

Total No. of Printed Pages : 13

(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU
ARE ASKED TO DO SO)

A

M.Phil./Ph.D./URS-EE-2020

SET-Y

SUBJECT : Computer Science

10005

Sr. No.

Time : 1¼ Hours

Max. Marks : 100

Total Questions : 100

Roll No. (in figures) _____ (in words) _____

Name _____ Father's Name _____

Mother's Name _____ Date of Examination _____

(Signature of the Candidate)

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MPH/PHD/URS-EE-2020/(Computer Science)(SET-Y)/(A)

SEAL

1. What is the maximum number of possible non-zero values in an adjacency matrix of a simple graph with n vertices ?
(1) $(n*(n-1))/2$ (2) $(n*(n+1))/2$ (3) $n*(n-1)$ (4) $n*(n+1)$
2. If L is DFA-regular, L' is :
(1) Non-regular (2) DFA-regular
(3) Non-finite (4) None of the above
3. What is the maximum number of edges in a bipartite graph having 10 vertices ?
(1) 24 (2) 21 (3) 25 (4) 16
4. $p \vee q$ is logically equivalent to:
(1) $\neg q \rightarrow \neg p$ (2) $q \rightarrow p$ (3) $\neg p \rightarrow \neg q$ (4) $\neg p \rightarrow q$
5. Which of the technique can be used to prove that a language is non-regular ?
(1) Arden's theorem (2) Pumping Lemma
(3) Ogden's Lemma (4) None of the above
6. What is the 2's complement of $(1001)_2$?
(1) $(0100)_2$ (2) $(0011)_2$ (3) $(0111)_2$ (4) $(1100)_2$
7. What are the mantissa and exponent required respectively to represent '5' in binary floating point representation ?
(1) 011, 0.110000 (2) 0.110000, 011
(3) 011, 0.101000 (4) 0.101000, 011
8. For a given graph G having v vertices and e edges which is connected and has no cycles, which of the following statements is *true* ?
(1) $v = e$ (2) $v = e + 1$
(3) $v + 1 = e$ (4) None of the above
9. The set of positive integers is :
(1) Infinite (2) Finite (3) Subset (4) Empty
10. The compound propositions p and q are called logically equivalent if is a tautology.
(1) $p \leftrightarrow q$ (2) $p \rightarrow q$ (3) $\neg(p \vee q)$ (4) $\neg p \vee \neg q$
11. 3G W-CDMA is also known as :
(1) UMTS (2) DECT (3) DCS-1800 (4) ETACS

12. To increase the speed of memory access in pipelining, we make use of
- (1) Special memory locations
 - (2) Special purpose registers
 - (3) Cache
 - (4) Buffers
13. Which instruments are used for perceiving and acting upon the environment ?
- (1) Sensors and Actuators
 - (2) Sensors
 - (3) Perceiver
 - (4) None of the mentioned
14. In which agent does the problem generator is present ?
- (1) Learning agent
 - (2) Observing agent
 - (3) Reflex agent
 - (4) None of the mentioned
15. Which application we will use to make program more portable ?
- (1) WindowsAPI
 - (2) WindowApp
 - (3) MFC
 - (4) None of these
16. What does an HTML tag do ?
- (1) It specifies formatting and layout instructions for your web page.
 - (2) It hides programming instructions from view.
 - (3) It determines the organizational structure of your web site.
 - (4) It connects your web site to an operating environment.
17. A Web document is broken into sections. What are the tags called that create these sections ?
- (1) structure tags
 - (2) html tags
 - (3) heading tags
 - (4) body tags
18. What should be the first and last pair of tags in your Web document ?
- (1) <html></html> and <body></body>
 - (2) <start><end> and <body></body>
 - (3) <head><body> and <title></title>
 - (4) <title></title> and <body></body>
19. When you use a heading tag in a document, what does the Web browser assumes ?
- (1) heading information is to appear in bold letters
 - (2) heading information is to appear on its own line
 - (3) heading information has a hyperlink
 - (4) heading information is shown as a size six

20. For every Web document, you can add words that appear in the upper left bar area of your browser. What set of tags allows you to provide this information ?
- (1) <head></head> (2) <head><head>
(3) <label></label> (4) <title></title>
21. is a high speed cache used to hold recently referenced page table entries a part of paged virtual memory.
- (1) Translation Lookaside buffer (2) Inverse page table
(3) Segmented page table (4) All the above
22. does the job of allocating a process to the processor.
- (1) Long term scheduler (2) Short term scheduler
(3) Medium term scheduler (4) Dispatcher
23. In interactive environments such as time-sharing systems, the primary requirement is to provide reasonably good response time and in general, to share system resources equitably. In such situations, the scheduling algorithm that is most popularly applied is
- (1) Shortest Remaining Time Next (SRTN) Scheduling
(2) Priority Based Preemptive Scheduling
(3) Round Robin Scheduling
(4) None of the above
24. In the multi-programming environment, the main memory consisting of number of process.
- (1) Greater than 100 (2) Only one
(3) Greater than 50 (4) More than one
25. In a multithreaded environment
- (1) Each thread is allocated with new memory from main memory.
(2) Main thread terminates after the termination of child threads.
(3) Every process can have only one thread.
(4) None of the above
26. Which of the following is *not* a 'concern' during the management of a software project ?
- (1) Money
(2) Time
(3) Product quality
(4) Product quantity

27. A Business Intelligence system requires data from :
- (1) Data warehouse
 - (2) Operational systems
 - (3) All possible sources within the organization and possibly from external sources
 - (4) Web servers
28. Data mining application domains are :
- (1) Biomedical
 - (2) DNA data analysis
 - (3) Financial data analysis
 - (4) All above
29. The generalization of multidimensional attributes of a complex object class can be performed by examining each attribute, generalizing each attribute to simple-value data and constructing a multidimensional data cube is called as
- (1) Object cube
 - (2) Relational cube
 - (3) Transactional cube
 - (4) Tuple
30. Which of the following project is a building a data mart for a business process/department that is very critical for your organization ?
- (1) High risk high reward
 - (2) High risk low reward
 - (3) Low risk low reward
 - (4) Low risk high reward
31. Which of the following tools a business intelligence system will have ?
- (1) OLAP tool
 - (2) Data mining tool
 - (3) Reporting tool
 - (4) Both (1) and (2) above
32. Which of the following is/are the Data mining tasks ?
- (1) Regression
 - (2) Classification
 - (3) Clustering
 - (4) All above
33. In a data warehouse, if D1 and D2 are two conformed dimensions, then :
- (1) D1 may be an exact replica of D2
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- (1) Pixel phasing
 - (2) Filtering
 - (3) Intensity compensation
 - (4) Sampling technique

