

DO NOT BREAK THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

QUESTION BOOKLET

SERIES III

Subject : General English, Computer Science & Engineering

BOOKLET SERIAL NO.

70035

Marks : 300

Time : 3 (three) hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

1. This booklet contains **200 questions** to be answered in a separate OMR Answer Sheet using Black Ball Pen in following two parts.
Part-A-General English : 100 questions and Part-B-Computer Science & Engineering : 100 questions.
2. All Questions are compulsory.
3. You will be supplied the Answer sheet separately by the invigilator. You must complete the details of particulars asked for.
4. Answers must be shown by completely blackening the corresponding circles in the Answer Sheet against the relevant question number by Black Ball Pen. OMR Answer Sheet without marking series/double series marking shall not be evaluated.

Example :

Supposing the following question is asked :-

The Capital of Meghalaya is-

- A. Guwahati
- B. Kohima
- C. Shillong
- D. Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :-

(A) (B) (C) (D)

In the above illustration, if your chosen response is alternative C i.e. Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ball Point Pen only as below :-

(A) (B) ● (D)

WHICH IS THE ONLY CORRECT METHOD OF ANSWERING :

5. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the invigilator before you leave the Examination Hall.
8. No rough work is to be done on the Answer Sheet. Space for rough work has been provided in the question booklet.

PART - A - GENERAL ENGLISH

Marks :100

Each Question carry 1 mark

Section-I

“Time once gone is gone forever.” This sentence has encapsulated the true value of time. Time gives only one chance and one has to put all effort and intelligence to make it best usable. Time has no beginning and no ending. All things are born in time, grow in time and then decay and die in time. Time moves at its own pace. It cannot be commanded. It does not wait for kings or princes and has no pity for beggars. It cannot be analyzed. It can not be criticised.

We are generally conscious about passing time and its importance. We have developed clocks and watches to indicate its flow. We have invented dates, days and years to indicate and measure it in our own way, but mind me, it is really indivisible and immeasurable. People say time is money. But I am saying that it is more precious than money. Money lost can be recovered, but not the time lost. A moment lost is lost forever. Time is ever changing. We should never postpone doing good and important things. We should never be idle when we ought to be working hard. Leisure is enjoyable only after fruitful hard work. It is our duty to not to leave any work till tomorrow that can be done today and now. We should not waste time. Actually, nobody can waste time. It is we who are being wasted by time. Economy and value of time is very much important. Great men and women use their every moment most profitably and economically. It is through this method that they have invented great things, discovered wonderful things and left their footprints on the sands of time.

Even our spare time should be wisely used. It should be utilized in pursuit of healthy and meaningful hobbies and ecstasy. We may study books, learn music, play with children, grow a garden, learn to do something new and

useful in our leisure. To value time is to value the divine.

A. Choose the appropriate antonyms of the following :

1. Complex

- | | |
|-------------|-----------|
| a) Rigid | b) Hard |
| c) Colossal | d) Simple |

2. Pursuit

- | | |
|--------------|-----------|
| a) Given up | b) Chase |
| c) Vigilance | d) Search |

3. Ecstasy

- | | |
|----------|------------|
| a) Bliss | b) Delight |
| c) Agony | d) Rapture |

4. Divine

- | | |
|--------------|------------|
| a) Celestial | b) Pious |
| c) Heavenly | d) Earthly |

5. Encapsulated

- | | |
|---------------|--------------|
| a) Elaborated | b) Summed up |
| c) Reviewed | d) Reduced |

6. Immeasurable

- | | |
|-----------|----------------|
| a) Vast | b) Untold |
| c) Slight | d) Inestimable |

7. Conscious

- | | |
|--------------|------------|
| a) Oblivious | b) Mindful |
| c) Vigilant | d) Alert |

8. Idle

- | | |
|---------------|------------|
| a) Unoccupied | b) Dormant |
| c) Vigilant | d) Active |

9. Leisure

- | | |
|---------|---------------|
| a) Rest | b) Time off |
| c) Work | d) Recreation |

10. Profitably

- | | |
|--------------|-----------------|
| a) Uselessly | b) Beneficially |
| c) Valuably | d) Gainfully |

