SOF

SCIENCE OLYMPIAD FOUNDATION

ICSO

SOF INTERNATIONAL COMPUTER SCIENCE OLYMPIAD 2024-25

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

CLASS 9

SET-B

Total Questions : 50 | Time : 1 hr.

Guidelines for the Candidate

1. You will get additional ten minutes to fill up information about yourself on the OMR Sheet, before the start of the exam.
2. Write your **Name, School Code, Class, Section, Roll No.** and **Mobile Number** clearly on the **OMR Sheet** and do not forget to sign it. We will share your marks / result and other information related to SOF exams on your mobile number.
3. The Question Paper comprises four sections:
   Logical Reasoning (10 Questions), **Computer Science** (30 Questions), **AI, Robotics and Information Technology** (5 Questions) and **Achievers Section** (5 Questions).
   Each question in Achievers Section carries 3 marks, whereas all other questions carry one mark each.
4. All questions are compulsory. There is no negative marking. Use of calculator is not permitted.
5. There is only ONE correct answer. Choose only ONE option for an answer.
6. To mark your choice of answers by darkening the circles on the OMR Sheet, use **HB Pencil** or **Blue / Black ball point pen** only. E.g.
   Q.16: Which of the following is a type of printer?
   A. Cathode Ray Tube   B. Light Emitting Diode   C. Thermal Flatbed   D. Liquid Crystal Display
   As the correct answer is option C, you must darken the circle corresponding to option C on the OMR Sheet.

   16. Ⓐ Ⓑ ● Ⓓ

7. Rough work should be done in the blank space provided in this booklet.
8. Return the OMR Sheet to the invigilator at the end of the exam.
9. Please fill in your personal details in the space provided before attempting the paper.

Name:...

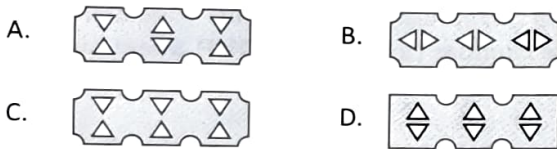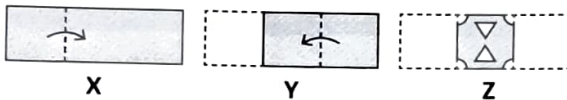SOF Olympiad Roll No.:... Contact No.:..

LOGICAL REASONING

1. In a certain code language, "going back home" is written as "529", "school to home" is written as "815" and "come back soon" is written as "472". Which of the following words is written as "9" in the same code language?

   A. back
   B. school
   C. home
   D. going

2. The given question consists of a set of three figures X, Y and Z showing a sequence of folding of a piece of paper. Fig. Z shows the manner in which the folded paper has been cut. Select a figure from the options which would most closely resemble the unfolded form of Fig. Z.

   X   Y   Z

   A.   B.

   C.   D.

3. Study the given information carefully and answer the following question.
   'P − Q' means 'P is the father of Q'.
   'P × Q' means 'P is the sister of Q'.
   'P + Q' means 'P is the mother of Q'.
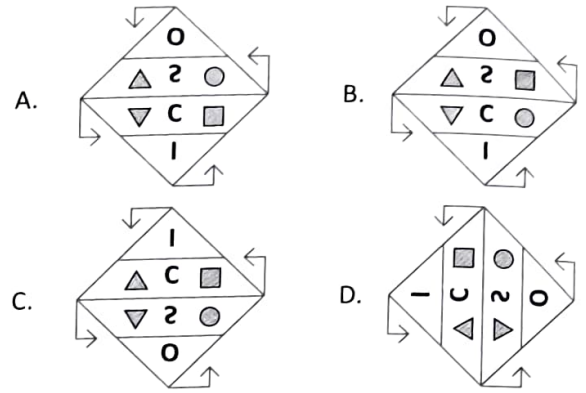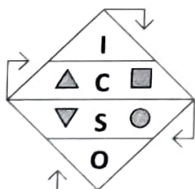   'P ÷ Q' means 'P is the daughter of Q'.
   How is F related to M in F × G − K ÷ M?

