Booklet Serial No.   **4294**

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

SERIES : II

QUESTION BOOKLET

Subjects : General English, General Aptitude and Computer Science

Full Marks : 350   **Time Allowed : 2½ Hours**

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

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains **175 questions** to be answered in a separate OMR Answer Sheet using Black Ballpoint Pen in the following three Parts :

Part—A	:	General English	:	50 questions
Part—B	:	General Aptitude	:	25 questions
Part—C	:	Computer Science	:	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. Answer must be shown by completely blackening the corresponding circle in the Answer Sheet against the relevant question number by Black Ballpoint Pen. OMR Answer Sheet without marking Series shall not be evaluated.

   Example :

   Suppose 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 :

   Ⓐ Ⓑ Ⓒ Ⓓ

   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 Ballpoint Pen only as below :

   Ⓐ Ⓑ ⬤ Ⓓ

   The example shown above 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 be 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.

SEAL

PART—A : GENERAL ENGLISH

(*Marks* : 100)

Each question carries **2** marks :

Section—I

Choose the correct meaning for the phrases given below :

1. **Cut and dried** means

    (A) readymade form

    (B) sun-dried form

    (C) smoked-dried form

    (D) air-dried form

2. **Fire and fury** means

    (A) to light a fire

    (B) extreme enthusiasm

    (C) to be angry

    (D) extreme frustration

3. **Fishy** means

    (A) doubtful

    (B) fearful

    (C) hateful

    (D) tasteful

4. **All and sundry** means

    (A) without making it dry well

    (B) without making it pay

    (C) without making it wet

    (D) without making any distinction

5. **An eye wash** means

    (A) a pretence

    (B) a cleaning agent

    (C) an eye condition

    (D) a realization

6. **An iron hand** means

    (A) by right

    (B) by a mechanical process

    (C) a cold hand

    (D) by force

7. **Beck and call** means

    (A) an alarm system

    (B) on horseback

    (C) at the service

    (D) at the call centre

8. **Black and white** means

    (A) in uniform

    (B) in honesty

    (C) in paint

    (D) in writing

9. **Body and soul** means

    (A) entirely

    (B) partly

    (C) separately

    (D) diligently

10. **By hook or by crook** means

    (A) by fair means

    (B) by foul means

    (C) by legal means

    (D) by any means

Section—II

Choose the correct option to fill in the gaps :

11. I have not seen her _____ January.

    (A) by   (B) in

    (C) at   (D) since

12. She turned pale _____ fear.

    (A) by   (B) at

    (C) with   (D) to

13. Ramu is waiting for you _____ the bus stop.

    (A) in   (B) by

    (C) to   (D) at

14. The author's name is _____ the cover of the book.

    (A) in   (B) at

    (C) on   (D) by

15. People climbed _____ their roofs.

    (A) at   (B) for

    (C) against   (D) onto

16. He is _____ home in Mathematics.

    (A) at   (B) for

    (C) in   (D) on

17. Her car ran _____ a dog.

    (A) over   (B) at

    (C) to   (D) on

18. Rice is selling _____ five rupees a kilo.

    (A) for   (B) by

    (C) in   (D) at

19. She assured to stand _____ me in all circumstances.

    (A) with   (B) for

    (C) by   (D) at

20. He put _____ a coat of red colour.

    (A) of   (B) on

    (C) at   (D) in

21. In general, acids act _____ metals.

    (A) on   (B) at

    (C) in   (D) by

22. Rahul was _____ by Mohan for no reason.

    (A) at   (B) with

    (C) up   (D) to

23. He lives _____ Delhi.

    (A) at   (B) by

    (C) on   (D) in

24. He fell the tree _____ an axe.

    (A) at   (B) to

    (C) by   (D) with

25. An epidemic broke _____ in the town last year.

    (A) out   (B) at

    (C) for   (D) with

26. He finished the work _____ four hours.

   (A) in   (B) by

   (C) for   (D) with

27. Morning walk is beneficial _____ health.

   (A) to   (B) for

   (C) with   (D) by

28. I find no exception _____ this rule of grammar.

   (A) for   (B) with

   (C) at   (D) to

29. He has a great passion _____ natural beauty.

   (A) of   (B) for

   (C) by   (D) in

30. Suitable reward is an important incentive _____ hard work.

   (A) with   (B) to

   (C) in   (D) by

31. This is consequent _____ your application dated 25th June.

   (A) with   (B) by

   (C) for   (D) upon

32. We must provide _____ the bad days.

   (A) against   (B) to

   (C) for   (D) by

33. Such rude behaviour was not expected _____ you.

   (A) from   (B) by

   (C) of   (D) with

34. It is expected _____ you to find the solution.

   (A) by   (B) of

   (C) from   (D) for

35. He has a car _____ a scooter.

   (A) for   (B) of

   (C) besides   (D) with

Section—III

Choose the correct sentence :