35. The simply reads each successive byte of data from the frame buffer.
(1) Digital Controller (2) Data Controller
(3) Display Controller (4) All of above
36. If you wanted to create text that was a different color or font than other text in your Web page, what type of tag would you use ?
(1) layout (2) basic formatting
(3) design (4) outline
37. Which among the following is used to write small programs to control Unix functionalities ?
(1) Shell Commands (2) Shell Script
(3) Filters (4) C Language
38. Which of the following is considered as the super daemon in Unix ?
(1) sysinit (2) init (3) inetd (4) proc
39. How do you get help about the command "cp" in Unix ?
(1) help cp (2) man cp
(3) cp? (4) none of the mentioned
40. page replacement algorithm suffers from Belady's anomaly.
(1) LRU (2) MRU (3) FIFO (4) LIFO
41. Software configuration activities would **not** include :
(1) Identify change
(2) Control change
(3) Ensure improper implementation of change
(4) Report change to interested parties
42. In planning a software project one would :
(1) Find ways to produce results using limited resources
(2) Pad the schedule to accommodate errors
(3) Overestimate the budget
(4) Structure the team to prevent administrative interference
43. A systematic approach to software development, as epitomized by the various life-cycle models, is useful in :
(1) Helping us understand the nature of the software product
(2) Convincing the customer that we know what we are doing
(3) Filling texts on software engineering
(4) Managing the various activities necessary to get the job done

44. A process view in software engineering would consider which of the following ?
(1) Product performance (2) Staffing
(3) Functionality (4) Reliability
45. Software measurement is useful to :
(1) Indicate quality of the product (2) Track progress
(3) Assess productivity (4) All of the above
46. What is the worst-case time for heapsort to sort an array of n elements ?
(1) $O(\log n)$ (2) $O(n)$ (3) $O(n \log n)$ (4) $O(n^2)$
47. In AVL tree the balance factor of every node should be :
(1) 0 (2) 0 or 1 (3) -1, 0 or 1 (4) -1 or 1
48. The elements of linked list are stored in :
(1) Successive memory locations (2) Random memory locations
(3) Alternate memory locations (4) None of the above
49. Queue data structure is based on the principle of :
(1) Last Come First Serve (2) First Come First Serve
(3) Both (1) & (2) above (4) None of the above
50. Which of the following is a non-linear data structure ?
(1) Tree (2) Array
(3) Linked list (4) None of the above
51. Which of the following is the fastest logic ?
(1) TTL (2) ECL (3) CMOS (4) LSI
52. The linker :
(1) is similar to interpreter (2) uses source code as its input
(3) is required to create a load module (4) None of the mentioned
53. The symbol table implementation is based on the property of locality of reference is :
(1) Linear list (2) Search tree
(3) Hash Table (4) Self Organisation
54. Which concept of grammar is used in the compiler ?
(1) Lexical analysis (2) Parser
(3) Code generation (4) Code optimization

55. The behaviour of a NFA can be stimulated by DFA :
(1) Always (2) Sometimes (3) Never (4) Depends on NFA
56. To store your picture in a database requires a(n) field.
(1) BLOB (2) text (3) image (4) logical
57. The is used to access one record at a time.
(1) query (2) filter (3) form (4) report
58. A transparent DBMS ?
(1) Can not hide sensitive information from users
(2) Keep its logical structure hidden from users
(3) Keeps its physical structure hidden from users
(4) Both (2) and (3)
59. An unnormalized relation contains values :
(1) Atomic (2) Non - Atomic (3) Classified (4) None of these
60. A relation scheme is said to be in form if the values in the domain of each attribute of the relation are atomic ?
(1) Unnormalized (2) First Normal (3) Boyce CODD (4) None of these
61. A second Normal form does not permit dependency between a non-prime attribute and the relation key ?
(1) Partial (2) Multi (3) Functional (4) Valued
62. A relation scheme is in if it is in the 1 NF and if all non-prime attributes are fully functionally dependent on the relation key?
(1) First Normal Form (2) Second Normal Form
(3) Boyce Codd Normal Form (4) Fourth Normal Form
63. In a Third Normal Form relation, every attribute is non - transitively and fully dependent on the every candidate key ?
(1) Prime (2) Non-Prime (3) Unique (4) None of these
64. In the IEEE standards 802.5 standard is also called
(1) Ethernet (2) Token Bus
(3) Wireless Token Area Network (4) Token Ring
65. have a single communication channel that is shared by all the users on the network ?
(1) Point-to-Point (2) Broadcast Network
(3) Protocol (4) PAN

P. T. O.

66. Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as :
- (1) Semantic analysis
 - (2) Syntax analysis
 - (3) Regular analysis
 - (4) General analysis
67. Load address for the first word of the program is called :
- (1) Linker addression origin
 - (2) Load addression origin
 - (3) Phase library
 - (4) Absolute library
68. Symbolic names can be associated with :
- (1) Information
 - (2) data or instruction
 - (3) operand
 - (4) mnemonic operation
69. The translator which perform macro expansion is called a :
- (1) Macro processor
 - (2) Macro pre-processor
 - (3) Micro pre-processor
 - (4) Assembler
70. An assembler is :
- (1) programming language dependent
 - (2) syntax dependant
 - (3) machine dependant
 - (4) data dependant
71. Which of the following transmission systems provide the highest data rate to in individual device ?
- (1) Computer bus
 - (2) Telephone lines
 - (3) Voice and mode
 - (4) Lease lines
72. Communication circuits that transmit data in both directions but not at the same time are operating in :
- (1) a simplex mode
 - (2) a half duplex mode
 - (3) a full duplex mode
 - (4) an asynchronous mode
73. What type of information should you avoid including on your Web site ?
- (1) links to sites of interest
 - (2) private personal information
 - (3) work and academic experience
 - (4) graphical
74. Which of the following Web elements should you know about before building your Web site ?
- (1) the web audience
 - (2) the operating environment of your ISP
 - (3) the operating system of your visitor
 - (4) each consideration should determine your web design choices