Section-II

B. Choose the correct option to fill in the gaps :

11. Mr. and Mrs Parson _____ to work together everyday.

- a) drive b) drives
- c) are driving d) is driving

12. The children won't go to sleep _____ we leave a light on outside their bedroom.

- a) except b) otherwise
- c) unless d) but

13. I'll give you my spare keys in case you _____ home before me.

- a) would get b) get
- c) got d) will get

14. My holiday in Paris gave me a great _____ to improve my French accent.

- a) occasion b) opportunity
- c) hope d) possibility

15. I bought _____ new car yesterday.

- a) an b) a
- c) the d) none

16. I watched _____ video you had sent me.

- a) the b) an
- c) a d) none

17. He thinks that _____ love is what will save us all.

- a) an b) a
- c) the d) none

18. He is _____ oldest member of the club.

- a) a b) the
- c) an d) none

19. We normally live with our parents but for these two months we _____ in our aunt's flat.

- a) live b) are living
- c) lived d) have lived

20. Unless John _____ harder he won't get this job.

- a) will try b) tried
- c) tries d) is trying

21. I _____ for them for an hour now.

- a) am waiting b) have been waiting
- c) waiting d) was waiting

22. Look ! Its Tom ! I _____ him for ages.

- a) saw b) have not seen
- c) am seeing d) see

23. Babies _____ when they are hungry.

- a) cry b) cries
- c) cried d) are crying

24. I _____ tennis every Sunday morning.

- a) playing b) play
- c) am playing d) am play

25. _____ many times in a year in Frankfurt.

- a) It snows b) It snowed
- c) It is snowing d) It is snow

26. Sorry, you can't borrow my pencil. I _____ it myself.

- a) was using b) using
- c) use d) am using

27. What time _____

- a) does the train leave ?
- b) leaves the train ?
- c) is the train leaving ?
- d) the train leaves ?

28. You can keep my iPod if you like it. I _____ it anymore.

- a) didn't use b) doesn't use
- c) don't use d) am not using

29. My husband and his colleagues _____ golf at the moment

- a) play b) plays
- c) are playing d) is playing

30. The singer ended the concert _____ her

most popular song.

- a) by b) as
- c) in d) with

31. Fortunately, _____ from a bump on the head, she suffered no serious injuries from her fall.

- a) other b) except
- c) besides d) apart

32. She had changed so much that _____ anyone recognised her.

- a) almost b) hardly
- c) not d) nearly

33. _____ to teaching English, she also writes children's books.