36. (A) She is fortunate to get a gift.

   (B) She is fortunate in getting a gift.

   (C) She is fortunate by getting a gift.

   (D) She is fortunate for getting a gift.

37. (A) She was neither ashamed of not sorry for her misbehaviour.

   (B) She was neither ashamed nor sorry for her misbehaviour.

   (C) She was neither ashamed or sorry for her misbehaviour.

   (D) She was neither ashamed in nor sorry for her misbehaviour.

38. (A) Ramesh has no interest and passion for cricket.

(B) Ramesh has no interest and passion at cricket.

(C) Ramesh has no interest and passion to cricket.

(D) Ramesh has no interest in and passion for cricket.

39. (A) I insisted him to attend the event.

(B) I insisted him on attending the event.

(C) I insisted on him to attend the event.

(D) I insisted him for attending the event.

40. (A) He is negligent in attending the meeting.

(B) He is negligent to attend the meeting.

(C) He is negligent with attending the meeting.

(D) He is negligent for attending the meeting.

41. (A) He is bent with fighting again.

(B) He is bent for fighting again.

(C) He is bent to fight again.

(D) He is bent on fighting again.

42. (A) He succeeded for passing the examination this time.

(B) He succeeded with passing the examination this time.

(C) He succeeded in passing the examination this time.

(D) He succeeded to pass the examination this time.

43. (A) I cannot hinder him from entering the mosque.

(B) I cannot hinder him to enter the mosque.

(C) I cannot hinder from entering the mosque by him.

(D) I cannot hinder with him to enter the mosque.

44. (A) Pooja was disqualified to compete in this tournament.

(B) Pooja was disqualified from competing in this tournament.

(C) Pooja was disqualified with competing in this tournament.

(D) Pooja was disqualified for competing in this tournament.

45. (A) She intends for going to Jaipur.

(B) She intends to going to Jaipur.

(C) She intends going to Jaipur.

(D) She intends to go to Jaipur.

Section—IV

Read the following passage and answer the questions given below following the instruction :

'Show me a man's companions', says the proverb, 'and I will tell you what the man is,' and this is, and must be true, because all men seek the society of those who think and act somewhat like themselves. A sober man will not associate with drunkards, a frugal man will not like spendthrifts, and the orderly and the decent shun the noisy and the disorderly.

It is for the vulgar to herd together, but there is a class rather higher which is still more blameable. I mean the happy companions who come together to do little but talk, and who are so fond of talk that they go from home to get it. The conversation among such persons has nothing of instruction in it, and is generally of a vicious tendency.

Young people naturally seek the society of those of their own age; but be careful in choosing your companions; and lay this down as a rule never to be departed from, that no youth, nor man, ought to be called your friend, who is addicted to indecent talk or who is fond of low society.

46. The sober do not mix with the

   (A) dull

   (B) drunkards

   (C) smart

   (D) company

47. Young people should guard themselves against the company of

   (A) proud friends

   (B) helpful friends

   (C) vulgar friends

   (D) honourable friends

48. A man is known by the company

   (A) he keeps

   (B) he stays away from

   (C) he is employed to

   (D) he owns

49. Men generally seek the company of those with

   (A) different tastes

   (B) similar tastes

   (C) repulsive tastes

   (D) sweet tastes

50. The frugal do not mix with the

   (A) smart

   (B) sober

   (C) proud

   (D) extravagant

PART—B : GENERAL APTITUDE

(*Marks* : 50)

Each question carries **2** marks :