75. What is the language of the Web ?
(1) Basic (2) C++
(3) MS Visual Basic (4) HTML
76. Write the output of :
main ()
{
int n1 = 4;
printf(" % d " , sizeof (n 1));
}
(1) 2 (2) 4 (3) 1 (4) 8
77. Which of the following operator can't be overloaded ?
(1) Scope resolution operator (2) Arrow operator
(3) Equality operator (4) Assignment operator
78. How do we declare an interface class ?
(1) By declaring the class as interface with keyword interface
(2) By making all the methods abstract using the keyword abstract in class
(3) By making all the methods pure virtual in class
(4) It is not possible to create interface classes in c++
79. What is the right way to declare a copy constructor of a class if the name of class is X ?
(1) X(const X* arg) (2) X(const X& arg)
(3) X(X arg) (4) X(X* arg)
80. Which statement is most appropriate for C++ language ?
(1) Type Less language (2) Statically types Language
(3) Dynamically typed language (4) Both (2) and (3)
81. Program generation activity aims at :
(1) Automatic generation of program
(2) Organize execution of a program written in PL
(3) Skips generation of program
(4) Speed generation of program
82. Which of the following loader is executed when a system is first turned on or restarted ?
(1) Boot loader (2) Compile and Go loader
(3) Bootstrap loader (4) Relating loader

83. A parser which is a variant of top-down parsing without backtracking is :
(1) Recursive Descend (2) Operator Precedence
(3) LL(I) parser (4) LALR Parser
84. is used to build 'intuitive' queries.
(1) SQL (2) Xbase (3) QBE (4) XML
85. To print information from a table, the tool is the best choice.
(1) form (2) report (3) query (4) macro
86. In regular expressions, the operator '*' stands for :
(1) Concatenation (2) Selection
(3) Iteration (4) Addition
87. A system program that set-up an executable program in main memory ready for execution is :
(1) Assembler (2) Linker (3) Loader (4) Text editor
88. Symptoms of the software crisis would include :
(1) Software delivered behind schedule
(2) Software exceeding cost estimate
(3) Unreliable
(4) All of the above
89. Which of the following projects would be a good one for adopting the prototyping paradigm for software development ?
(1) Accounting System (2) Spreadsheet
(3) Automobile Cruise Control (4) Algebra Tutor
90. Views of quality software would *not* include :
(1) Optimizing price and performance
(2) Minimizing the execution errors
(3) Conformance to specification
(4) Establishing valid requirements
91. To implement recursion, which of the following data structure is required ?
(1) Stack (2) Queue
(3) Tree (4) None of the above

92. Array passed as an argument to a function is interpreted as :
- (1) Address of the array
 - (2) Values of the first elements of the array
 - (3) Address of the first element of the array
 - (4) Number of element of the array
93. Time taken for addition of element in queue is :
- (1) $O(1)$
 - (2) $O(n)$
 - (3) $O(\log n)$
 - (4) None of these options
94. The memory address of the first element of an array is called :
- (1) floor address
 - (2) foundation address
 - (3) first address
 - (4) base address
95. How is a J-K flip-flop made to toggle ?
- (1) $J = 0, K = 0$
 - (2) $J = 1, K = 0$
 - (3) $J = 0, K = 1$
 - (4) $J = 1, K = 1$
96. Error detection at the data link level is achieved by :
- (1) Bit stuffing
 - (2) Hamming codes
 - (3) Cyclic Redundancy codes
 - (4) Equalization
97. Which of the following is an advantage to using fibre optics data transmission ?
- (1) resistance to data theft
 - (2) fast data transmission rate
 - (3) low noise level
 - (4) all of above
98. Which of the following is required to communicate between two computers ?
- (1) communications software
 - (2) protocol
 - (3) communication hardware
 - (4) all of above including access to transmission medium

99. Which of the following types of channels moves data relatively slowly ?
- (1) wide band channel
 - (2) voice band channel
 - (3) narrow band channel
 - (4) all of above
100. A protocol is a set of rules governing a time sequence of events that must take place ?
- (1) between peers
 - (2) between an interface
 - (3) between modems
 - (4) across an interface

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3. What type of information should you avoid including on your Web site ?
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 - (3) MS Visual Basic
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6. Write the output of :

```
main ()  
{  
int n1 = 4;  
printf(" %d ", sizeof ( n 1 ));  
}
```

 - (1) 2
 - (2) 4
 - (3) 1
 - (4) 8
7. Which of the following operator can't be overloaded ?
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 - (2) Arrow operator
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(1) LRU (2) MRU (3) FIFO (4) LIFO
31. 3G W-CDMA is also known as :
(1) UMTS (2) DECT (3) DCS-1800 (4) ETACS
32. To increase the speed of memory access in pipelining, we make use of
(1) Special memory locations (2) Special purpose registers
(3) Cache (4) Buffers
33. Which instruments are used for perceiving and acting upon the environment ?
(1) Sensors and Actuators (2) Sensors
(3) Perceiver (4) None of the mentioned
34. In which agent does the problem generator is present ?
(1) Learning agent (2) Observing agent
(3) Reflex agent (4) None of the mentioned
35. Which application we will use to make program more portable ?
(1) WindowsAPI (2) WindowApp
(3) MFC (4) None of these
36. What does an HTML tag do ?
(1) It specifies formatting and layout instructions for your web page.
(2) It hides programming instructions from view.
(3) It determines the organizational structure of your web site.
(4) It connects your web site to an operating environment.