   A. Mother-in-law
   B. Sister-in-law
   C. Cousin
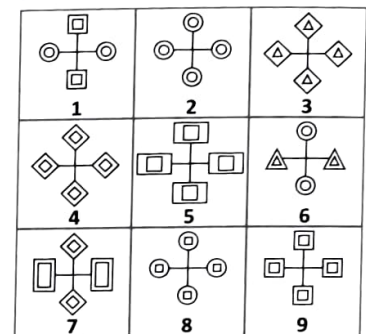   D. Can't be determined

4. If South-West becomes North, East becomes South-West, and so on, then which direction becomes North-East?

   A. South-West
   B. East
   C. West
   D. North-West

5. Select the correct water image of the given figure.

   A.   B.

   C.   D.

6. Group the given figures into three classes on the basis of their identical properties using each figure only once.
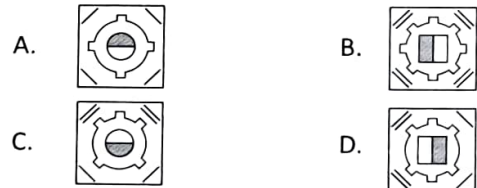

   A. 1, 5, 8; 2, 4, 9; 3, 6, 7
   B. 1, 6, 9; 2, 4, 7; 3, 5, 8
   C. 1, 6, 7; 2, 4, 9; 3, 5, 8
   D. 1, 6, 7; 2, 5, 9; 3, 4, 8

7. Arrange the given words in a meaningful sequence and select the correct option.
   1. Retire   2. Education   3. Pension
   4. Promotion   5. Job

   A. 2, 5, 1, 4, 3
   B. 5, 3, 1, 2, 4
   C. 2, 5, 3, 1, 4
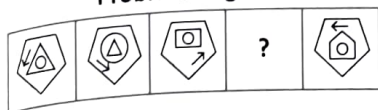   D. 2, 5, 4, 1, 3

8. Select the odd one out.

   A.   B.

   C.   D.

9. Which of the following interchanges of signs would make the given equation correct?

   $$9 + 72 \times 12 \div 6 - 27 = 18$$

   A. × and −
   B. × and ÷
   C. + and ÷
   D. ÷ and −

10. Select a figure from the options which will continue the same series as established by the Problem Figures.

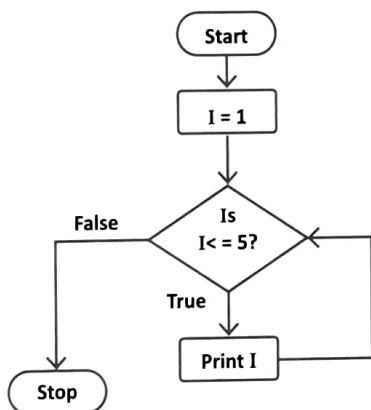Problems Figures

A.

B.

C.

D.

COMPUTER SCIENCE

11. Which of the following hardware devices measures the quantity of light reflected back after directing a beam of light and enables fast reading of product details?

A.

B.

C.

D.

12. What would be the output of the given flowchart?

A. 1
    2
    3
    4
    5

B. 0
    1
    2
    3
    4

C. 1
    2
    3
    4

D. 0
    1
    2
    3

13. Which of the following characters can be used as punctuators in Python?

(i)   Brackets []
(ii) Braces {}
(iii) Comma (,)
(iv) Semicolon (;)

A.   (i) and (ii) only
B.   (iii) and (iv) only
C.   (ii) and (iv) only
D.   (i),(ii),(iii) and (iv)

14. Which of the following statements hold(s) true with respect to FTP protocol?

Statement 1 : It is a file transfer protocol.

Statement 2 : It is used to transfer files between a client and a server.