51. A pair of words is given, followed by four pairs of words as alternatives. You are required to choose the odd pair :

Weight : Kilogram

(A) Axe : Grind

(B) Current : Ampere

(C) Power : Watt

(D) Energy : Joule

52. "Because you deserve to know"—is the punchline used by

(A) *The Times of India*

(B) *The Hindu*

(C) *The Indian Express*

(D) *Hindustan Times*

Read the passage and answer the following questions (Q. Nos. **53–58**) :

The concept of creative society refers to the phase of development of a society, in which a large number of potential contradictions become articulate and active. This is most evident when oppressed social groups are politically mobilized and demand their rights. The upsurge of peasants and tribes, the movements for regional autonomy and self-determination, the environmental movements, and the women's movement in the developing countries are signs of emergence of a creative society in contemporary times. The forms of social movements and their intensity may vary from country to country and place to place within a country, but the very presence of movements for social transformations in various spheres of a society indicates the emergence of a creative society in a country.

53. What does the author imply by creative society?

I. A society where diverse art forms and literary writings seek incentive

II. A society where social inequalities are accepted as a norm

III. A society where a large number of contradictions is articulated

IV. A society where the exploited and the oppressed groups grow conscious of their human rights and upliftment

Select the correct answer using the code given below.

(A) I, II and III

(B) III and IV

(C) II and IV

(D) IV only

54. According to the passage, what is/are the manifestation(s) of social movement?

I. Being aggressive

II. Involvement of the whole society

III. Quest for social equality and individual freedom

Select the correct answer using the code given below.

(A) I and II only

(B) III only

(C) II and III only

(D) I, II and III

55. With reference to the passage, consider the following statements :

I. To be a creative society, it is essential to have a variety of social movements.

II. To be a creative society, it is imperative to have potential contradictions and conflicts.

Which of the above statements is/are correct?

(A) Only I

(B) Both I and II

(C) Only II

(D) Neither I nor II

56. Which of the following are examples of different social movements?

I. Upsurge of peasants and tribes

II. Movement for regional autonomy and self-determination

III. The environmental movements

IV. The women's movements

Select the correct answer using the code given below.

(A) I, II and III only

(B) II, III and IV only

(C) I, II and IV only

(D) I, II, III and IV

57. Which of the following can be described as the most appropriate aim(s) for various social movements?

I. To achieve the status of a creative society

II. To achieve right

III. Social transformation

Select the correct answer using the code given below.

(A) I and II

(B) II and III

(C) I and III

(D) III only

58. Which of the following can be considered as the most suitable title for the passage?

(A) Creative society and social movements

(B) Social movement as the prerequisite for creative society

(C) Social movements

(D) None of the above

59. Mr. *H* starts from home at a speed of 30 km/hr and reaches his office 20 minutes late. Then the next day he increases his speed by 15 km/hr but still gets late by 8 minutes. How far is his office from his home?

(A) 18 km

(B) 35 km

(C) 20 km

(D) 27 km

In the following table (Q. Nos. **60** to **64**), total exports and imports of 5 countries over 4 years (₹ in crores) is given. Study the table carefully and answer the given questions. (*I* = import and *E* = export)

Year Country	2017 I	2017 E	2018 I	2018 E	2019 I	2019 E	2020 I	2020 E
P	25	30	24	32	28	36	22	32
Q	28	26	26	31	29	37	26	34
R	24	32	28	25	32	36	28	34
S	22	28	18	28	16	21	23	32
T	26	31	16	33	12	23	21	28