37. A Web document is broken into sections. What are the tags called that create these sections ?
- (1) structure tags (2) html tags
(3) heading tags (4) body tags
38. What should be the first and last pair of tags in your Web document ?
- (1) `<html></html>` and `<body></body>`
(2) `<start><end>` and `<body></body>`
(3) `<head><body>` and `<title></title>`
(4) `<title></title>` and `<body></body>`
39. When you use a heading tag in a document, what does the Web browser assumes ?
- (1) heading information is to appear in bold letters
(2) heading information is to appear on its own line
(3) heading information has a hyperlink
(4) heading information is shown as a size six
40. For every Web document, you can add words that appear in the upper left bar area of your browser. What set of tags allows you to provide this information ?
- (1) `<head></head>` (2) `<head><head>`
(3) `<label><label>` (4) `<title></title>`
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- (1) Stack (2) Queue
(3) Tree (4) None of the above
42. Array passed as an argument to a function is interpreted as :
- (1) Address of the array
(2) Values of the first elements of the array
(3) Address of the first element of the array
(4) Number of element of the array
43. Time taken for addition of element in queue is :
- (1) $O(1)$ (2) $O(n)$
(3) $O(\log n)$ (4) None of these options
44. The memory address of the first element of an array is called :
- (1) floor address (2) foundation address
(3) first address (4) base address

45. How is a J-K flip-flop made to toggle ?
- (1) $J = 0, K = 0$
 - (2) $J = 1, K = 0$
 - (3) $J = 0, K = 1$
 - (4) $J = 1, K = 1$
46. Error detection at the data link level is achieved by :
- (1) Bit stuffing
 - (2) Hamming codes
 - (3) Cyclic Redundancy codes
 - (4) Equalization
47. Which of the following is an advantage to using fibre optics data transmission ?
- (1) resistance to data theft
 - (2) fast data transmission rate
 - (3) low noise level
 - (4) all of above
48. Which of the following is required to communicate between two computers ?
- (1) communications software
 - (2) protocol
 - (3) communication hardware
 - (4) all of above including access to transmission medium
49. Which of the following types of channels moves data relatively slowly ?
- (1) wide band channel
 - (2) voice band channel
 - (3) narrow band channel
 - (4) all of above
50. A protocol is a set of rules governing a time sequence of events that must take place ?
- (1) between peers
 - (2) between an interface
 - (3) between modems
 - (4) across an interface
51. A second Normal form does not permit dependency between a non-prime attribute and the relation key ?
- (1) Partial
 - (2) Multi
 - (3) Functional
 - (4) Valued

52. A relation scheme is in if it is in the 1 NF and if all non-prime attributes are fully functionally dependent on the relation key?
- (1) First Normal Form (2) Second Normal Form
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58. Symbolic names can be associated with :
- (1) Information (2) data or instruction
(3) operand (4) mnemonic operation
59. The translator which perform macro expansion is called a :
- (1) Macro processor (2) Macro pre-processor
(3) Micro pre-processor (4) Assembler
60. An assembler is :
- (1) programming language dependent (2) syntax dependant
(3) machine dependant (4) data dependant

61. Program generation activity aims at :
- (1) Automatic generation of program
 - (2) Organize execution of a program written in PL
 - (3) Skips generation of program
 - (4) Speed generation of program
62. Which of the following loader is executed when a system is first turned on or restarted ?
- (1) Boot loader
 - (2) Compile and Go loader
 - (3) Bootstrap loader
 - (4) Relating loader
63. A parser which is a variant of top-down parsing without backtracking is :
- (1) Recursive Descend
 - (2) Operator Precedence
 - (3) LL(I) parser
 - (4) LALR Parser
64. is used to build 'intuitive' queries.
- (1) SQL
 - (2) Xbase
 - (3) QBE
 - (4) XML
65. To print information from a table, the tool is the best choice.
- (1) form
 - (2) report
 - (3) query
 - (4) macro
66. In regular expressions, the operator '*' stands for :
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73. A systematic approach to software development, as epitomized by the various life-cycle models, is useful in :
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 - (3) Filling texts on software engineering
 - (4) Managing the various activities necessary to get the job done
74. A process view in software engineering would consider which of the following ?
- | | |
|-------------------------|-----------------|
| (1) Product performance | (2) Staffing |
| (3) Functionality | (4) Reliability |
75. Software measurement is useful to :
- | | |
|-------------------------------------|----------------------|
| (1) Indicate quality of the product | (2) Track progress |
| (3) Assess productivity | (4) All of the above |
76. What is the worst-case time for heapsort to sort an array of n elements ?
- | | | | |
|-----------------|------------|-------------------|--------------|
| (1) $O(\log n)$ | (2) $O(n)$ | (3) $O(n \log n)$ | (4) $O(n^2)$ |
|-----------------|------------|-------------------|--------------|
77. In AVL tree the balance factor of every node should be :
- | | | | |
|-------|------------|----------------|-------------|
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78. The elements of linked list are stored in :
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91. What is the maximum number of possible non-zero values in an adjacency matrix of a simple graph with n vertices ?
 (1) $(n*(n-1))/2$ (2) $(n*(n+1))/2$ (3) $n*(n-1)$ (4) $n*(n+1)$
92. If L is DFA-regular, L' is :
 (1) Non-regular
 (2) DFA-regular
 (3) Non-finite
 (4) None of the above
93. What is the maximum number of edges in a bipartite graph having 10 vertices ?
 (1) 24 (2) 21 (3) 25 (4) 16
94. $p \vee q$ is logically equivalent to:
 (1) $\neg q \rightarrow \neg p$ (2) $q \rightarrow p$ (3) $\neg p \rightarrow \neg q$ (4) $\neg p \rightarrow q$

95. Which of the technique can be used to prove that a language is non-regular ?
(1) Arden's theorem (2) Pumping Lemma
(3) Ogden's Lemma (4) None of the above
96. What is the 2's complement of $(1001)_2$?
(1) $(0100)_2$ (2) $(0011)_2$ (3) $(0111)_2$ (4) $(1100)_2$
97. What are the mantissa and exponent required respectively to represent '5' in binary floating point representation ?
(1) 011, 0.110000 (2) 0.110000, 011
(3) 011, 0.101000 (4) 0.101000, 011
98. For a given graph G having v vertices and e edges which is connected and has no cycles, which of the following statements is *true* ?
(1) $v = e$ (2) $v = e + 1$
(3) $v + 1 = e$ (4) None of the above
99. The set of positive integers is :
(1) Infinite (2) Finite (3) Subset (4) Empty
100. The compound propositions p and q are called logically equivalent if is a tautology.
(1) $p \leftrightarrow q$ (2) $p \rightarrow q$ (3) $\neg(p \vee q)$ (4) $\neg p \vee \neg q$

Total No. of Printed Pages : 13

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ARE ASKED TO DO SO)

C

SET-Y

M.Phil./Ph.D./URS-EE-2020

SUBJECT : Computer Science

10003

Sr. No.