- a) Moreover b) As well as
- c) In addition d) Apart

34. It was clear that the young couple were _____ of taking charge of the restaurant.

- a) responsible b) reliable
- c) capable d) able

35. The book _____ of ten chapters, each one covering a different topic.

- a) comprises b) includes
- c) consists d) contains

36. Mary was disappointed with her new shirt as the colour _____ very quickly.

- a) bleached b) misplaced
- c) vanished d) faded

37. National leaders from all over the world are expected to attend the _____ meeting.

- a) peak b) summit
- c) top d) apex

38. Jane remained calm when she won the lottery and _____ about her business as if nothing had happened.

- a) came b) brought
- c) went d) moved

39. I suggest we _____ outside the stadium tomorrow at 8.30.

- a) meeting b) will meet
- c) met d) meet

40. My remarks were _____ as a joke, but she was offended by them.

- a) pretended b) thought
- c) meant d) supposed

41. You ought to take up swimming for the _____ of your health

- a) concern b) relief
- c) sake d) cause

42. If you're not too tired we could have a _____ of chess after lunch.

- a) match b) play
- c) game d) party

43. Don't you get tired _____ watching TV every night ?

- a) with b) by
- c) of d) at

44. Go on, finish the dessert. It needs _____ up because it won't stay fresh until tomorrow.

- a) eat b) eating
- c) to eat d) to be eaten

45. Because it had not rained for several months, there was a _____ of water.

- a) shortage b) drop
- c) scarce d) waste

46. I've always _____ you as my best friend.

- a) regarded b) thought
- c) meant d) supposed

47. She came to live here _____ a month ago.

- a) quite b) beyond
- c) already d) about

48. Don't make such a _____ ! The dentist is only going to look at your teeth.

- a) fuss b) trouble
- c) worry d) reaction

49. He spent a long time looking for a tie which

_____ with his new shirt.

- a) fixed b) made
- c) went d) wore

50. Anyone _____ after the start of the play is not allowed in until the interval.

- a) arrives b) has arrived
- c) arriving d) arrived

51. This new magazine is _____ with interesting stories and useful information.

- a) full b) packed
- c) thick d) written

52. The restaurant was far too noisy _____ relaxed conversation.

- a) to b) on
- c) at d) for

53. In this branch of medicine, it is vital to _____ open to new ideas.

- a) stand b) continue
- c) hold d) remain

54. Please _____ your dog.

- a) prevent b) stop
- c) restrain d) subdue

55. The teacher is popular _____ his students.

- a) among b) with
- c) to d) for

56. If you _____ and explain your problem, he will help.

- a) call at him b) call upon him
- c) call to him d) call in him

57. He may have aged _____

- a) when I last saw him
- b) since I last saw him
- c) before I last saw him
- d) since I saw him

58. I need a good explanation of all the costs _____ in buying a new car

- a) involved b) affected
- c) concerned d) implied

59. The doctor told him to lose weight quickly or pay the _____ later in life.

- a) fine b) fee
- c) price d) cost

60. Jet lag causes problems with our _____ clock.

- a) biological b) botanical
- c) natural d) rhythmical

61. I didn't stay behind because I wanted to, I did so because it was my _____.

- a) work b) duty
- c) shift d) chore

62. What angered me wasn't his resignation but the _____ in which he did it.

- a) method b) manner
- c) aspect d) bearing

63. Despite being _____ in the battle, the soldier fought on and was awarded a medal for bravery.

- a) enraged b) flawed
- c) wounded d) bruised

64. We're not used to _____ invited to very formal occasions.

- a) be b) have
- c) being d) having

65. I'd rather we _____ the meeting this evening, because I'm very tired.

- a) cancel b) cancelled
- c) do not cancel d) didn't cancel

66. She obviously didn't want to discuss the matter so I didn't _____ the point.

- a) maintain b) chase
- c) follow d) pursue

67. The rain will _____ for most of the morning, but we are expecting a brighter afternoon.

- a) persist b) insist
- c) resist d) consist

68. Deep sea oil exploration is a dirty and dangerous _____

- a) situation b) affair
c) case d) business

69. She obviously didn't want to go so I didn't _____ her to.

- a) encourage b) follow
c) control d) chase

70. _____ a maruti 800, he also owns a Hyundai vehicle.

- a) apart b) from
c) besides d) except

Directions : For questions 71-77, choose one letter a, b, c or d. Where can you see these notices ?

71. YOU CAN LOOK BUT DON'T TOUCH THE PICTURES..

- a) in an office b) in a cinema
c) in a museum d) in the classroom

72. SILENCE PLEASE

- a) in a cinema b) in a hospital
c) in a bus stop d) in a street

73. PLEASE KEEP YOUR PHONES ON SILENT MODE

- a) in a meeting b) in a bus
c) in a bank d) in a street

74. PLEASE GIVE THE EXACT CHANGE TO THE CONDUCTOR.

- a) in a cinema b) in a bank
c) in a bus d) in an aeroplane

75. NO PARKING PLEASE.

- a) in a street b) in a cinema
c) on a book d) in a garage

76. CROSS BRIDGE FOR TRAIN TO EDINBURGH

- a) in a bank b) in a garage
c) in a station d) in a bus

77. KEEP IN A COLD PLACE

- a) clothes b) food
c) furniture d) money

Section-III

Directions : For questions 78-90, choose the correct sentence from the following :

78. (i) I will inform them this.

(ii) I will inform them of this.

(iii) They will be informed of this.

- a) (i) and (iii)
b) (ii) and (iii)
c) (i) and (ii)
d) None of the sentence is correct

79. (i) I only sleep four hours a day.

(ii) Four hours sleep in a day is bad for health

(iii) I sleep in a day four hours.

- a) (i) and (iii)
b) (ii) and (iii)
c) (i) and (ii)
d) None of the sentence is correct

80. (i) The dentist kept him waiting for over an hour

(ii) The dentist kept him waiting for over a hour

(iii) He was waiting for the dentist for an hour

- a) (i) and (iii)
b) (ii) and (iii)
c) (i) and (ii)
d) None of the sentence is correct

81. (i) Why don't you borrow dress from your sister for the party this evening ?

(ii) Why don't you borrow a dress from your sister for the party this evening ?

(iii) Why don't you borrow a dress from your sister for party this evening ?

- a) (i)
b) (ii)
c) (iii)
d) None of the sentence is correct

82. (i) The possessiveness often lead to problems among couples.