60. Find out the ratio of exports done by countries *S* and *T* during 2017–2020.

(A) 109/115

(B) 111/115

(C) 108/117

(D) 107/117

61. Which country has the maximum percentage of profit increase from 2019 to 2020? (Profit = Export − Import)

(A) *P*

(B) *Q*

(C) *R*

(D) *S*

62. Which year has the minimum average import?

(A) 2017

(B) 2018

(C) 2019

(D) 2020

63. Find out the difference between average export and average import for the country *P*.

(A) 7·25

(B) 7·75

(C) 8·25

(D) 8·50

64. Which year has the maximum export?

(A) 2017

(B) 2018

(C) 2019

(D) 2020

65. The missing number in the series

40, 120, 60, 180, 90, ?, 135

is

(A) 110

(B) 270

(C) 105

(D) 210

66. If DEMOCRACY is written as YCARCOMED, then how the word PRESIDENT be coded?

(A) EIETPRSDN

(B) NOSRPTEIE

(C) TNEDISERP

(D) RSDNPEIET

67. A woman introduces a man as the son of the brother of her mother. How is the man related to the woman?

(A) Nephew

(B) Son

(C) Cousin

(D) Uncle

68. If *P* is to the South of *Q* and *R* is to the East of *Q*, then in what direction is *P* with respect to *R*?

(A) South-West

(B) South

(C) North-East

(D) North

69. In an English examination, the average for the entire class was 80 marks. If 10% of the students scored 95 marks and 20% scored 90 marks, what was the average marks of the remaining students of the class?

(A) 65·5

(B) 85

(C) 75

(D) None of the above

70. If PALE is coded as 2134, EARTH is coded as 41590, then how is PEARL coded as?

(A) 29530

(B) 24153

(C) 25413

(D) 25430

71. AHOP : CKSU :: BJMR : ?

(A) EZUQ

(B) DMQW

(C) DQKM

(D) CJWN

72. Identify the IP address from the following.

(A) 300.215.317.3

(B) 302.215@.417.5

(C) 202.50.20.148

(D) 202-50-20-148

73. Two or more computers connected to each other for sharing information from

(A) network

(B) router

(C) server

(D) tunnel

74. In an examination, 78% of the total students who appeared were successful. If the total number of failures was 176 and 34% got first class, then how many students got first class?

(A) 272

(B) 112

(C) 210

(D) 254

75. Five students are standing in a circle. John is between Hoffen and Robin. Miller is on the left of Reg. Hoffen is on the left of Miller. Who is sitting next to John on his right?

(A) Miller

(B) Robin

(C) Reg

(D) Hoffen

PART—C : COMPUTER SCIENCE

(*Marks* : 200)

Each question carries **2** marks :

76. A packet whose destination is outside the local TCP/IP network segment is sent to
(A) File server
(B) DNS server
(C) DHCP server
(D) Default gateway

77. In a classful addressing, the IP addresses with 0 (zero) as network number
(A) refers to the current network
(B) refers to broadcast on the local network
(C) refers to broadcast on a distant network
(D) refers to loopback testing

78. The combination of an IP address and a port number is known as
(A) network number
(B) socket address
(C) subnet mask number
(D) MAC address

79. Which of the following is **not** a congestion policy at network layer?
(A) Flow Control Policy
(B) Packet Discard Policy
(C) Packet Lifetime Management Policy
(D) Routing Algorithm

80. Which layers of the OSI reference model are host-to-host layers?
(A) Transport, Session, Presentation, Application
(B) Network, Transport, Session, Presentation
(C) Data-link, Network, Transport, Session
(D) Physical, Data-link, Network, Transport

81. A network on the Internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts it can handle?
(A) 1024
(B) 2048
(C) 4096
(D) 8192

82. In HTML, which tag is used to create a hyperlink?
(A) <link>
(B) <a>
(C) <href>
(D) <url>

83. Which HTML element is used to define an unordered list?
(A)
(B)
(C)
(D) <list>

84. Which HTML element is used to create a table row?
(A) <td>
(B) <tr>
(C) <table>
(D) <th>

85. How can you link an external CSS file to an HTML document?
(A) <stylesheet src="style.css">
(B) <css>style.css</css>
(C) <link rel="stylesheet" href="style.css">
(D) <style>style.css</style>

86. What is the correct CSS property to change the text color of an element?

(A) Font-color

(B) Color

(C) Text-color

(D) Text

87. In a two-pass assembler, symbol table is

(A) generated in first pass

(B) generated in second pass

(C) not generated at all

(D) generated and used only in second pass

88. In compiler design, what is an Abstract Syntax Tree (AST) used for?

(A) To store the program's intermediate code representation

(B) To optimize the program's runtime performance

(C) To check for lexical errors in the source code

(D) To represent the hierarchical structure of the source code's syntax

89. What does the term 'three-address code' refer to in compiler design?

(A) A code optimization technique to reduce the number of memory accesses

(B) A technique to generate compact binary code for smaller memory footprint

(C) A representation of intermediate code with at most three operands per instruction

(D) A way to detect and eliminate syntax errors in the source code

90. Which of the following derivations does a top-down parser use while parsing an input string? (The input is scanned from left to right)

