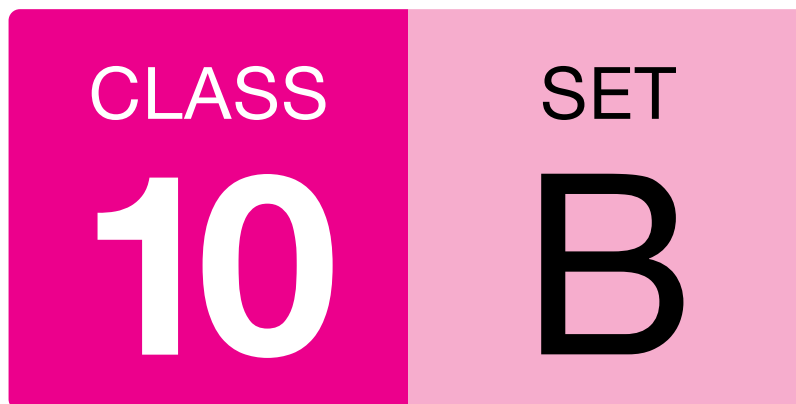




Total Questions : 50

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 before attempting the paper.



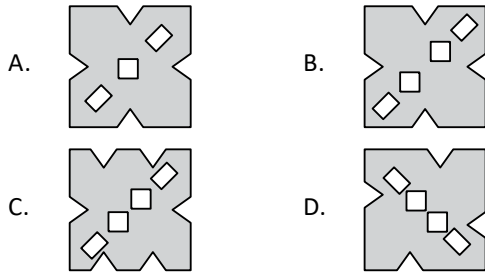
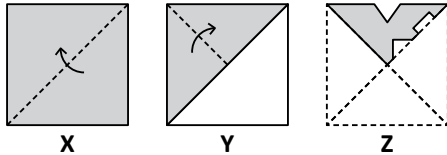
DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

Name:.....

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

LOGICAL REASONING

1. There is 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 resembles the unfolded form of Fig. Z.



2. Select the correct order of signs from the options, so that the given equation becomes correct.

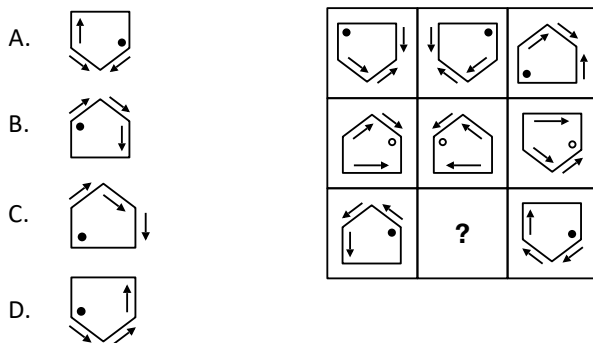
$$10 \square 41 \square 689 \square 53 \square 7 = -40$$

- A. $-, +, \times, \div$ B. $+, -, \div, \times$
C. $\times, -, +, \div$ D. $+, -, \times, \div$

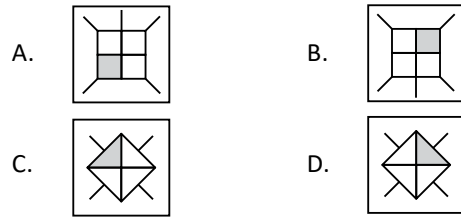
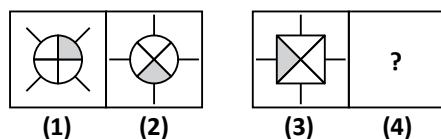
3. Select the odd one out.

- A. (14, 210) B. (16, 272)
C. (12, 132) D. (18, 342)

4. Select a figure from the options which will complete the given figure matrix.



5. There is a definite relationship between figures (1) and (2). Establish a similar relationship between figures (3) and (4) by selecting a suitable figure from the options that would replace the (?) in fig. (4).



6. If the positions of the first and the sixteenth element, the second and the seventeenth element and so on up to the fifteenth and the last element are interchanged in the given below arrangement, then which element will be 16th to the right of 20th element from the right end?