(ii) Being over possessive often leads to problems between couples.

(iii) Possessiveness often leads to problems between couples.

- a) (i) and (iii)
- b) (ii) and (iii)
- c) (i) and (ii)
- d) None of the sentence is correct

83. (i) Which came first, chicken or egg ?
 (ii) Which came first, a chicken or egg ?
 (iii) Which came first, the chicken or the egg ?
 a) (i)
 b) (ii)
 c) (iii)
 d) None of the sentence is correct

84. (i) Advice from their bosses is needed by junior employees.
 (ii) Junior employees need an advice from their bosses.
 (iii) Junior employees need advice from their bosses now and then.
 a) (i) and (iii)
 b) (ii) and (iii)
 c) (i) and (ii)
 d) None of the sentence is correct

85. (i) Rahul has been studying at Delhi University for two years now
 (ii) Rahul has been studying at Delhi University for the two years now
 (iii) Rahul was studying at Delhi University for two years now
 a) (i)
 b) (ii)
 c) (iii)
 d) None of the sentence is correct

86. (i) You can't teach old dog new tricks.
 (ii) You can't teach to dog new tricks.
 (iii) You can't teach an old dog new tricks.
 a) (i)
 b) (ii)
 c) (iii)
 d) None of the sentence is correct

87. (i) The food smells great.
 (ii) The food is smelling great.
 (iii) The food smell great.
 a) (i) and (iii)
 b) (ii) and (iii)

- c) (i) and (ii)
- d) None of the sentence is correct

88. (i) We'll go shopping soon.
 (ii) We will go a shopping soon.
 (iii) We will be going for shopping very soon
 a) (i) and (iii)
 b) (ii) and (iii)
 c) (i) and (ii)
 d) None of the sentence is correct

89. (i) Will Jane and Mary be coming for a dinner tonight ?
 (ii) Will Jane be coming for dinner tonight ?
 (iii) Will Jane and Mary come for dinner to-night ?
 a) (i) and (ii)
 b) (ii) and (iii)
 c) (i) and (ii)
 d) None of the sentence is correct

90. (i) Have you ever been to Spain ?
 (ii) Have you to Spain gone before ?
 (iii) Have you Spain visited ?
 a) (i)
 b) (ii)
 c) (iii)
 d) None of the sentence is correct

Section-IV

Choose the correct meaning for the words and phrases given below :

91. **To feel under the weather**
 a) To not feel too happy about the weather
 b) To not feel too well
 c) To not like the weather
 d) None of the above

92. **When pigs fly**
 a) Something that will never happen
 b) Something that will surely happen
 c) Something that frequently happens
 d) None of the above

93. **Break a leg**
 a) To take care not to break ones leg

- b) To wish someone good luck
- c) To wish someone a good day
- d) None of the above

94. Make a long story short

- a) To come to the end of the story
- b) To give a summary of the story
- c) To come to the point
- d) None of the above

95. Your guess is as good as mine

- a) To have no purpose at all
- b) To have no idea at all
- c) To have no effect at all
- d) None of the above

96. Miss the boat

- a) Miss a plan
- b) Miss a dance
- c) Miss a chance
- d) None of the above

97. Dragging its feet

- a) Delaying in decision
- b) Delaying in beginning
- c) Delaying in creation
- d) None of the above

98. Speak of the devil

- a) The person you are speaking of is the devil
- b) The person you are speaking of actually turns up at that moment
- c) The devil has come
- d) None of the above

99. See eye to eye

- a) To look into the eye
- b) To agree with someone
- c) There is something in the eye
- d) None of the above

100. Let the cat out of the bag

- a) To purposely conceal the truth
- b) To never put a cat inside a bag
- c) To accidentally reveal a secret
- d) None of the above

PART - B - COMPUTER SCIENCE & ENGINEERING

Marks :200

Each question carry 2 marks :

101. Which of the following approaches do not require knowledge of the system state ?

- a) deadlock detection
- b) deadlock prevention
- c) deadlock avoidance
- d) none of the above

102. "Throughput" of a system is

- a) Number of programs processed by it per unit time
- b) Number of times the program is invoked by the system
- c) Number of requests made to a program by the system
- d) None of the above

103. The "blocking factor" of a file is

- a) The number of blocks accessible to a file
- b) The number of blocks allocated to a file
- c) The number of logical records in one physical record
- d) None of the above