(A) Leftmost derivation

(B) Leftmost derivation traced out in reverse

(C) Rightmost derivation traced out in reverse

(D) Rightmost derivation

91. Loop unrolling is a code optimization technique

(A) that avoids tests at every iteration of the loop

(B) that improves performance by decreasing the number of instructions in a basic block

(C) that exchanges inner loops with outer loops

(D) that reorders operations to allow multiple computations to happen in parallel

92. Which SQL keyword is used to retrieve data from a database table?

(A) SEARCH

(B) EXTRACT

(C) SELECT

(D) FIND

93. Which SQL clause is used to filter rows in the result set based on specified conditions?

(A) FROM

(B) WHERE

(C) ORDER BY

(D) GROUP BY

94. What is the purpose of the SQL JOIN clause?

(A) To filter rows in the result set based on specified conditions

(B) To group rows based on the values of one or more columns

(C) To combine rows from two or more tables based on a related column

(D) To sort the result set in ascending or descending order

95. Which data mining technique is used to predict numeric values for a target variable based on the values of other variables?

(A) Clustering

(B) Classification

(C) Regression

(D) Association

96. In data mining, what is the purpose of feature scaling or normalization?

(A) To convert categorical features into numerical representations

(B) To reduce the dimensionality of the dataset

(C) To remove outliers from the dataset

(D) To ensure that all features have the same scale or range

97. What is the objective of Artificial Intelligence (AI)?

(A) To replicate human intelligence exactly

(B) To develop machines that can surpass human intelligence

(C) To create intelligent agents that can perform tasks that typically require human intelligence

(D) To replace humans with fully autonomous robots

98. The Turing test, proposed by Alan Turing in 1950, is

(A) a test to determine a machine's ability to exhibit human-like behaviour

(B) a test to assess a machine's physical capabilities

(C) a test to evaluate a machine's mathematical abilities

(D) a test to measure a machine's memory and processing speed

99. What is a chatbot?

(A) A robot that can chat with human in real-time

(B) A computer program that simulates human conversation through text or speech

(C) A social media platform for chatting with friends

(D) A virtual reality-based communication tool

100. Which programming language is commonly used for developing Android mobile applications?

(A) Java

(B) Python

(C) C#

(D) Swift

101. What is the function of an IP address in computer networking?

(A) To store website URLs for easy access

(B) To encrypt data for secure communication

(C) To uniquely identify a device on a network

(D) To manage internet service provider (ISP) connections

102. A subtractor is not usually present in a computer because

   (A) it is expensive

   (B) it is not possible to design it

   (C) the adder will take care of the subtraction

   (D) None of the above

103. Typical characteristic(s) of an RISC machine is/are

   (A) highly pipelined

   (B) instructions taking multiple cycles

   (C) instructions interpreted by micro-programs

   (D) All of the above

104. The CPU of a computer takes instructions from the memory and executes them. This process is called

   (A) load cycle

   (B) time sequence

   (C) fetch-execute cycle

   (D) clock cycle

105. The I/O processor controls the flow of information in

   (A) cache memory and I/O devices

   (B) main memory and I/O devices

   (C) two I/O devices

   (D) main memory and cache memory

106. Any given truth table can be represented by a

   (A) Karnaugh map

   (B) sum of products of Boolean expressions

   (C) product of sums of Boolean expressions

   (D) All of the above

107. The Boolean expression

$$AB + AB' + A'C + AC$$

   is unaffected by the value of the Boolean variable

   (A) A

   (B) B

   (C) C

   (D) None of the above

108. How many flip-flop circuits are needed to divide by 16?

   (A) 2

   (B) 4

   (C) 8

   (D) 16

109. How many 2-input multiplexers are required to construct a 2^{10}-input multiplexer?

   (A) 1023

   (B) 31

   (C) 10

   (D) 127

110. If the cache needs an access time of 20 ns and the main memory 120 ns, then the average access time of a CPU is (assume a hit-ratio 80%)

   (A) 30 ns

   (B) 40 ns

   (C) 35 ns

   (D) 45 ns

111. Which of the following interrupts is called trap?

   (A) Internal

   (B) External

   (C) Sequential

   (D) Global

112. Consider the function :

find (int x, int y)
{return ((x < y)? 0 : (x−y));}

Let a and b be two non-negative integers. Which of the following calls finds the positive difference of a and b?

