



DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO

CLASS **10**
SET-B



**SOF INTERNATIONAL
COMPUTER SCIENCE OLYMPIAD
2024-25**

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. (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.

Name:.....

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



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LOGICAL REASONING

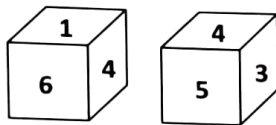
1. In a class, Ankit's rank is 17th from the top and Bhavika is 7 ranks behind Ankit. If Bhavika's rank is 13th from the bottom, then how many total students are there in the class?

A. 38
B. 37
C. 36
D. 35

2. How many such pairs of letters are there in the word **PROCESSOR** each of which has as many letters between them in the word as in the English alphabets?

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

3. Two different positions of a dice are shown here. Find the number on the face opposite to the face having number 3.



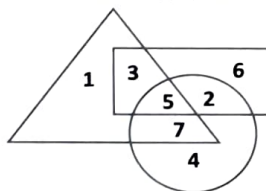
A. 2
B. 6
C. 5
D. 1

4. Select the correct water image of the given combination of numbers, letters and symbols.

12ey60@₹D

A. 12ey60@₹D
B. 12ey60@₹D
C. 12ey60@₹D
D. 12ey60@₹D

5. Study the given Venn diagram carefully and answer the following question.



△ → Teachers who teach Social Science
□ → Teachers who teach in English language only
○ → Teachers who use public transport

Which of the following number represents the teachers who teach Social Science but not in English language and use public transport?

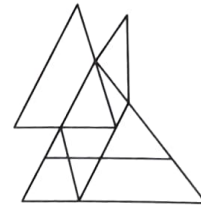
A. 3
B. 7

C. 5
D. 2

6. Find the wrong term in the given number series.
25, 28, 55, 71, 196, 232

A. 71
B. 196
C. 25
D. 232

7. Find the number of triangles formed in the given figure.



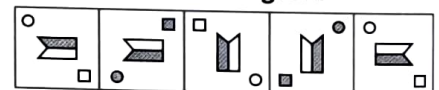
A. 10
B. 8
C. 9
D. More than 10

8. If '−' stands for '×', '×' stands for '÷', '÷' stands for '+' and '+' stands for '−', then the value of $12 \div 1651 \times 127 + 56$ is _____.

A. 56
B. -31
C. 60
D. 31

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

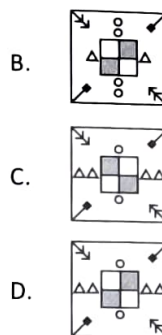
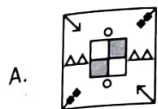
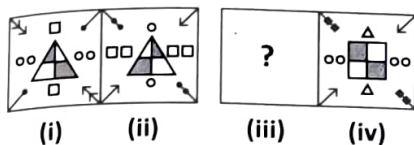
Problem Figures



A. [Figure]
B. [Figure]
C. [Figure]
D. [Figure]

10. There is a certain relationship between figures (i) and (ii). Establish a similar relationship between figures

(iii) and (iv) by selecting a suitable figure from the options that would replace the (?) in figure (iii).



COMPUTER SCIENCE

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



Statement 1 : It is a hyperlink where the label is generated that refers to important sections or objects, like a table, an image or a heading.

Statement 2 : It allows you to create multiple documents based on information contained in different files.

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

12. Using the given icon you can _____ in MS-Excel 2016.



- A. Insert online pictures
B. Insert picture from your computer or from other connected computer
C. Insert PivotChart
D. Create your own picture

13. Select the incorrect match with respect to chart types in MS-Excel 2016.

- A.  – It is used to show trends over time or categories.
B.  – It is used to show the relationship between sets of values.
C.  – It is used to compare parts to a whole, or when several columns of categories form a hierarchy.
D.  – It is used to show types of waterfall or stock charts.

14. Which of the following can be considered as the function(s) of an operating system?

- (i) Booting
(ii) Memory management
(iii) Process management
(iv) Virus management

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

15. Identify the following with respect to an operating system.

- It is a way by which user program requests for service from the kernel.
- It provides an interface to the services made available by an operating system.

- A. System call
B. Shell
C. Process
D. Both A and B

16. Select the incorrect match regarding HTML.

- A. `<!-- -->` : This tag is used to apply comments in an HTML document.
B. `<dl>` : This tag is used to define a description list.
C. `<em>` : This tag is used to emphasize the content applied within this element.
D. `<hr>` : This tag is used to define the header of a section or webpage.