A.   Only Statement 1
B.   Only Statement 2
C.   Both Statement 1 and Statement 2
D.   Neither Statement 1 nor Statement 2

15. Which of the following tags are examples of an empty element in html, where you do not need opening and closing tags as there is nothing to go in between them?
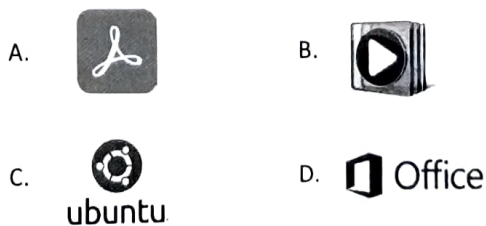
(i)   <hr>
(ii) <img>
(iii)
(iv) <p>

A.   (i) and (ii) only
B.   (ii) and (iii) only
C.   (ii) and (iv) only
D.   (i), (ii) and (iii) only

16. What is/are the sign(s) that may help you to identify computer viruses?

(i)   Slow speed of the system
(ii) Pop-up windows
(iii) Self execution of programs
(iv) Crashing of device

A.   (i) only
B.   (iii) only
C.   (ii) and (iii) only
D.   (i), (ii), (iii) and (iv)

17. Find the odd one out.

A.

B.

C.
ubuntu

D. Office

18. Identify following regarding transmission media.

- It is made of glass or plastic and transmits signals in the form of light.
- A light pulse can be used to signal a one (1) bit.
- The absence of a pulse signals a zero (0).
- The bandwidth of such transmission system is potentially enormous.

A. Optical fiber cable
B. Twisted pair cable
C. Coaxial cable
D. RJ-45 connector

19. Match the following protocols given in Column-I with their descriptions given in Column-II.

Column-I	Column-II
(a) TCP/IP	(i) It is the most widely used protocol for networking. Every communication is divided into many packets, each of which is sent from the source to the destination.
(b) FTP	(ii) It is used to move a hypertext between two or more computers or other devices.
(c) HTTP	(iii) It is used to transfer documents, text files, multimedia files, program files, etc., from one device to another over a network.

A. (a)-(i), (b)-(ii), (c)-(iii)
B. (a)-(i), (b)-(iii), (c)-(ii)
C. (a)-(ii), (b)-(iii), (c)-(i)
D. (a)-(ii), (b)-(i), (c)-(iii)

20. Which of the following tags defines an abbreviation or acronym in HTML?

A. <abbr>
B. <abv>
C. <abr>
D. <avr>

21. Which of the following crimes do/does not come under cyber crime?

(i) Copying some important data from a computer without taking permission from the owner of the data.

(ii) Stealing keyboard and mouse from a shop.

(iii) Getting into unknown person's social networking account and start messaging on his behalf.

A. (i) only
B. (ii) only
C. (i) and (iii) only
D. (i), (ii) and (iii)

22. What will be the output of the given Visual Basic code?

```
Private Sub Command1_Click( )
Print InStr("Computer Science", "Sci")
End Sub
```

A. 3
B. 10
C. 9
D. 8

**23.** Select the correct match with respect to number system.

A. $(568)_{10}$ — $(10010111000)_2$
B. $(28)_{10}$ — $(11100)_2$
C. $(14)_{10}$ — $(1100)_2$
D. $(29)_{10}$ — $(11001)_2$

24. Match the MS-PowerPoint 2016 icons given in Column-I with their descriptions given in Column-II.

Column-I	Column-II
(a)	(i) Used to reset the position, size and formatting of the slide placeholders to their default settings.
(b)	(ii) Used to add a slide to your presentation.
(c)	(iii) Used to change the layout of your slide.
(d)	(iv) Used to organize your slides into sections.

A. (a)-(i), (b)-(ii), (c)-(iv), (d)-(iii)
B. (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)
C. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)
D. (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

25. Select the correct match with respect to paragraph elements of MS-Word 2016.

A. — Align your content to the right margin.
B. — Align your content evenly between the margins.
C. — Align your content to the center on the page.
D. — Add or remove borders from your selection.

26. Which of the following statements hold(s) true about ⬚→☐ in MS-Excel 2016?

Statement 1 : It is used to summarize data from separate ranges.

Statement 2 : It is used to consolidate the results in a single output range.

A. Only Statement 1
B. Only Statement 2
C. Both Statement 1 and Statement 2
D. Neither Statement 1 nor Statement 2

27. Consider the statement given here.

Link
   Ⓟ   Ⓠ   Ⓡ Ⓢ

Which of the parts marked by Ⓟ, Ⓠ, Ⓡ and Ⓢ would get displayed in the webpage?