58#BFL@4★MJ9GN2W3+S4?SPQ6R7•HT

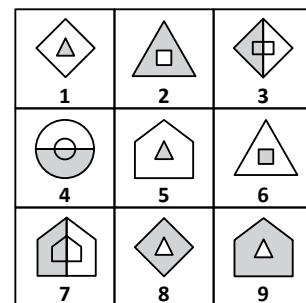
- A. 9
B. B
C. G
D. #

7. Find the missing number, if a certain rule is followed either row-wise or column-wise.

- A. 17
B. 36
C. 19
D. 28

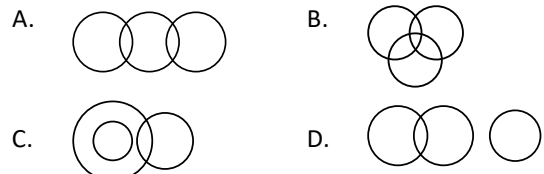
9	4	8
7	5	9
3	2	2
95	11	?

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



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

9. Which of the following Venn diagrams best represents the relationship amongst, "Cousins, Males and Sisters"?



10. A number arrangement machine when given an input line of numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement.

Input : 71 91 22 73 11 24 18 26
 Step I : 11 71 91 22 73 24 18 26
 Step II : 11 71 22 73 24 18 26 91
 Step III : 11 18 71 22 73 24 26 91
 Step IV : 11 18 71 22 24 26 73 91
 Step V : 11 18 22 71 24 26 73 91

Step VI : 11 18 22 24 26 71 73 91

And Step VI is the last step for the above input. As per the rule followed in the above steps, which of the following will be the second last step for the given input?

- Input : 73 13 17 64 25 87 48
 A. 13 17 64 25 73 48 87
 B. 13 17 25 64 48 73 87
 C. 87 73 64 48 25 17 13
 D. None of these

COMPUTER SCIENCE

11. Which of the following memory types is volatile and used primarily by the OS to compensate for physical memory shortages?

- A. Virtual memory
 B. Flash memory
 C. Cache memory
 D. ROM

12. Select the incorrect match with respect to MS-Word 2016.

- A.  - It is used for a faint text or image that appears behind the content on a document.
 B.  - It is used to change the background color of the document.
 C.  - It is used to apply a decorative line or design that appears around the edges of your document.
 D.  - It is a pre-designed set of formatting sets that help to quickly change the look of an entire document to a consistent, professional style.

13. Which of the following statements hold(s) true with respect to MS-Word 2016?

Statement 1 : π is used to insert preformatted text, auto text, document properties and fields anywhere in the document.

Statement 2 : Ω is used to add symbols that are not on your keyboard, including mathematical, currency and copyright symbols.

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

14. Which of the following is the correct hexadecimal representation of a given decimal number?

(255)

- A. FF
 B. EF
 C. FE
 D. DF

15. What will be the correct sequence of margin values applied in the following CSS code?

```
p
{
margin: 10px 20px 30px 40px;
}
```

- A. Right=20px, Top=10px, Bottom=30px, Left=40px
 B. Top=10px, Right=20px, Left=40px, Bottom=30px
 C. Top=10px, Right=20px, Bottom=30px, Left=40px
 D. All margins set to 10px

16. A system in which database is maintained in the form of tables and in which all records are stored in rows is called _____ in Database management system.

- A. Relational database
 B. Object oriented database
 C. Multi level database
 D. Virtual database

17. Identify the following.

- It is a unique identifier assigned to a network interface card (NIC) for communications.
 - It is usually represented as six pairs of hexadecimal digits, separated by colons or hyphens, e.g., 00:1A:2B:3C:4D:5E or 00-1A-2B-3C-4D-5E.
 - It is used in Ethernet and Wi-Fi networks.
- A. IP address
 B. MAC address
 C. Unicast address
 D. Multicast address

18. Which of the following options acts as a translator between the OS and hardware devices (like printers, keyboards, graphics cards) and converts OS instructions into device-specific commands and vice versa?

- A. Input/Output Memory Access
- B. Device Driver
- C. Disk Drive
- D. Process Control Block

19. Match the following with respect to MS-PowerPoint 2016.

- | Column-I | Column-II |
|---|--|
| (a)  | (i) Create a beautiful presentation of your favourite photo album. |
| (b)  | (ii) Quickly add a snapshot of any window that is open on your desktop to your document. |
| (c)  | (iii) Find and insert pictures from a variety of online sources. |
| (d)  | (iv) Insert pictures from your computer or from other computers that you are connected to. |

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

20. Which of the following statements hold(s) true about the given icon of MS-Excel 2016?



Statement 1 : It refers to specific rows or columns that are repeated automatically on every printed page of a worksheet.

Statement 2 : This feature ensures that headings like column headers or row labels remain invisible on each page when printing large tables or reports.