Time : 1¼ Hours

Max. Marks : 100

Total Questions : 100

Roll No. (in figures) _____ (in words) _____

Name _____ Father's Name _____

Mother's Name _____ Date of Examination _____

(Signature of the Candidate)

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**CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE
STARTING THE QUESTION PAPER.**

1. **All questions are compulsory.**
2. The candidates **must return** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
3. Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
4. Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
5. The candidate **must not** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers **must not** be ticked in the question booklet.
6. **There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
7. Use only **Black or Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
8. **Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.**

MPH/PHD/URS-EE-2020/(Computer Science)(SET-Y)/(C)

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- (1) OLAP tool (2) Data mining tool
(3) Reporting tool (4) Both (1) and (2) above
52. Which of the following is/are the Data mining tasks ?
- (1) Regression (2) Classification
(3) Clustering (4) All above

53. In a data warehouse, if D1 and D2 are two conformed dimensions, then :
- (1) D1 may be an exact replica of D2
 - (2) D1 may be at a rolled up level of granularity compared to D2
 - (3) Columns of D1 may be a subset of D2 and vice versa
 - (4) Rows of D1 may be a subset of D2 and vice versa
54. The anti - aliasing technique which allows shift of $1/4, 1/2$ and $3/4$ of a pixel diameter enabling a closer path of a line is :
- (1) Pixel phasing
 - (2) Filtering
 - (3) Intensity compensation
 - (4) Sampling technique
55. The simply reads each successive byte of data from the frame buffer.
- (1) Digital Controller
 - (2) Data Controller
 - (3) Display Controller
 - (4) All of above
56. If you wanted to create text that was a different color or font than other text in your Web page, what type of tag would you use ?
- (1) layout
 - (2) basic formatting
 - (3) design
 - (4) outline
57. Which among the following is used to write small programs to control Unix functionalities ?
- (1) Shell Commands
 - (2) Shell Script
 - (3) Filters
 - (4) C Language
58. Which of the following is considered as the super daemon in Unix ?
- (1) sysinit
 - (2) init
 - (3) inetd
 - (4) proc
59. How do you get help about the command "cp" in Unix ?
- (1) help cp
 - (2) man cp
 - (3) cp?
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60. page replacement algorithm suffers from Belady's anomaly.
- (1) LRU
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 - (4) LIFO
61. Which of the following transmission systems provide the highest data rate to individual device ?
- (1) Computer bus
 - (2) Telephone lines
 - (3) Voice and mode
 - (4) Lease lines

62. Communication circuits that transmit data in both directions but not at the same time are operating in :
- (1) a simplex mode (2) a half duplex mode
(3) a full duplex mode (4) an asynchronous mode
63. What type of information should you avoid including on your Web site ?
- (1) links to sites of interest (2) private personal information
(3) work and academic experience (4) graphical
64. Which of the following Web elements should you know about before building your Web site ?
- (1) the web audience
(2) the operating environment of your ISP
(3) the operating system of your visitor
(4) each consideration should determine your web design choices
65. What is the language of the Web ?
- (1) Basic (2) C++
(3) MS Visual Basic (4) HTML
66. Write the output of :
- ```
main ()
{
int n1 = 4;
printf(" %d ", sizeof (n 1));
}
```
- (1) 2 (2) 4 (3) 1 (4) 8
67. Which of the following operator can't be overloaded ?
- (1) Scope resolution operator (2) Arrow operator  
(3) Equality operator (4) Assignment operator
68. How do we declare an interface class ?
- (1) By declaring the class as interface with keyword interface  
(2) By making all the methods abstract using the keyword abstract in class  
(3) By making all the methods pure virtual in class  
(4) It is not possible to create interface classes in c++

69. What is the right way to declare a copy constructor of a class if the name of class is X ?
- (1) X(const X\* arg) (2) X( const X& arg)  
(3) X(X arg) (4) X(X\* arg)
70. Which statement is most appropriate for C++ language ?
- (1) Type Less language (2) Statically types Language  
(3) Dynamically typed language (4) Both (2) and (3)
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(DO NOT OPEN THIS QUESTION BOOKLET BEFORE TIME OR UNTIL YOU  
ARE ASKED TO DO SO)

**D**

**SET-Y**

**M.Phil./Ph.D./URS-EE-2020**

**SUBJECT : Computer Science**

**10012**

Sr. No. ....

Time : 1¼ Hours

Max. Marks : 100

Total Questions : 100

Roll No. (in figures) \_\_\_\_\_ (in words) \_\_\_\_\_

Name \_\_\_\_\_ Father's Name \_\_\_\_\_

Mother's Name \_\_\_\_\_ Date of Examination \_\_\_\_\_

\_\_\_\_\_  
(Signature of the Candidate)

\_\_\_\_\_  
(Signature of the Invigilator)

**CANDIDATES MUST READ THE FOLLOWING INFORMATION/INSTRUCTIONS BEFORE  
STARTING THE QUESTION PAPER.**

- 1. All questions are compulsory.**
- The candidates **must return** the question booklet as well as OMR Answer-Sheet to the Invigilator concerned before leaving the Examination Hall, failing which a case of use of unfair-means / mis-behaviour will be registered against him / her, in addition to lodging of an FIR with the police. Further the answer-sheet of such a candidate will not be evaluated.
- Keeping in view the transparency of the examination system, carbonless OMR Sheet is provided to the candidate so that a copy of OMR Sheet may be kept by the candidate.
- Question Booklet along with answer key of all the A, B, C & D code will be got uploaded on the University website after the conduct of Entrance Examination. In case there is any discrepancy in the Question Booklet/Answer Key, the same may be brought to the notice of the Controller of Examination in writing/through E.Mail within 24 hours of uploading the same on the University Website. Thereafter, no complaint in any case, will be considered.
- The candidate **must not** do any rough work or writing in the OMR Answer-Sheet. Rough work, if any, may be done in the question booklet itself. Answers **must not** be ticked in the question booklet.
- There will be no negative marking. Each correct answer will be awarded one full mark. Cutting, erasing, overwriting and more than one answer in OMR Answer-Sheet will be treated as incorrect answer.**
- Use only **Black** or **Blue Ball Point Pen** of good quality in the OMR Answer-Sheet.
- Before answering the questions, the candidates should ensure that they have been supplied correct and complete booklet. Complaints, if any, regarding misprinting etc. will not be entertained 30 minutes after starting of the examination.**