104. Nested Macro calls are expanded using the

- a) FIFO rule (First in First out)
- b) LIFO (Last in First out)
- c) Can be both FIFO and LIFO
- d) None of the above

105. A parser which is a variant of top-down parsing without backtracking is

- a) Recursive Descend
- b) Operator Precedence
- c) LL (1) parser
- d) LALR parser

106. The expansion of nested macro calls follows

- a) FIFO rule (First in First out)
- b) LIFO rule (Last in First out)
- c) LILO rule (Last in Last out)
- d) priority rule

107. Which scheduling policy is most suitable for a time-shared operating system

- a) Shortest - Job First
- b) Elevator
- c) Round - Robin
- d) First-Come-First-Serve

108. A critical section is a program segment

- a) which should run in a certain specified amount of time
- b) which avoids deadlocks
- c) where shared resources are accessed
- d) which must be enclosed by a pair of semaphore operations, P and V.

109. An operating system contains 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlocks will ever arise is

- a) 4
- b) 3
- c) 5
- d) 6

110. The following features are needed to implement top down parsing

- a) Source string marker
- b) Prediction making mechanism
- c) Matching and Backtracking mechanism
- d) All of the above

111. Translator for converting low level programming language to machine understandable language is termed as

- a) Assembler
- b) Compiler
- c) Linker
- d) Loader

112. Analysis which determines the meaning of a statement once its grammatical structure has been checked is termed as

- a) Semantic analysis
- b) Syntax analysis
- c) Regular analysis
- d) General analysis

113. Load address for the first word of the program is called

- a) Linker address origin

- b) load address origin
- c) Phase library
- d) absolute library

114. Symbolic names can be associated with

- a) Information
- b) data or instruction
- c) operand
- d) mnemonic operation

115. The translator which perform macro expansion is called a

- a) Macro processor
- b) Macro pre-processor
- c) Micro pre-processor
- d) assembler

116. Shell is the exclusive feature of

- a) UNIX
- b) DOS
- c) System software
- d) Application software

117. A program in execution is called

- a) Process b) Instruction
- c) Procedure d) Function

118. Program 'preemption' is

- a) forced de allocation of the CPU from a program which is executing on the CPU.
- b) release of CPU by the program after completing its task.
- c) forced allotment of CPU by a program to itself
- d) a program terminating itself due to detection of an error.

119. An assembler is

- a) programming language dependent
- b) syntax dependant
- c) machine dependant
- d) data dependant

120. The total time to prepare a disk drive mechanism for a block of data to be read from is its

- a) latency
- b) latency plus transmission time

c) latency plus seek time

d) latency plus seek time plus transmission time

121. A public key encryption system

- a) Allows only the correct receiver to decode the data
- b) Allows only one to decode the transmission
- c) Allows only the correct sender to decode the data.
- d) Does not encode the data before transmitting it

122. 'LRU' page replacement policy is

- a) Last Replaced Unit.
- b) Last Restored Unit.
- c) Least Recently Used
- d) Least Required Unit

123. Which of the following is not a key piece of information, stored in single page table entry, assuming pure paging and virtual memory

- a) Frame number
- b) A bit indicating whether the page is in physical memory or on the disk
- c) A reference for the disk block that stores the page
- d) None of the above

124. Which amongst the following is not a valid page replacement policy ?

- a) LRU policy (Least Recently Used)
- b) FIFO policy (First in first out)
- c) RU policy (Recurrently used)
- d) Optimal page replacement policy

125. Page fault frequency in an operating system is reduced when the

- a) processes tend to the I/O-bound
- b) size of pages is reduced
- c) processes tend to be CPU-bound
- d) locality of reference is applicable to the process

126. Virtual memory can be implemented with

- a) Segmentation
- b) Paging
- c) Neither (a) nor (b)
- d) Both (a) and (b)

127. You have to sort a list L consisting of a sorted list followed by a few "random" elements. Which of the following sorting methods would be especially suitable for such a task ?