(A) find (a,b) + find (b,a)

(B) find (a, find (a,b))

(C) a + find (a, b)

(D) b + find (a, b)

113. The program fragment

for (i = 3; i < 15; i + = 3);
print ("%d", i);

results

(A) a syntax error

(B) an execution error

(C) printing of 12

(D) printing of 15

114. Consider the declaration :

static char hello[]=
"hello";

The output of

printf("%s\n",hello);

will be the same as that of

(A) puts("hello");

(B) puts(hello);

(C) printf("%s\n", "hello");

(D) All of the above

115. Consider the declaration :

char x[]="WYSIWYG";
char *y="WYSIWYG";

Pick the correct answer.

(A) The output of puts(x) and puts(y) will be the same

(B) The output of puts(x) and puts(y) will be different

(C) The output of puts(y) will be implementation dependent

(D) None of the above

116. Consider the following program fragment :

if (a>b)
if (b>c)
s1;
else s2;

s2 will be executed if

(A) a<=b

(B) b>c

(C) b<=c and a<=b

(D) a>b and b<=c

117. Choose the correct statement regarding inline function :

(A) It speeds up execution and decreases the code size.

(B) It speeds up execution and increases the code size.

(C) It slows down execution and decreases the code size.

(D) It slows down execution and increases the code size.

118. Which of the following remarks about the differences between constructors and destructors is correct?

(A) Constructors can take arguments and be overloaded but destructors cannot take arguments and cannot be overloaded.

(B) Constructors and destructors can take arguments but only constructors can be overloaded.

(C) Constructors and destructors can be overloaded but only constructors can take arguments.

(D) Destructors can take arguments and be overloaded but constructors cannot take arguments and cannot be overloaded.

119. The code class Dog: public X, public Y is an example of

(A) multiple inheritance

(B) hierarchical inheritance

(C) linear inheritance

(D) repeated inheritance

120. The fields in a structure of a C program are by default

(A) protected   (B) public

(C) private   (D) unassigned

121. The fields in a structure of a C++ program are by default

(A) protected   (B) public

(C) private   (D) unassigned

122. In Java, which of the following is **not** a primitive type?

(A) Boolean   (B) String

(C) Byte   (D) Double

123. Exceptions that are expected to possibly occur are called

(A) checked exceptions

(B) unchecked exceptions

(C) runtime exceptions

(D) errors

124. What is the purpose of the 'static' keyword in Java?

(A) It indicates that a method cannot be overridden

(B) It allows multiple instances of a class to share the same variable or method

(C) It restricts the creation of objects of a class

(D) It indicates that a class cannot be extended

125. Which of the following is **not** true about interfaces in Java?

(A) Interfaces can be instantiated directly

(B) A class can implement multiple interfaces

(C) Interfaces can define constants

(D) Interface methods are implicitly public and abstract

126. Automatic conversion from primitive type to an object of the corresponding wrapper class is called

(A) coercing   (B) casting

(C) boxing   (D) widening

127. What is the worst-case time complexity of the Dijkstra's algorithm for finding the shortest path in a graph?

(A) $O(V)$ (B) $O(E)$

(C) $O(V^2)$ (D) $O(E \log V)$

128. What is the time complexity of the binary search algorithm?

(A) $O(n)$ (B) $O(\log n)$

(C) $O(n \log n)$ (D) $O(1)$

129. Which of the following traversal techniques lists the nodes of a binary search tree in ascending order?

(A) Post-order

(B) In-order

(C) Pre-order

(D) None of the above

130. The way a card game player arranges his cards as he picks up one-by-one, is an example of

(A) bubble sort

(B) selection sort

(C) insertion sort

(D) merge sort

131. The following postfix expression with single-digit operands is evaluated using a stack :

   8 2 7 ^ / 2 7 * + 5 1 * –

   Note that ^ is the exponentiation operator. The top two elements of the stack after the first * is evaluated are
   (A) 6 and 1   (B) 5 and 7
   (C) 7 and 2   (D) 1 and 5

132. Hashing refers to the process of deriving
   (A) a record key from storage address
   (B) storage address from a record key
   (C) a floating point code from a record key
   (D) None of the above

