder works?
5. How does Bresenham's line algorithm work?
6. Explain the application of 5 G technologies in detail.
7. Explain instruction format and addressing modes of 8086 .
8. Give an example of dynamic programming and explain it in detail.
9. Explain division operation on relation with table of records.
10. Write a C program to sort linked list elements.
11. Write function to traverse a graph using
a) depth first and
b) breadth first
12. Explain software reverse engineering in detail.