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

21. Identify the icons and their functions marked as X and Y with respect to MS-PowerPoint 2016.



- A. X - Fit to Window is used to zoom your presentation so that the slide fills the window.
Y - Move Split is used to move the splitters which separate the different panes of the window.
- B. X - Cascade is used to see all open windows overlapped on the screen.
Y - Arrange All is used to stack your open windows so you can see them all at once.
- C. X - Arrange All is used to stack your open windows so you can see them all at once.
Y - Cascade is used to see all open windows overlapped on the screen.
- D. X - Move Split is used to move the splitters which separate the different panes of the window.
Y - Fit to Window is used to zoom your presentation so that the slide fills the window.

22. Select the incorrect match with respect to different tools of What-If Analysis in MS-Excel 2016.

- A. Scenario Manager - Creates different groups of values switches between them.
- B. Goal Seek - See the results of multiple inputs at the same time.
- C. Data Table - Find the right input for the value you want.
- D. Both B and C

23. Which of the following statements is correct about the given icon in MS-Access 2016?



- A. It views and runs the export operations you previously saved.
- B. It split a database into two files: one containing the tables and one containing the queries and forms.
- C. It moves your tables to a SharePoint list and creates links to those tables in your database.
- D. It shows objects in the database that use the selected object, such as queries that rely on specific tables or tables that rely on other tables.

24. Which of the following statements is correct about the given icon of the Control Panel in Windows 11?



- A. It is used to check network status, change network settings and set preferences for sharing files and printers.
- B. It is used to change user account settings and passwords for people who share a computer.

- C. It is used for troubleshooting and fixing common computer problems.
- D. It is used to set firewall security options to help protect your computer from hackers and malicious software.

25. Select the incorrect match with respect to Visual Basic.

- A. Round() - Rounds a number. Example: Round(3.567,2) → 3.57
- B. Int() - Return the decimal portion. Example: Int(4.8)→4
- C. Fix() - Truncates decimals without rounding. Example: Fix(-3.9)→ -3
- D. Abs() - Returns the absolute value. Example: Abs(-5)→ 5

26. What does the error #NAME? represent in MS-Excel 2016?

- A. When the formula doesn't recognise text in the cell, it is likely a typo or missing quotes.
- B. When the formula refers to an invalid cell reference or refers to a deleted cell.
- C. When a formula refers to an invalid numeric value in a formula.
- D. All of these

27. Identify the following.

- It allows Wi-Fi devices to connect to a wired LAN and acts as a bridge between Ethernet and wireless devices.
 - It is used to extend the Wi-Fi range in huge home, building or campus.
 - It is designed to handle multiple wireless users simultaneously.
 - It supports centralised management, user access control, load balancing and roaming.
- A. Router
 - B. Switch
 - C. WAP
 - D. Proxy server

28. What will happen after clicking on the hyperlink in the given HTML code?

```
<!DOCTYPE html>
<html>
<head>
<body>
<a href="https://example.com" target="_blank">Visit</a>
</body>
</head>
</html>
```

- A. Linked page will get open in a new tab.
- B. Linked page will get open in an existing tab.
- C. Linked page will get open in the new frame.
- D. Nothing will happen.

29. Which of the following statements hold(s) true about WiMAX?

Statement 1 : It can provide at-home or mobile internet access across whole cities or countries.

Statement 2 : It stands for WorldWide Internet for Multiple Applications.

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

30. What will be the output of the following Python code?

```
>>> str1 = "Hello"
>>> str2 = "World"
>>> result = str1 + " " + str2
>>> print(result)
```

- A. HelloWorld
- B. Hello World
- C. Hello++World
- D. "Hello""World"

31. Which of the following keyboard shortcuts is used to create a new virtual desktop in Windows 11?

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

32. Identify the following with respect to cyber ethics.

- The programmers who break into secure systems for malicious purpose.
 - They are more interested in gaining information about computer systems.
- A. Malware
 - B. Hackers
 - C. Spyware
 - D. Worms

33. Which of the following options will replace the question mark (?) in the given steps to assign names to cells or ranges of cells, making it easier to refer to them in formulas and enhance readability in MS-Excel 2016?

Formulas tab → Defined Names group → (?)

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

34. Select the incorrect match with respect to database management system.

- | | |
|----------------------|--|
| A. Data Definition | – Defining the database structure, including specifying data types, relationships between data elements and constraints. |
| B. Data Manipulation | – Inserting, updating, deleting and retrieving data from the database using queries and commands. |
| C. Data Abstraction | – Providing mechanisms for backing up data and recovering it in case of system failures or data corruption. |
| D. Data Integrity | – Maintaining the accuracy, consistency and reliability of the data through validation rules and constraints. |

35. Which of the following is the main function of the DMA (Direct Memory Access) controller ?

- A. It decreases the clock speed of the CPU.
- B. It handles I/O interrupts.
- C. It transfers data directly between the I/O device and memory without constant involvement of CPU.
- D. It manages memory segmentation.

