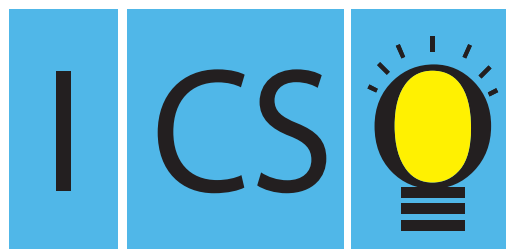


CLASS
9

SET
6



**SOF INTERNATIONAL
COMPUTER SCIENCE OLYMPIAD**

DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

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 1 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. (A) (B) (C) (D)

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 on this page before attempting the paper.



SCIENCE OLYMPIAD FOUNDATION

Inspiring Young Minds Through Knowledge Olympiads

Name:.....

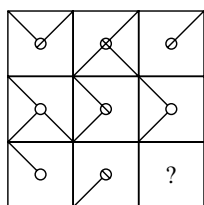
SOF Olympiad Roll No.:..... Contact No.:.....

LOGICAL REASONING

1. Pointing to a woman in a photograph, a man says, "She is the mother of the father of my wife's only son." How is the woman in the photograph related to the man?

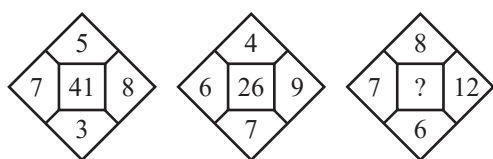
A. Mother
B. Wife
C. Daughter-in-law
D. Mother-in-law

2. Which of the following options replaces (?) in the given figure matrix?



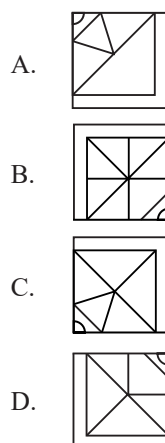
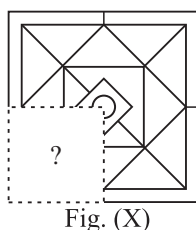
- A.
- B.
- C.
- D.

3. Find the missing number, if same rule is followed in all the three figures.

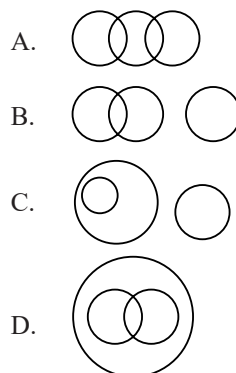


- A. 35
B. 36
C. 45
D. 47

4. Select a figure from the options, which when placed in the blank space of Fig. (X) would complete the pattern.



5. Which of the following Venn diagrams best represents the relationship amongst, "Wire, Copper and Paper"?

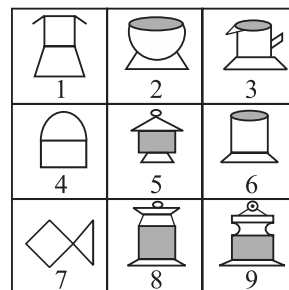


6. How many such symbols are there in the given arrangement, each of which is immediately preceded by a perfect square and also immediately followed by a vowel?

H T 9 # E 7 \$ K I L % 3 P @ 2 J ↑ R U 4 ★ A D

- A. None
B. One
C. Two
D. Three

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



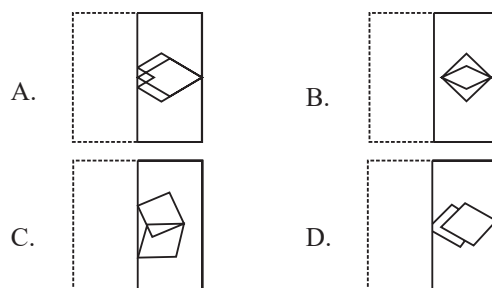
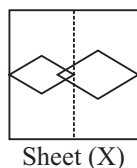
- A. 1, 4, 7; 2, 5, 9; 3, 6, 8
B. 1, 4, 7; 2, 6, 9; 5, 3, 8
C. 1, 4, 7; 2, 3, 6; 5, 8, 9
D. 1, 3, 5; 4, 7, 8; 2, 6, 9