**MPH/PHD/URS-EE-2020/(Computer Science)(SET-Y)/(D)**



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11. To implement recursion, which of the following data structure is required ?
- (1) Stack
  - (2) Queue
  - (3) Tree
  - (4) None of the above
12. Array passed as an argument to a function is interpreted as :
- (1) Address of the array
  - (2) Values of the first elements of the array
  - (3) Address of the first element of the array
  - (4) Number of element of the array
13. Time taken for addition of element in queue is :
- (1)  $O(1)$
  - (2)  $O(n)$
  - (3)  $O(\log n)$
  - (4) None of these options
14. The memory address of the first element of an array is called :
- (1) floor address
  - (2) foundation address
  - (3) first address
  - (4) base address
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21. Which of the following transmission systems provide the highest data rate to in individual device ?
- (1) Computer bus
  - (2) Telephone lines
  - (3) Voice and mode
  - (4) Lease lines
22. Communication circuits that transmit data in both directions but not at the same time are operating in :
- (1) a simplex mode
  - (2) a half duplex mode
  - (3) a full duplex mode
  - (4) an asynchronous mode
23. What type of information should you avoid including on your Web site ?
- (1) links to sites of interest
  - (2) private personal information
  - (3) work and academic experience
  - (4) graphical

24. Which of the following Web elements should you know about before building your Web site ?
- (1) the web audience
  - (2) the operating environment of your ISP
  - (3) the operating system of your visitor
  - (4) each consideration should determine your web design choices
25. What is the language of the Web ?
- (1) Basic
  - (2) C++
  - (3) MS Visual Basic
  - (4) HTML
26. Write the output of :
- ```
main ( )
{
int nl = 4;
printf(" %d ", sizeof ( n l ));
}
```
- (1) 2
 - (2) 4
 - (3) 1
 - (4) 8
27. Which of the following operator can't be overloaded ?
- (1) Scope resolution operator
 - (2) Arrow operator
 - (3) Equality operator
 - (4) Assignment operator
28. How do we declare an interface class ?
- (1) By declaring the class as interface with keyword interface
 - (2) By making all the methods abstract using the keyword abstract in class
 - (3) By making all the methods pure virtual in class
 - (4) It is not possible to create interface classes in c++
29. What is the right way to declare a copy constructor of a class if the name of class is X ?
- (1) X(const X* arg)
 - (2) X(const X& arg)
 - (3) X(X arg)
 - (4) X(X* arg)
30. Which statement is most appropriate for C++ language ?
- (1) Type Less language
 - (2) Statically types Language
 - (3) Dynamically typed language
 - (4) Both (2) and (3)
31. Which of the following is the fastest logic ?
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 - (2) First Normal
 - (3) Boyce CODD
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41. Which of the following tools a business intelligence system will have ?
- (1) OLAP tool
 - (2) Data mining tool
 - (3) Reporting tool
 - (4) Both (1) and (2) above
42. Which of the following is/are the Data mining tasks ?
- (1) Regression
 - (2) Classification
 - (3) Clustering
 - (4) All above

43. In a data warehouse, if D1 and D2 are two conformed dimensions, then :
- (1) D1 may be an exact replica of D2
 - (2) D1 may be at a rolled up level of granularity compared to D2
 - (3) Columns of D1 may be a subset of D2 and vice versa
 - (4) Rows of D1 may be a subset of D2 and vice versa
44. The anti-aliasing technique which allows shift of $1/4, 1/2$ and $3/4$ of a pixel diameter enabling a closer path of a line is :
- (1) Pixel phasing
 - (2) Filtering
 - (3) Intensity compensation
 - (4) Sampling technique
45. The simply reads each successive byte of data from the frame buffer.
- (1) Digital Controller
 - (2) Data Controller
 - (3) Display Controller
 - (4) All of above
46. If you wanted to create text that was a different color or font than other text in your Web page, what type of tag would you use ?
- (1) layout
 - (2) basic formatting
 - (3) design
 - (4) outline
47. Which among the following is used to write small programs to control Unix functionalities ?
- (1) Shell Commands
 - (2) Shell Script
 - (3) Filters
 - (4) C Language
48. Which of the following is considered as the super daemon in Unix ?
- (1) sysinit
 - (2) init
 - (3) inetd
 - (4) proc
49. How do you get help about the command "cp" in Unix ?
- (1) help cp
 - (2) man cp
 - (3) cp?
 - (4) none of the mentioned
50. page replacement algorithm suffers from Belady's anomaly.
- (1) LRU
 - (2) MRU
 - (3) FIFO
 - (4) LIFO
51. is a high speed cache used to hold recently referenced page table entries a part of paged virtual memory.
- (1) Translation Lookaside buffer
 - (2) Inverse page table
 - (3) Segmented page table
 - (4) All the above

52. does the job of allocating a process to the processor.
- (1) Long term scheduler (2) Short term scheduler
(3) Medium term scheduler (4) Dispatcher
53. In interactive environments such as time-sharing systems, the primary requirement is to provide reasonably good response time and in general, to share system resources equitably. In such situations, the scheduling algorithm that is most popularly applied is
- (1) Shortest Remaining Time Next (SRTN) Scheduling
(2) Priority Based Preemptive Scheduling
(3) Round Robin Scheduling
(4) None of the above
54. In the multi-programming environment, the main memory consisting of number of process.
- (1) Greater than 100 (2) Only one
(3) Greater than 50 (4) More than one
55. In a multithreaded environment
- (1) Each thread is allocated with new memory from main memory.
(2) Main thread terminates after the termination of child threads.
(3) Every process can have only one thread.
(4) None of the above
56. Which of the following is *not* a 'concern' during the management of a software project ?
- (1) Money (2) Time
(3) Product quality (4) Product quantity
57. A Business Intelligence system requires data from :
- (1) Data warehouse
(2) Operational systems
(3) All possible sources within the organization and possibly from external sources
(4) Web servers
58. Data mining application domains are :
- (1) Biomedical (2) DNA data analysis
(3) Financial data analysis (4) All above