36. Which of the following options is the octal equivalent of the decimal number 198.25?

- A. 306.2
- B. 306.4
- C. 307.1
- D. 316.5

37. What would be the output of the given Visual Basic code?

`Print(Mid("Computer Science",2,3))`

- A. Omp
- B. omp
- C. OMP
- D. OMp

38. Which of the following programming models used in Scratch?

- A. Object-oriented programming model
- B. Visual programming model
- C. Event-driven programming model
- D. Both B and C

39. Which of the following statements hold(s) true with respect to Scratch?

Statement 1:  represents workspace, where you can drag and drop blocks for representing different actions (like moving, turning, etc).

Statement 2:  is used to record, add and edit sounds for sprite.

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

40. Which of the following statements are correct about the Real-Time Operating System (RTOS)?

- (i) It only performs batch processing tasks.
- (ii) It processes data and respond within a guaranteed time frame.
- (iii) It is commonly used in embedded systems.
- (iv) It allows multitasking without time constraints.
- A. (i) and (iv) only
- B. (i) and (ii) only
- C. (ii) and (iii) only
- D. (i), (ii) and (iii) only

AI, ROBOTICS AND INFORMATION TECHNOLOGY

41. Which of the following is the third step in the project cycle of artificial intelligence?

- A. Data Acquisition

- B. Data Exploration
- C. Data Modelling
- D. Data Evaluation

42. A _____ is a computational model in artificial intelligence that is designed to simulate the way the human brain processes information. It consists of interconnected units called neurons, organised in layers, that work together to recognise patterns, make decisions, and learn from data.

- A. Computer vision
- B. Neural network
- C. Machine learning
- D. Rule based learning

43. Which of the following statements is/ are considered as feature(s) of the power bank?

- (i) It is a portable backup battery that can charge mobile or other devices without direct power supply.
 - (ii) The mAh rating (milliampere-hour) indicates the storage capacity of the power bank — higher values mean more charges.
 - (iii) It is also known as external battery packs or portable chargers.
- A. (i) only
 - B. (i) and (ii) only
 - C. (ii) and (iii) only
 - D. (i), (ii) and (iii)

44. Which of the following is/are correct example(s) of narrow AI?

- A. Self-driven vehicles.
- B. Voice interface-based assistants such as Alexa and Siri.
- C. A robot collecting empty food trays from the tables in a restaurant.
- D. All of these

45. Identify the following.

- It is a cloud storage and backup tool, that provides unlimited services for automatically backing up files and storing large amounts of data online (in the cloud).
- It is widely known for being affordable, secure and easy to use.

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

ACHIEVERS SECTION

46. Match the following with respect to MS-PowerPoint 2016.

Column-I	Column-II
(a) Print All Slides	(i) 
(b) Print Selection	(ii) 
(c) Print Current Slide	(iii) 
(d) Custom Range	(iv) 

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

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

```
<html>
<body>
<form>
<input type="radio" name="Apple" value="Fruit">
I am a fruit<br>
```

```
<input type="radio" name="Potato" value=
"Vegetable">I am a Vegetable<br>
</form>
</body>
</html>
```

- A. ☐ I am a fruit
☐ I am a Vegetable
- B. ☒ I am a fruit Apple
☐ I am a Vegetable Potato
- C. ☐ I am a fruit
☐ I am a Vegetable
- D. ☐ I am a fruit Apple
☐ I am a Vegetable Potato

48. What would be the output of the given code in Python?

```
>>>data=[1,2,3,4]
>>>result={x:x**2 for x in data if x%2==0}
>>>print(result)
```

- A. {2: 4, 4: 16}
- B. (2: 4, 4: 16)
- C. {4: 16, 2: 4}
- D. [4: 16, 2: 4]

49. Select the correct match with respect to MS-Word 2016.

- A.  – Let's you translate the document using an online service.
- B.  – Let's you translates the translation selected text into another language.
- C.  – It shows instant translation by selecting over the words or phrases.

- D.  – It gives you results from various online sources on selected text or images.

50. Identify the following.

- It acts as an intermediary between a user's device and the internet.
 - It helps to hide the user's IP address, enhancing privacy and anonymity online.
 - It is often used in corporate networks to monitor and control employee internet usage.
- A. Proxy server B. Web server
C. Database server D. Application server

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Head Office: Plot 99, Sector 44 Institutional area, Gurugram -122 003 (HR), India
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