8. What will come in place of the (?) in the following series?

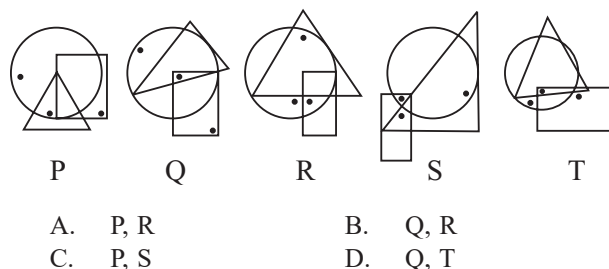
X5C, U8F, ?, O17L, L23O

- A. R12I
B. S13K
C. O90P
D. R13K

9. A square transparent Sheet (X) with a pattern and a dotted line on it is given. Select the figure from the options as to how the pattern would appear when the transparent sheet is folded along the dotted line.



10. Select a pair of figures from the options which satisfies the same condition of placement of dots.



COMPUTER SCIENCE

11. Which of the following options is an immutable data type in Python?

- A. List
B. Dictionary
C. Tuple
D. Set

12. Match the following options given in Column-I with their correct description given in Column-II in Scratch.

Column-I	Column-II
(a) Code Blocks Palette	(i) It lets you edit backgrounds.
(b) Stage	(ii) It is the place where you build code blocks.
(c) Script Area	(iii) It contains blocks of code that can drag and drop to create scripts.
(d) Backdrop Editor	(iv) It displays the running project and shows how sprites behave.









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

13. Which of the following is the default name of the first field in a new table in MS-Access 2016?

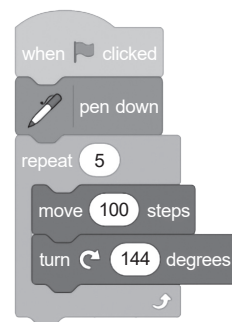
- A. Name
B. ID

- C. RecordID
D. New

14. Select the incorrect match with respect to Windows 11.

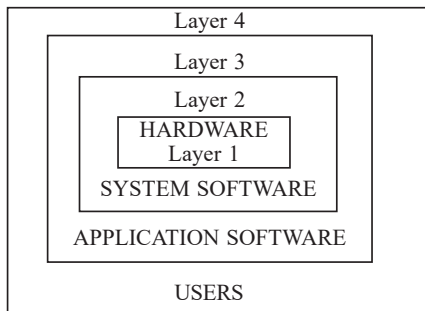
- A.  +  – It helps you quickly arrange the windows into predefined layouts.
B.  +  – It helps you to switch between open apps.
C.  +  – It helps you to open File Explorer.
D.  +  – It helps you to hide all open window.

15. What will be the shape drawn with the help of given code in Scratch?



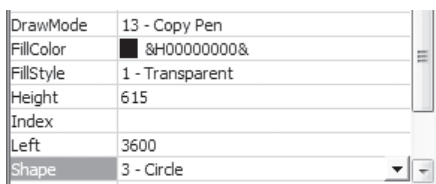
- A. Pentagon
B. Star
C. Diamond
D. Trapezoid

16. Given here is an image of logical system architecture of a computer system representing the relationship among hardware, system software, application software and users. Identify which among these layers comprises of end user programs that do a specific task?



- A. Layer 1
B. Layer 2
C. Layer 3
D. Layer 4

17. Which of the following tools has the properties shown in the given snapshot in Visual Basic?



- A.
- B.
- C.
- D.

18. Identify the following.

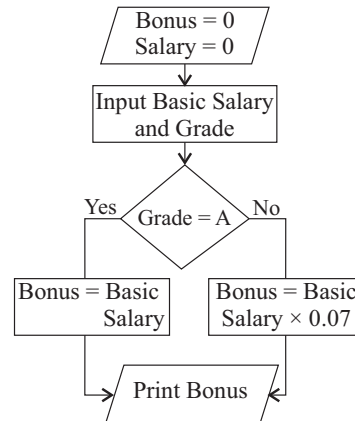
- It is a program that resides permanently on secondary storage.
- It translates a source program written in a high level language to its equivalent machine level language.