133. The in-order and pre-order traversals of a binary tree are

   d b e a f c g and *a b d e c f g*

   respectively. The post-order traversal of the binary tree is
   (A) *d e b f g c a*
   (B) *e d b g f c a*
   (C) *e d b f g c a*
   (D) *d e f g b c a*

134. Null pointer is used to tell
   (A) end of linked list
   (B) empty pointer field of a structure
   (C) the linked list is empty
   (D) All of the above

135. Which data structure allows efficient insertion and deletion at both ends?
   (A) Queue
   (B) Stack
   (C) Array
   (D) Linked list

136. Which sorting algorithm is based on the 'divide and conquer' strategy?
   (A) Bubble sort
   (B) Quicksort
   (C) Selection sort
   (D) Insertion sort

137. Which of the following is **not** an advantage of a thread?
   (A) Inter-process communication
   (B) Less memory space occupied by thread
   (C) Less time to create and terminate than process
   (D) Context switching is faster

138. Consider a vertical memory system with FIFO page replacement algorithm policy. For an arbitrary page access pattern, increasing the number of page frames in main memory will
   (A) always decrease the number of page faults
   (B) always increase the number of page faults
   (C) sometimes increase the number of page faults
   (D) never affect the number of page faults

139. In an operating system, Dijkstra's banking algorithm solves the problem of
   (A) deadlock avoidance
   (B) deadlock recovery
   (C) mutual exclusion
   (D) context switching

140. Semaphores are used to solve the problem of

(A) race condition only

(B) process synchronization and mutual exclusion

(C) race condition and mutual exclusion

(D) None of the above

141. Which of the following is true?

(A) Overlays are used to increase the size of physical memory

(B) Overlays are used to increase the logical address space

(C) When overlays are used, the size of the process is not limited to the size of physical memory

(D) Overlays are used whenever the physical address space is smaller than the logical address space

142. Supervisor call

(A) is a call made by the supervisor of the system

(B) is a call with control functions

(C) is privileged call that is used to perform resource management functions, which are controlled by the operating system

(D) is a call made by someone working in a root directory

143. Which scheduling algorithm is commonly used in real-time operating systems?

(A) Round-robin scheduling

(B) First-Come, First-Served (FCFS) scheduling

(C) Shortest Job Next (SJN) scheduling

(D) Earliest Deadline First (EDF) scheduling

144. Which of the following is an example of a command-line interface operating system?

(A) Linux

(B) Windows

(C) macOS

(D) Android

145. In a time-sharing operating system, when the time slot given to a process is completed, the process goes from the RUNNING state to the

(A) BLOCKED state

(B) READY state

(C) SUSPENDED state

(D) TERMINATED state

146. Thrashing

(A) reduces page I/O

(B) implies excessive page I/O

(C) decreases the degree of multi-programming

(D) improves the system performance

147. The command

echo welcome > /dev/tty

(A) echoes 'welcome' in all the terminals that are switched on

(B) echoes 'welcome' in all the terminals that are logged on

(C) echoes 'welcome' in all the terminals in which it is run

(D) signals the error message— terminal number not specified

148. The Unix shell is both _____ and _____.

(A) scripting, interpreter

(B) high level, low level

(C) interactive, responsive

(D) interpreter, executing

149. Which command is used to display the documentation of commands in Unix?

(A) man   (B) whatis

(C) help   (D) search

150. Which command is used for renaming files in Unix?

(A) rename

(B) move

(C) mv

(D) cp

151. Which of the following results in an error?

(A) expr 3+6

(B) expr 11−8

(C) expr 4*8

(D) expr 5/8

152. Which type of data can be stored in the database?

(A) Image oriented data

(B) Text, files containing data

(C) Data in the form of audio or video

(D) All of the above

153. What does an RDBMS consist of?

(A) Collection of Records

(B) Collection of Tables

(C) Collection of Keys

(D) Collection of Fields

154. The ability to query data, as well as insert, delete, and alter tuples, is offered by _____.

(A) TCL (Transaction Control Language)

(B) DCL (Data Control Language)

(C) DDL (Data Definition Language)

(D) DML (Data Manipulation Language)