A. Ⓟ
B. Ⓠ
C. Ⓡ
D. Ⓢ

28. Identify the following.

- It is a procedure for solving a problem or performing a computation.
- It is a set of instructions that conduct specified task step-by-step.
- It is defined as a set of finite rules or instructions to be followed in calculations.

A. Algorithm
B. Flowchart
C. Program control block
D. Animation chain

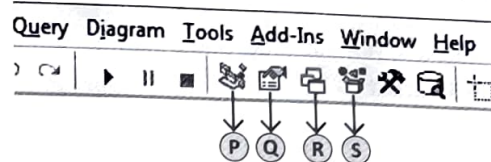29. Which of the following attributes of <hr> tag specifies a horizontal line that should be rendered in one solid color in an HTML document?

A. Shade
B. Solid
C. Noshade
D. Color

30. Which of the following statements is/are correct with respect to computer viruses?

(i) Boot sector virus can spread by attaching an infected removable media.

(ii) Polymorphic virus changes its code every time a file infected with a virus is executed.

(iii) Multipartite virus infects both boot sectors and executable files simultaneously and can spread in multiple ways.

A. (i) only
B. (ii) only
C. (ii) and (iii) only
D. (i), (ii) and (iii)

31. Observe the snapshot shown here and identify which of the following marked areas when clicked will open the Form Layout window in Visual Basic?

Query Diagram Tools Add-Ins Window Help

Ⓟ Ⓠ Ⓡ Ⓢ

A. Ⓟ
B. Ⓠ
C. Ⓡ
D. Ⓢ

32. Select the correct difference between HTML and CSS.

	HTML	CSS
A.	It is a markup language that describes the structure of web pages.	It is the style sheet language used to describe the presentation and design of web pages, including colors, layouts and others.
B.	We can use HTML inside CSS.	We cannot use CSS inside HTML.
C.	It consists of selectors that are declared using block statement syntax.	It uses tags that are surrounding the content of any webpage element.
D.	It is stands for Hightext Markup Language.	It is stands for Cascading Style Sheets.

33. Select the correct match with respect to Flash CS6.

A. — Allows you to make the most complex drawings.

B. — Allows you to select several objects or parts of a shape.

C. — Allows you to apply color changes to the stroke of drawings.

D. — Allows you to draw freehand drawing lines.

34. Which of the following statements is/are correct about memory units in computers?

A. Data in the computer's memory is represented by two digits 0 and 1.

B. 0 and 1, these two digits are called binary digits or bits.

C. A bit is the smallest unit of computer's memory.

D. All of these

35. Which of the following block moves a sprite forward in Scratch?

A. Forward 90°

B. Move 10 steps

C. Turn right 10 steps

D. None of these

36. Identify the following.
- It tells us the location of the web page being displayed and other related information.
- It consists of various parts namely protocol, subdomain, domain and the directories.

A. URL

B. IP

C. MAC

D. FTP

37. Which of the following statements hold(s) true about the drawing modes in Scratch?

Statement 1 : Bitmap mode allows you to edit images and paint with pixels.

Statement 2 : Vector mode allows you to create and edit shapes.

A. Only Statement 1

B. Only Statement 2

C. Both Statement 1 and Statement 2

D. Neither Statement 1 nor Statement 2

38. Identify the following with respect to animation.
- It is the study of the movement and motion of structures that have joints, such as walking man.
- It is mostly used in 3D programs, in which you link objects such as hands to arms.

A. Kinematics animation

B. Morphing animation

C. Cel animation

D. Vector graphics

39. Select the correct statement about the MS-Word 2016 icon shown in the given image.

A. It allows you to reuse the content in your document by saving it to the Quick Part Gallery.

B. It helps to focus on important content of the document.

C. It allows you to insert an embedded object in your document.

D. It allows you to protect your document by adding digital signature.

40. Which of the following statements hold(s) true about the given icon with respect to MS-Excel 2016?

Statement 1 : It is used to create, edit, delete and find all the names used in the workbook.

Statement 2 : It can be used in formulas as substitutes for cell references.