59. The generalization of multidimensional attributes of a complex object class can be performed by examining each attribute, generalizing each attribute to simple-value data and constructing a multidimensional data cube is called as
- (1) Object cube (2) Relational cube
(3) Transactional cube (4) Tuple
60. Which of the following project is a building a data mart for a business process/department that is very critical for your organization ?
- (1) High risk high reward (2) High risk low reward
(3) Low risk low reward (4) Low risk high reward
61. Software configuration activities would *not* include :
- (1) Identify change
(2) Control change
(3) Ensure improper implementation of change
(4) Report change to interested parties
62. In planning a software project one would :
- (1) Find ways to produce results using limited resources
(2) Pad the schedule to accommodate errors
(3) Overestimate the budget
(4) Structure the team to prevent administrative interference
63. A systematic approach to software development, as epitomized by the various life-cycle models, is useful in :
- (1) Helping us understand the nature of the software product
(2) Convincing the customer that we know what we are doing
(3) Filling texts on software engineering
(4) Managing the various activities necessary to get the job done
64. A process view in software engineering would consider which of the following ?
- (1) Product performance (2) Staffing
(3) Functionality (4) Reliability
65. Software measurement is useful to :
- (1) Indicate quality of the product (2) Track progress
(3) Assess productivity (4) All of the above
66. What is the worst-case time for heapsort to sort an array of n elements ?
- (1) $O(\log n)$ (2) $O(n)$ (3) $O(n \log n)$ (4) $O(n^2)$

67. In AVL tree the balance factor of every node should be :
(1) 0 (2) 0 or 1 (3) -1, 0 or 1 (4) -1 or 1
68. The elements of linked list are stored in :
(1) Successive memory locations (2) Random memory locations
(3) Alternate memory locations (4) None of the above
69. Queue data structure is based on the principle of :
(1) Last Come First Serve (2) First Come First Serve
(3) Both (1) & (2) above (4) None of the above
70. Which of the following is a non-linear data structure ?
(1) Tree (2) Array
(3) Linked list (4) None of the above
71. A second Normal form does not permit dependency between a non-prime attribute and the relation key ?
(1) Partial (2) Multi (3) Functional (4) Valued
72. A relation scheme is in if it is in the 1 NF and if all non-prime attributes are fully functionally dependent on the relation key?
(1) First Normal Form (2) Second Normal Form
(3) Boyce Codd Normal Form (4) Fourth Normal Form
73. In a Third Normal Form relation, every attribute is non - transitively and fully dependent on the every candidate key ?
(1) Prime (2) Non-Prime (3) Unique (4) None of these
74. In the IEEE standards 802.5 standard is also called
(1) Ethernet (2) Token Bus
(3) Wireless Token Area Network (4) Token Ring
75. have a single communication channel that is shared by all the users on the network ?
(1) Point-to-Point (2) Broadcast Network
(3) Protocol (4) PAN
76. Analysis which determines the meaning of a statement once its grammatical structure becomes known is termed as :
(1) Semantic analysis (2) Syntax analysis
(3) Regular analysis (4) General analysis

77. Load address for the first word of the program is called :
 (1) Linker addression origin (2) Load addression origin
 (3) Phase library (4) Absolute library
78. Symbolic names can be associated with :
 (1) Information (2) data or instruction
 (3) operand (4) mnemonic operation
79. The translator which perform macro expansion is called a :
 (1) Macro processor (2) Macro pre-processor
 (3) Micro pre-processor (4) Assembler
80. An assembler is :
 (1) programming language dependent (2) syntax dependant
 (3) machine dependant (4) data dependant
81. What is the maximum number of possible non-zero values in an adjacency matrix of a simple graph with n vertices ?
 (1) $(n*(n-1))/2$ (2) $(n*(n+1))/2$ (3) $n*(n-1)$ (4) $n*(n+1)$
82. If L is DFA-regular, L' is :
 (1) Non-regular (2) DFA-regular
 (3) Non-finite (4) None of the above
83. What is the maximum number of edges in a bipartite graph having 10 vertices ?
 (1) 24 (2) 21 (3) 25 (4) 16
84. $p \vee q$ is logically equivalent to:
 (1) $\neg q \rightarrow \neg p$ (2) $q \rightarrow p$ (3) $\neg p \rightarrow \neg q$ (4) $\neg p \rightarrow q$
85. Which of the technique can be used to prove that a language is non-regular ?
 (1) Arden's theorem (2) Pumping Lemma
 (3) Ogden's Lemma (4) None of the above
86. What is the 2's complement of $(1001)_2$?
 (1) $(0100)_2$ (2) $(0011)_2$ (3) $(0111)_2$ (4) $(1100)_2$
87. What are the mantissa and exponent required respectively to represent '5' in binary floating point representation ?
 (1) 011, 0.110000 (2) 0.110000, 011
 (3) 011, 0.101000 (4) 0.101000, 011

88. For a given graph G having v vertices and e edges which is connected and has no cycles, which of the following statements is *true* ?
- (1) $v = e$ (2) $v = e + 1$
 (3) $v + 1 = e$ (4) None of the above
89. The set of positive integers is :
- (1) Infinite (2) Finite (3) Subset (4) Empty
90. The compound propositions p and q are called logically equivalent if is a tautology.
- (1) $p \leftrightarrow q$ (2) $p \rightarrow q$ (3) $\neg(p \vee q)$ (4) $\neg p \vee \neg q$
91. Program generation activity aims at :
- (1) Automatic generation of program
 (2) Organize execution of a program written in PL
 (3) Skips generation of program
 (4) Speed generation of program
92. Which of the following loader is executed when a system is first turned on or restarted ?
- (1) Boot loader (2) Compile and Go loader
 (3) Bootstrap loader (4) Relating loader
93. A parser which is a variant of top-down parsing without backtracking is :
- (1) Recursive Descend (2) Operator Precedence
 (3) LL(1) parser (4) LALR Parser
94. is used to build 'intuitive' queries.
- (1) SQL (2) Xbase (3) QBE (4) XML
95. To print information from a table, the tool is the best choice.
- (1) form (2) report (3) query (4) macro
96. In regular expressions, the operator '*' stands for :
- (1) Concatenation (2) Selection
 (3) Iteration (4) Addition
97. A system program that set-up an executable program in main memory ready for execution is :
- (1) Assembler (2) Linker (3) Loader (4) Text editor