155. A functional dependency of the form $X \to Y$ is trivial, if

(A) $Y \subseteq X$

(B) $Y \subset X$

(C) $X \subseteq Y$

(D) $X \subset Y$ and $Y \subset X$

156. Which normal form is considered adequate for relational database design?

(A) 2NF   (B) 3NF

(C) 4NF   (D) BCNF

157. In an E-R diagram, ellipses represent

(A) entity sets

(B) relationships among entity sets

(C) attributes

(D) link between attributes and entity sets

158. Employees, working in multiple projects, is an example of

(A) one-to-one relationship

(B) one-to-many relationship

(C) many-to-one relationship

(D) many-to-many relationship

159. A trigger is

(A) a statement that enables you to start any DBMS

(B) a statement that is executed by the user when debugging an application program

(C) a condition that the system tests for the validity of the database user

(D) a statement that is executed automatically by the system as a side effect of a modification to the database

160. Which of the following types of table constraints will prevent the entry of duplicate rows?

(A) Primary key

(B) Unique

(C) Null

(D) Foreign key

161. An entity set that does **not** have sufficient attributes to form a primary key is a

(A) strong entity set

(B) weak entity set

(C) simple entity set

(D) primary entity set

162. Software engineering is an engineering discipline that is concerned with

(A) how computer systems work

(B) theories and methods that underlie computers and software systems

(C) all aspects of software production

(D) production costs and scheduling

163. The prototyping model of software development is

(A) a reasonable approach when requirements are well-defined

(B) a useful approach when a customer cannot define requirements clearly

(C) the best approach to use for projects with large development teams

(D) a risky model that rarely produces a meaningful product

164. Which of the following statements is/are true with regard to software testing?

I. Regression testing technique ensures that the software product runs correctly after the changes during maintenance.

II. Equivalence partitioning is a white-box testing technique that divides the input domain of a program into classes of data from which test cases can be derived.

(A) Only I

(B) Only II

(C) Both I and II

(D) Neither I nor II

165. Which of the following is/are fact(s) about a top-down software testing approach?

I. Top-down testing typically requires the tester to build method stubs.

II. Top-down testing typically requires the tester to build test drivers.

(A) Only I

(B) Only II

(C) Both I and II

(D) Neither I nor II

166. Which of the following is **not** included in waterfall model?

(A) Requirement analysis

(B) Risk analysis

(C) Design

(D) Coding

167. The extent to which a software tolerates the unexpected problems is termed as

(A) accuracy

(B) reliability

(C) correctness

(D) robustness

168. Which of the following is *not* a software process model?

(A) Prototyping

(B) Iterative

(C) Timeboxing

(D) Glassboxing

169. What is the purpose of a software requirement specification document?

(A) To outline the marketing strategy for the software

(B) To document the design of the user interface

(C) To describe the functionalities and constraints of the software

(D) To provide a step-by-step guide for software installation

170. In the context of software development, what does the acronym 'SDLC' stand for?

(A) Software Development and Launch Cycle

(B) Software Design and Logical Construction

(C) Software Development Life Cycle

(D) System Deployment and Life Cycle Control

171. In software development, what does the term 'refactoring' refer to?

(A) Rewriting the entire codebase from scratch

(B) Adding new features to the existing software

(C) Fixing bugs and errors in the software

(D) Improving the internal structure of the code without changing its external behaviour

172. Which network topology connects all devices in a linear sequence, with each device connected to exactly two other devices?

(A) Bus topology

(B) Star topology

(C) Ring topology

(D) Mesh topology

173. Which network protocol is used to retrieve emails from a mail server to a mail client?

(A) POP3 (Post Office Protocol version 3)

(B) SMTP (Simple Mail Transfer Protocol)

(C) HTTP (Hypertext Transfer Protocol)

(D) FTP (File Transfer Protocol)

174. Which network device operates at the Data Link Layer (Layer 2) of the OSI model and connects multiple devices within a LAN?

(A) Switch

(B) Router

(C) Hub

(D) Bridge

175. In TCP/IP networking, which protocol is responsible for assigning IP addresses dynamically to devices on a network?

(A) DNS (Domain Name System)

(B) DHCP (Dynamic Host Configuration Protocol)

(C) ARP (Address Resolution Protocol)

(D) ICMP (Internet Control Message Protocol)