- a) Bubble sort b) Selection sort
- c) Quick sort d) Insertion sort

128. A technique for direct search is

- a) Binary Search b) Linear Search
- c) Tree Search d) Hashing

129. If a node having two children is deleted from a binary tree, it is replaced by its

- a) Inorder predecessor
- b) Inorder successor
- c) Preorder predecessor
- d) None of the above

130. The searching technique that takes $O(1)$ time to find a data is

- a) Linear Search b) Binary Search
- c) Hashing d) Tree Search

131. Count function in SQL returns the number of

- a) values b) distinct values
- c) groups d) columns

132. What is the following code segment doing ?

```
void fn () {
    char c ;
    cin.get (c) ;
    if (c != '\n') {
        fn () ;
        cout.put (c) ;
    }
}
```

- a) The string entered is printed as it is.
- b) The string entered is printed in reverse order.
- c) It will go in an infinite loop.
- d) It will print an empty line.

133. A mathematical-model with a collection of operations defined on that model is called

- a) Data Structure
- b) Abstract Data Type

- c) Primitive Data Type
- d) Algorithm

134. If a node in a BST has two children, then its inorder predecessor has

- a) no left child b) no right child
- c) two children d) no child

135. A binary tree in which if all its levels except possibly the last, have the maximum number of nodes and all the nodes at the last level appear as far left as possible, is known as

- a) full binary tree
- b) AVL tree
- c) threaded tree
- d) complete binary tree

136. The number of interchanges required to sort 5, 1, 6, 2, 4 in ascending order using Bubble Sort is

- a) 6 b) 5
- c) 7 d) 8

137. Merging 4 sorted files containing 50, 10, 25 and 15 records will take _____ time

- a) $O(100)$ b) $O(200)$
- c) $O(175)$ d) $O(125)$

138. For an undirected graph with n vertices and e edges, the sum of the degree of each vertex is equal to

- a) $2n$ b) $(2n-1)/2$
- c) $2e$ d) $e^2/2$

139. In worst case Quick Sort has order

- a) $O(n \log n)$ b) $O(n^2/2)$
- c) $O(\log n)$ d) $O(n^2/4)$

140. A full binary tree with $2n + 1$ nodes contain

- a) n leaf nodes
- b) n non-leaf nodes
- c) $n-1$ leaf nodes
- d) $n-1$ non-leaf nodes

141. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is

known as a

- a) queue
- b) stack
- c) tree
- d) linked list

142. The number of different directed trees with 3 nodes are

- a) 2
- b) 3
- c) 4
- d) 5

143. A B-tree of minimum degree t can have maximum _____ pointers in a node.

- a) $t - 1$
- b) $2t - 1$
- c) $2t$
- d) t

144. The process of accessing data stored in a serial access memory is similar to manipulating data on a

- a) heap
- b) queue
- c) stack
- d) binary tree

145. What is the function of the transport layer to OSI protocol stack ?

- a) Provide reliable connection between point to point links
- b) Provide reliable connection between source and destination
- c) Forward packets from one node to the next
- d) None of the above

146. ABST is traversed in the following order recursively. Right, root, left. The output sequence will be in

- a) Ascending order
- b) Descending order
- c) Bitonic sequence
- d) No specific order

147. If the address of $A[1][1]$ and $A[2][1]$ are 1000 and 1010 respectively and each element occupies 2 bytes then the array has been stored in _____ order.

- a) row major
- b) column major
- c) matrix major
- d) none of these

148. An algorithm is made up of two independent time complexities $f(n)$ and $g(n)$.

Then the complexities of the algorithm is in the order of

- a) $f(n) \times g(n)$
- b) $\text{Max}(f(n), g(n))$
- c) $\text{Min}(f(n), g(n))$
- d) $f(n) + g(n)$

149. Which of the following sorting algorithms does not have a worst case running time of $O(n^2)$?

- a) Insertion sort
- b) Merge sort
- c) Quick sort
- d) Bubble sort

150. An undirected graph G with n vertices and e edges is represented by adjacency list. What is the time required to generate all the connected components ?

- a) $O(n)$
- b) $O(e)$
- c) $O(e + n)$
- d) $O(e^2)$

151. Consider a linked list of n elements. What is the time taken to insert an element after an element pointed by some pointer ?