A. Only Statement 1

B. Only Statement 2

C. Both Statement 1 and Statement 2

D. Neither Statement 1 nor Statement 2

AI, ROBOTICS AND INFORMATION TECHNOLOGY

41. Which of the following options comes under the category of AI examples?

(i) Iris

(ii) Facial recognition

(iii) Digital assistants

(iv) Chatbots

(v) Biometric

A. (i) and (iii) only

B. (ii) and (v) only

C. (i), (iv) and (v) only

D. (i), (ii), (iii), (iv) and (v)

42. Identify the following.
- It is a subset of AI which enables machines to improve at tasks with experience (data).
- It is used to enable machines to learn by themselves using the provided data and make accurate decisions.

A. Machine learning

B. Neural networks

C. Deep learning

D. Computer vision

43. Which of the following options is able to interact with and respond to its environment, which is characterised

by three central capabilities : the ability to sense, the ability to plan, and the ability to act?

A. Robots

B. Programs

C. Taskbot

D. Codebots

44. Which of the following options represents mobile operating system(s)?

| (i) | (ii) | (iii) |

A. (i) only

B. (ii) only

C. (ii) and (iii) only

D. (i) and (ii) only

45. Select the odd one out.

A.

B.

C.

D.

ACHIEVERS SECTION

46. What will be the result of the following operations in Python?

    `>>> 4*(9 − 11), 7*7+4, 3−2*7`

A. (8, 53, −11)

B. (−8, 53, −11)

C. (−8, 77, −7)

D. (−26, 53, 7)

47. What will be the output of given HTML code?

```
<ol start = "a">
<li>Mobile</li>
<li>Desktop</li>
<li>Laptop</li>
</ol>
<ol type="I" start="10">
<li>Smart TV</li>
<li>LCD</li>
<li>LED</li>
</ol>
```

A.
   1. Mobile
   2. Desktop
   3. Laptop

   X. Smart TV
   XI. LCD
   XII. LED

B.
   1. Mobile
   2. Desktop
   3. Laptop

   10. Smart TV
   11. LCD
   12. LED

C.
   I. Mobile
   II. Desktop
   III. Laptop

   X. Smart TV
   XI. LCD
   XII. LED

D.
   1 Mobile
   2 Desktop
   3 Laptop

   X Smart TV
   XI LCD
   XII LED

48. What will come in the place of question mark (?) at step 5 to complete the given algorithm?

Input : "Any number", "n"

Output : "The factorial is", fact

Step 1 : Start

Step 2 : Input any number "n"

Step 3 : Initialize counter variable i = 1 and fact = 1.

Step 4 : If i< = n goto step 5 otherwise goto step 7.

Step 5 : ?

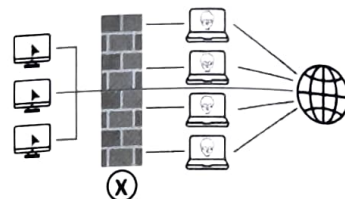Step 6 : Increment counter variable i and goto step 4.

Step 7 : Write fact

Step 8 : End

A. Calculate fact = i * 1

B. Calculate fact = fact * i

C. Calculate fact = i + 1

D. Calculate fact = fact − i

49. Which of the following steps will allow you to change the mouse pointer size and color in windows 10?

A. Press ⊞ + [I] → ⟳ → Select 'Mouse pointer' from left pane → Change pointer size and color as per your need.

B. [⚙️] → [A] → Select 'Mouse options' → Change pointer size and color as per your need.

C. Press ⊞ + [K] → [⚙️] → Select → 🖱️ → Change pointer size and color as per your need.

D. [📁] → 🖱️ → Change pointer size and color as per your need.

50. Which of the following statements hold(s) true about the area marked as (X) is the given diagram?

Statement 1 : It can provide protection from unauthorised access as well as from malware and threats.

Statement 2 : It can be used to restrict access to particular network resources or services as well as to keep track of network activities.

A. Only Statement 1
B. Only Statement 2
C. Both Statement 1 and Statement 2
D. Neither Statement 1 nor Statement 2

SPACE FOR ROUGH WORK