- A. Macro B. Compiler
C. Driver D. BIOS

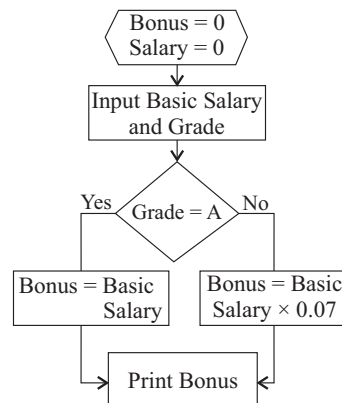
19. What would be the flowchart of given algorithm?

- Step 1 : Set Bonus and Salary to zero
Step 2 : Read Basic Salary and Grade
Step 3 : If Grade= A then Bonus= Basic Salary go to Step 5
Step 4 : Else set Bonus= Basic Salary \times 0.07 go to Step 5
Step 5 : Print Bonus

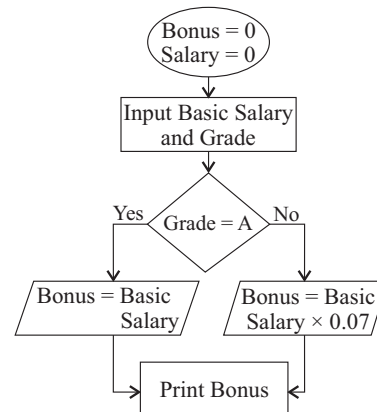
A.



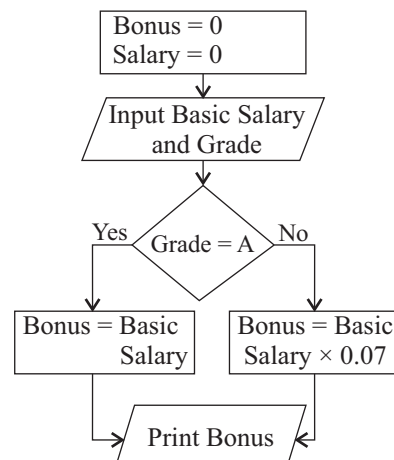
B.



C.



D.



20. Recognize the device given here and identify which among the following statements is incorrect about it.






- A. It converts an image into electronic form.
 B. It saves the image in such a form which can be later modified.
 C. It prints the image placed on it.
 D. Both A and B

21. Match the following.

Column-I

Column-II

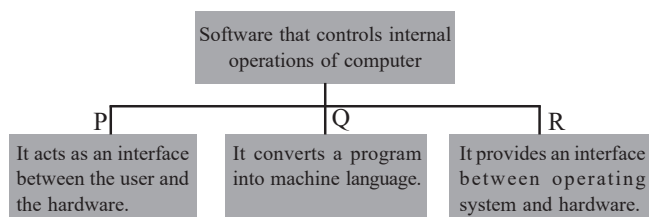
- (a)  (i) It contains a tiny quartz clock and its speed is measured in MHz or GHz
- (b)  (ii) It is the foundation of computer system and holds the circuitry to connect various components
- (c)  (iii) Temporarily stores documents or files on which a user is currently working

- 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)

22. A computer is made up of three units that are input, output and processing unit. All the arithmetic and logical operations are performed by Arithmetic and Logic Unit inside the CPU. Which of the following components of computer system determines the type of instructions i.e. whether it is arithmetic, logical or I/O?

- A. Output Unit
 B. Memory Unit
 C. Control Unit
 D. Input Unit

23. Identify the options marked as P, Q and R by the description given for them in the diagram.



- A. P-Operating System, Q- Language Processor, R- Device Drivers

- B. P- Device Drivers, Q- Operating System, R- Language Processor
 C. P- Language Processor, Q- Device Drivers, R- Operating System
 D. P- Device Drivers, Q- Language Processor, R- Operating System

24. What is motion capture animation?

- A. Drawing a series of pictures that vary gradually from one page to the next and then turning the pages rapidly to show animation.
 B. Making use of a screen filled with movable pins, which can be moved in or out by pressing an object onto the screen.
 C. Making animated films by manipulating slow-drying oil paints on sheets of glass.
 D. Recording actions of objects or people, and using that information to animate digital character models in 2D or 3D computer animation.