- a) $O(1)$
- b) $O(n \log n)$
- c) $O(n)$
- d) None of the above

152. A graph with n vertices will definitely have a parallel edge or self loop if the total number of edges are

- a) more than n
- b) more than $n + 1$
- c) more than $(n + 1)/2$
- d) more than $n(n - 1)/2$

153. The maximum degree of any vertex in a simple graph with n vertices is

- a) $n - 1$
- b) $n + 1$
- c) $2n - 1$
- d) n

154. In a circular linked list

- a) components are all linked together in some sequential manner.
- b) there is no beginning and no end
- c) components are arranged hierarchically
- d) forward and backward traversal within the list is permitted

155. The boolean expression which will result

in a high output only when the two inputs are distinct is

- a) $\overline{A}B + A\overline{B}$ b) $A.B + A + B$
c) $\overline{A} \overline{B} + AB$ d) None of the above

156. What will be the output of the following code segment ?

```
main ( ) {
char s [10] ;
strcpy (s, "abc") ;
printf ("%d %d", strlen (s), sizeof (s)) ;
}
```

- a) 3 10 b) 3 3
c) 10 3 d) 10 10

157. If the inorder and preorder traversal of a binary tree are D, B, F, E, G, H, A, C and A, B, D, E, F, G, H, C respectively then the postorder traversal of the tree is

- a) D, F, G, A, B, C, H, E
b) F, H, D, G, E, B, C, A
c) C, G, H, F, E, D, B, A
d) D, F, H, G, E, B, C, A

158. A complete binary tree with the property that the value of each node is at least as large as the values of its children is known as

- a) Binary Search Tree
b) AVL Tree
c) Heap
d) Threaded Binary Tree

159. The number of distinguishable permutations of the letters in the word BANANA are,

- a) 60 b) 36
c) 20 d) 10

160. In how many ways can a president and vice president be chosen from a set of 30 candidates ?

- a) 820 b) 850
c) 880 d) 870

161. The relation $\{ (1,2), (1,3), (3,1), (1,1), (3,3), (3,2), (1,4), (4,2), (3,4) \}$ is

- a) Reflexive b) Transitive

- c) Symmetric d) Asymmetric

162. A sorting algorithm is stable if

- a) its time complexity is constant irrespective of the nature of input
b) preserves the original order of records with equal keys.
c) its space complexity is constant irrespective of the nature of input
d) it sorts any volume of data in a constant time

163. If x is one dimensional array, then pick up the correct answer

- a) $*(x + i)$ is same as $\&x[i]$
b) $\&x[i]$ is same as $x + i$
c) $*(x + i)$ is same as $x[i] + 1$
d) $*(x + i)$ is same as $*x[i]$

164. A partial ordered relation is transitive, reflexive and

- a) antisymmetric b) bisymmetric
c) antireflexive d) asymmetric

165. Which of the following will allow access by the element $a[1]$ of the array

- a) $p2-2$ b) $p1-4$
c) $*(a + 1)$ d) $p2 - p1$

166. Which of the following statements is incorrect w.r.t. pointers ?

- a) $p1 + 2$ b) $p2 - 2$
c) $p2 + p1$ d) none of them

167. If B is a Boolean Algebra, then which of the following is true ?

- a) B is a finite, but not complemented lattice.
b) B is a finite, complemented and distributive lattice.
c) B is a finite, distributive but not complemented lattice.
d) B is not distributive lattice.

168. Which of the following statement is true

- a) Every graph is not its own sub graph?
b) The terminal vertex of a graph are of degree two.
c) A tree with n vertices has n edges.
d) A single vertex in graph G is a sub graph of G

169. The number of distinct relations on a set of 3 elements is

- a) 8
- b) 9
- c) 18
- d) 512

170. Ackerman's function is defined on the non-negative integers as follows

$$\begin{aligned} a(m, n) &= n + 1 \text{ if } m = 0 \\ &= a(m - 1, 1) \text{ if } m \neq 0, n = 0 \\ &= a(m - 1, a(m, n - 1)) \text{ if } m \neq 0, n \neq 0 \end{aligned}$$

The value of $a(1, 3)$ is

- a) 4
- b) 5
- c) 6
- d) 7

171. An _____ is a set of programs designed to manage the resources of a computer, including starting the computer, managing programs, managing memory and coordinating tasks between input and output devices.