98. Symptoms of the software crisis would include :
- (1) Software delivered behind schedule
 - (2) Software exceeding cost estimate
 - (3) Unreliable
 - (4) All of the above
99. Which of the following projects would be a good one for adopting the prototyping paradigm for software development ?
- | | |
|-------------------------------|-------------------|
| (1) Accounting System | (2) Spreadsheet |
| (3) Automobile Cruise Control | (4) Algebra Tutor |
100. Views of quality software would *not* include :
- (1) Optimizing price and performance
 - (2) Minimizing the execution errors
 - (3) Conformance to specification
 - (4) Establishing valid requirements

ANSWER KEY**Ph.D.(Computer Science) Entrance Exam,2020****Paper Code: PHD/URS-EE-2020****Code-A**

Question	Key	Question	Key	Question	Key	Question	Key
1	c	26	d	51	b	76	a
2	b	27	a	52	c	77	a
3	c	28	d	53	c	78	c
4	d	29	a	54	b	79	b
5	b	30	a	55	a	80	b
6	c	31	a	56	a	81	a
7	d	32	d	57	c	82	c
8	b	33	a	58	c	83	a
9	a	34	a	59	c	84	c
10	a	35	c	60	b	85	b
11	a	36	b	61	d	86	c
12	c	37	b	62	a	87	c
13	a	38	b	63	c	88	d
14	a	39	b	64	d	89	d
15	a	40	c	65	b	90	b
16	a	41	c	66	a	91	a
17	a	42	a	67	b	92	c
18	a	43	d	68	b	93	c
19	b	44	b	69	b	94	d
20	d	45	d	70	c	95	d
21	a	46	c	71	a	96	a
22	d	47	c	72	b	97	d
23	c	48	b	73	b	98	d
24	d	49	b	74	a	99	c
25	b	50	a	75	d	100	a

ANSWER KEY**Ph.D.(Computer Science) Entrance Exam,2020****Paper Code: PHD/URS-EE-2020****Code-B**

Question	Key	Question	Key	Question	Key	Question	Key
1	a	26	b	51	d	76	c
2	b	27	b	52	a	77	c
3	b	28	b	53	c	78	b
4	a	29	b	54	d	79	b
5	d	30	c	55	b	80	a
6	a	31	a	56	a	81	a
7	a	32	c	57	b	82	d
8	c	33	a	58	b	83	c
9	b	34	a	59	b	84	d
10	b	35	a	60	c	85	b
11	b	36	a	61	a	86	d
12	c	37	a	62	c	87	a
13	c	38	a	63	a	88	d
14	b	39	b	64	c	89	a
15	a	40	d	65	b	90	a
16	a	41	a	66	c	91	c
17	c	42	c	67	c	92	b
18	c	43	c	68	d	93	c
19	c	44	d	69	d	94	d
20	b	45	d	70	b	95	b
21	a	46	a	71	c	96	c
22	d	47	d	72	a	97	d
23	a	48	d	73	d	98	b
24	a	49	c	74	b	99	a
25	c	50	a	75	d	100	a

ANSWER KEY**Ph.D.(Computer Science) Entrance Exam,2020****Paper Code: PHD/URS-EE-2020****Code-C**

Question	Key	Question	Key	Question	Key	Question	Key
1	c	26	c	51	a	76	a
2	a	27	d	52	d	77	d
3	d	28	b	53	a	78	d
4	b	29	a	54	a	79	c
5	d	30	a	55	c	80	a
6	c	31	a	56	b	81	a
7	c	32	c	57	b	82	c
8	b	33	a	58	b	83	a
9	b	34	c	59	b	84	a
10	a	35	b	60	c	85	a
11	a	36	c	61	a	86	a
12	d	37	c	62	b	87	a
13	c	38	d	63	b	88	a
14	d	39	d	64	a	89	b
15	b	40	b	65	d	90	d
16	d	41	d	66	a	91	b
17	a	42	a	67	a	92	c
18	d	43	c	68	c	93	c
19	a	44	d	69	b	94	b
20	a	45	b	70	b	95	a
21	c	46	a	71	a	96	a
22	b	47	b	72	c	97	c
23	c	48	b	73	c	98	c
24	d	49	b	74	d	99	c
25	b	50	c	75	d	100	b

ANSWER KEY**Ph.D.(Computer Science) Entrance Exam,2020****Paper Code: PHD/URS-EE-2020****Code-D**

Question	Key	Question	Key	Question	Key	Question	Key
1	a	26	a	51	a	76	a
2	c	27	a	52	d	77	b
3	a	28	c	53	c	78	b
4	a	29	b	54	d	79	b
5	a	30	b	55	b	80	c
6	a	31	b	56	d	81	c
7	a	32	c	57	a	82	b
8	a	33	c	58	d	83	c
9	b	34	b	59	a	84	d
10	d	35	a	60	a	85	b
11	a	36	a	61	c	86	c
12	c	37	c	62	a	87	d
13	c	38	c	63	d	88	b
14	d	39	c	64	b	89	a
15	d	40	b	65	d	90	a
16	a	41	a	66	c	91	a
17	d	42	d	67	c	92	c
18	d	43	a	68	b	93	a
19	c	44	a	69	b	94	c
20	a	45	c	70	a	95	b
21	a	46	b	71	d	96	c
22	b	47	b	72	a	97	c
23	b	48	b	73	c	98	d
24	a	49	b	74	d	99	d
25	d	50	c	75	b	100	b