25. Which of the following devices has the features listed below?

- (i) It allows computer to accept input by capturing its image.
 (ii) It matches the captured image with pre-stored images and then decides whether it's a valid input or not.
 A. Vision Input System
 B. Machine Learning System
 C. Manual Entry System
 D. None of these

26. Predict the output of following HTML code.

```

<table frame="border">
<tr>
<th>Input</th>
<th>Output</th>
</tr>
<tr>
<td>Mouse</td>
<td>Monitor</td>
</tr>
</table>
  
```

- A.

Input	Output
Mouse	Monitor

 B.

Input	Output
Mouse	Monitor
- C.

Input	Output
Mouse	Monitor

 D.

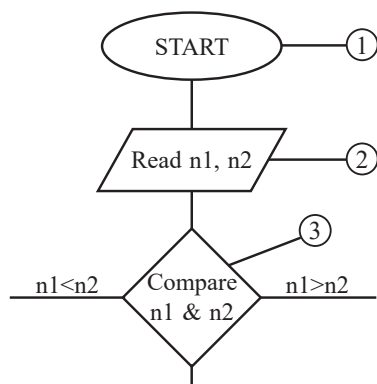
Input	Output
Mouse	Monitor

27. The process of making text or data unreadable to unauthorized users by changing it to an unreadable form is called as _____.

- A. Fragmentation
 B. Encryption
 C. Defragmentation
 D. Segmentation

28. Which of the following controls in Visual Basic acts as a container for grouping other controls?
- CommandButton
 - Frame
 - Label
 - Shape

29. Observe the flowchart given here and identify which symbols marked by numbers ①, ② and ③ indicates a point where one among multiple paths is possible.



- 1
- 2
- 3
- Both 1 and 2

30. What would be the output when given statement is executed in Visual Basic?

Print InStr("Foundation", "na")

- 4
- na
- 1
- 0

31. Identify the following:

- It is a storage device.
- Its base layer is of polycarbonate plastic.
- Its top layer is coated with aluminium.
- It was co-developed by Philips and Sony.



32. Which of the following statements hold(s) true about the <a> tag in HTML?

Statement 1 : Name attribute specifies the name of an anchor in <a> tag.

Statement 2 : Target attribute specifies where the linked document when clicked will open.

- Only Statement 1
- Only Statement 2

- Both Statement 1 and Statement 2
- Neither Statement 1 nor Statement 2

33. Which of the following tags is not used inside <table>..</table> tags in HTML?

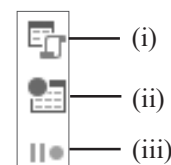
- <caption>
- <thead>
- <type>
- <colgroup>

34. Observe the snapshot of Advanced Find dialog box given here and identify which of the following words would be found when Find Next button is clicked in this dialog box in MS-Word 2016?



- Built
 - Bit
 - But
 - Boat
- Only (i)
 - Both (ii) and (iii)
 - Both (iii) and (iv)
 - (i), (ii), (iii) and (iv)

35. The options shown in the snapshot are displayed when we click on Macros option present under Macros group of View tab in MS-Word 2016. Identify the functions of icons marked as (i), (ii) and (iii).



- (i)- Pause Recording, (ii)- View Macros, (iii)- Record Macro
- (i)- Record Macro, (ii)- Pause Recording, (iii)- View Macros
- (i)- View Macros, (ii)-Record Macro, (iii)-Pause Recording
- (i)- Record Macro, (ii)- View Macros, (iii)- Pause Recording

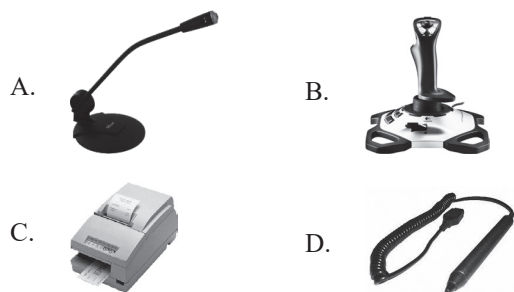
36. $(01010010)_2 = (\text{_____})_{10}$

- 80
- 82
- 90
- 92

37. You have created a sales sheet in MS-Excel 2016, which have five fields prod_id, unit_price, unit_sold, profit and profit %. You want to see the profit % for three different values of unit_price, which are 50, 60 and 70. Which of the following options would be best to use?