- a) application suite
- b) compiler
- c) input / output system
- d) operating system

172. What is a URL ?

- a) A computer software program
- b) A type of programming object
- c) The address of a document or page on the World Wide Web
- d) An acronym for Unlimited resources for Learning

173. Which of the following software could assist someone who cannot use their hands for computer input ?

- a) Video conferencing
- b) Speech recognition
- c) Audio digitizer
- d) Synthesizer

174. The 16 bit Microprocessor means that it has

- a) 16 address lines
- b) 16 Buses
- c) 16 Data lines
- d) 16 routes

175. Which of the following is the fastest media of data transfer?

- a) Co-axial Cable
- b) Untwisted Wire

- c) Telephone Lines
- d) Fibre Optic

176. ASCII is a coding system that provides

- a) 256 different characters
- b) 512 different characters
- c) 1024 different characters
- d) 128 different characters

177. In how many ways can a party of 7 persons arrange themselves around a circular table?

- a) 6 !
- b) 7 !
- c) 5 !
- d) 7

178. The performance of cache memory is frequently measured in terms of a quantity called

- a) Miss ratio
- b) Hit ratio
- c) Latency ratio
- d) Read ratio

179. Which of the following interrupt is non maskable?

- a) INTR
- b) RST 7.5
- c) RST 6.5
- d) TRAP

180. How many words can be formed out of the letters of the word 'PECULIAR' beginning with P and ending with R ?

- a) 100
- b) 120
- c) 720
- d) 150

181. A spanning tree of a graph is one that includes

- a) All the vertices of the graph
- b) All the edges of the graph
- c) Only the vertices of odd degree
- d) Only the vertices of even degree

182. Seven (distinct) car accidents occurred in a week. What is the probability that they all occurred on the same day ?

- a) $1 / (7 * 7 * 7 * 7 * 7 * 7 * 7)$
- b) $1 / 7$
- c) $1 / (7 * 7 * 7 * 7 * 7)$
- d) $1 / (7 * 7 * 7 * 7)$

183. Mechanism to protect private networks from outside attack is

- a) Firewall
- b) Antivirus

- c) Digital signature d) Formatting

184. The register which contains the data to be written into or read out of the addressed location is known as

- a) index register
b) memory address register
c) memory data register
d) program counter

185. Which of the following is not used as secondary storage

- a) Semiconductor memory
b) magnetic disks
c) magnetic drums
d) magnetic tapes

186. The 'EE' in EEPROM is

- a) easily erasable
b) non-erasable
c) effectively erasable
d) electrically erasable

187. Which of the following is a legal expression in SQL ?

- a) SELECT NULL FROM EMPLOYEE ;
b) SELECT NAME FROM EMPLOYEE ;
c) SELECT NAME.EMPLOYEE FROM EMPLOYEE
d) None of the above

188. The result of the UNION operation between R1 and R2 is a relation that includes

- a) all the tuples of R1
b) all the tuples of R2
c) all the tuples of R1 and R2
d) all the tuples of R1 and R2 which have common columns

189. Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is :

- a) mn b) m + n
c) (m + n)/2 d) 2(m + n)

190. A B-tree of order m has maximum of _____ children

- a) m b) m + 1

- c) m - 1 d) m/2

191. The boolean expression $(A + C')(B' + C')$ simplifies to

- a) $C' + AB'$ b) $C'(A' + B)$
c) $B'C' + A$ d) None of these

192. A hexa decimal number 'A0' has the decimal value

- a) 80 b) 256
c) 100 d) 160

193. Which technique is preferable for transferring large amount of data to and from a memory in a short time?

- a) DMA b) Interrupt driven I/O
c) programmed I/O d) None of these

194. In the binary number 110.101, the fractional part has the value

- a) 0.625 b) 0.125
c) 0.875 d) 0.5

195. By taking 2's complement again of the 2's complement of a binary, one gets

- a) the 1's complement
b) the 2's complement
c) the original number
d) the sign magnitude form of the numbers

196. In comparison to the internal (main) memory, tape or disk memory is

- a) slower and more expensive
b) slower and less expensive
c) faster and more expensive
d) faster and less expensive

197. The greatest negative number which can be stored in a computer that has 8-bit wordlength and uses 2's complement arithmetic is

- a) -256 b) -255
c) -128 d) -127

198. The binary representation of hexadecimal 'C3' is

- a) 1111 b) 110011
c) 110001 d) 11000011

199. Communication circuits that transmit data in both directions but not at the same time are operating in

- a) simplex mode
- b) half-duplex mode
- c) full-duplex mode
- d) asynchronous mode

200. Which of the following is the ascending order of data hierarchy

- a) bit-byte-record-field-database-file
- b) bit-byte-field-record-file-database
- c) bit-byte-file-field-record-database
- d) bit-record-byte-field-file-database