- Goal seek
- Scenario Manager
- Data Validation
- Sort

38. Which of the following devices uses character recognition technology and is a direct data entry device?



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







Statement 1 : It allows you to monitor values of certain cells in a separate window/pane.

Statement 2 : The watch window get closed when you switch to a different worksheet in the workbook.

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

40. Select the incorrect match with respect to MS-Excel 2016.

- A.  – Show all formulas applied in a sheet in a new window
B.  – Show how each part of a formula is evaluated
C.  – Remove dependents and precedents arrows
D.  – Check the errors in formula

AI, ROBOTICS AND INFORMATION TECHNOLOGY

41. _____ is a domain of artificial intelligence related to data systems and processes, in which the system collects numerous data, maintains data sets and derives meaning out of them.

- A. Computer Vision
B. Data Sciences
C. Natural Language Processing
D. All of these

42. Identify the following with respect to types of learning approaches for AI.

- It works on unlabelled datasets.
 - The data which is fed to the machine is random.
 - It is used to identify relationships, patterns and trends out of the data which is fed into it.
- A. Supervised learning modeling
B. Unsupervised learning modeling
C. Machine learning modeling
D. Deep learning modeling

43. Select the odd one.



44. Which of the following statements hold(s) true regarding the speech synthesizer?

Statement 1: It allows people with visual impairments or reading disabilities to listen to written words on a home computer.

Statement 2: It is an artificial production of human speech.

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

45. What does RPA stand for?

- A. Robotic Program Automation
B. Robotics Process Automatic
C. Robotics Processing Automation
D. Robotic Processes Automation

ACHIEVERS SECTION

46. While creating a Photo Album in MS-PowerPoint 2016, you can _____ in the Photo Album dialog box .

- (i) Rotate a picture
(ii) Insert a Text Box at the end of album
(iii) Insert an animation on a picture

- (iv) Apply a frame shape to the picture

- A. Only (ii)
B. Only (iii)
C. Both (iii) and (iv)
D. (i), (ii) and (iv)

47. You have placed a TextBox control on a form in Visual Basic and changed its Text property to Heena. After that you entered * in PasswordChar property. What would be the result of this change on the TextBox control?

- A. It will replace the text Heena with a single * character.
- B. It will replace the text Heena with five * characters.
- C. It will display * character after the text Heena.
- D. It will display five * after the text Heena.

48. Nisha has written the following HTML lines to insert images in a table row. But the images were not getting displayed inside the table. Her teacher has told her that she need to modify the lines written between <tr> and </tr> tags. Which of the following options shows the CORRECT modification ?

<tr>

</tr>

A. <td> </td>

<td> </td>

B. <td img src="Tulips.jpg" height=100 width=100> </td>

<td img src="Koala.jpg" height=100 width=100> </td>

C. <td bg="Tulips.jpg" height=100 width=100> </td>

<td bg="Koala.jpg" height=100 width=100></td>

D. <td><bg></bg></td>
<td><bg> </bg></td>

49. Niharika was writing an essay in MS-Word 2016. While typing she observed that repeated words are not being underlined with red wavy lines, which used to happen earlier. She wants that whenever she mistakenly type same word twice, it should get underlined with red wavy lines. Which of the following options would replace the question mark in the given step to enable this feature?

File tab → Options → ? → Check Flag repeated words option under “When correcting spelling in Microsoft Office programs”

- A. General
- B. Save
- C. Advanced
- D. Proofing

50. Observe the given snapshot, Trace Precedents option is applied on cell D2. What would happen when you change the formula in cell D2 and then press Enter key in MS-Excel 2016?

	A	B	C	D
1	Pd_id	Price per unit	units	sale
2	101	60	80	4800
3	102	60	24	1440

- A. The trace precedents arrows will get updated according to new formula.
- B. The trace precedents arrows will get removed.
- C. The formula will not get updated to retain the precedents arrows.
- D. None of these

SPACE FOR ROUGH WORK