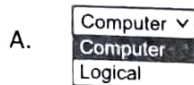
17. Which of the following statements is/are correct about firewall?

- (i) It is a network security device.
(ii) It can be a hardware or software based, and is an essential part of a network security strategy.
(iii) It is used to transfer files that make up pages on the world wide web.

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

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

```
<html>
<body>
<select>
<option value="Computer">Computer</option>
<option value="Logical">Logical</option>
</select>
</body>
</html>
```



- B. ☐ Computer
☐ Logical

- C. ☒ Computer
☐ Logical

- D. ☐ Computer
☐ Logical

19. What would be the result of the following lines of code when executed in interactive mode of Python?

```
> > > x=6
> > > x+3, x-3
```

- A. (9, -3)
B. (9, 3)
C. (3, -2)
D. (3, 2)

20. Select the incorrect match.

- A. 1 kilobyte = 2^{10} bytes = 1024 bytes
B. 1 Gigabyte = 2^{30} bytes = 1024 MB = 1024×1024 KB
C. 1 Megabyte = 2^{20} bytes = 1024 KB
D. 1 Terabyte = 2^{40} bytes = 1024 MB = $1024 \times 1024 \times 1024$ KB

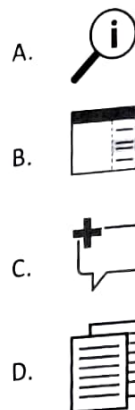
21. Which of the following is the long-term, non-volatile internal memory that retains data without the flow of electricity, which is an essential chip with permanent written data or programs?

- A. Read Only Memory
B. Random Access Memory
C. Static Random Access Memory
D. Dynamic Random Access Memory

22. Identify the following.

- It is a very high speed semiconductor memory which can speed up the CPU.
 - It acts as a buffer between the CPU and the main memory.
 - It is faster than main memory.
- A. SRAM
B. PROM
C. Cache memory
D. EEPROM

23. Which of the following options is used to show the comments by using Comments pane or Comments markup in MS-PowerPoint 2016?



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

Column-I	Column-II
(a)	(i) Used to insert a SmartArt graphic to visually communicate information.
(b)	(ii) Used to create a link in your document for quick access to webpages and files.
(c)	(iii) Used to create a beautiful presentation for your favourite photo album collection.
(d)	(iv) Used to give the selected object an action to carry out when you click it or mouse over it.
A. (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)	
B. (a) - (ii), (b) - (iv), (c) - (i), (d) - (iii)	
C. (a) - (iv), (b) - (ii), (c) - (i), (d) - (iii)	
D. (a) - (ii), (b) - (iv), (c) - (iii), (d) - (i)	

25. Identify the following marked as (X) and (Y) with respect to MS-Excel 2016.

(X) : Column is relative but row is absolute reference.

(Y) : Column is absolute but row is relative reference.

(X)	(Y)
A. = \$B2	= B\$2
B. = B\$2	= \$B2
C. = B2	= \$B2
D. = B\$2	= B2

26. CMOS stands for Complementary Metal Oxide Semiconductor. The CMOS technology is used to manufacture _____.

- A. Software
B. Vacuum tubes
C. Integrated circuits
D. Transistors

27. Which of the following statements hold(s) true regarding multiprocessing operating system?

Statement 1 : It is also known as parallel computing.

Statement 2 : It can process more than one task simultaneously.

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

28. Scratch is an event-driven programming language because _____.

- A. A scratch is a text-based programming
- B. Actions are triggered by specific events, like mouse clicks or keyboard inputs
- C. Scratch runs automatically without any user input
- D. Scratch is a platform independent programming language.

29. What is/are the advantage(s) of using antivirus software on your system?

- (i) It can detect, block and remove viruses, malware and ransomware.
 - (ii) It gives you warning about dangerous websites and links before you click.
 - (iii) It can prevent identity theft and block phishing and fraud.
- A. (i) only
 - B. (i) and (ii) only
 - C. (ii) and (iii) only
 - D. (i), (ii) and (iii)

30. What does SPOOLING stand for in an operating system?

- A. Simultaneous Peripheral Operation Online
- B. Simultaneous Peripheral Operates Online
- C. Simultaneously Processes Operations Online
- D. Simultaneous Process Operates online

31. Which of the following option is not a valid datatype in MS-Access 2016?

- A. Date/Time
- B. Hyperlink
- C. Images
- D. Number

32. Which of the following options is/are correct with respect to CSS?

- (i) Internal – CSS can be added by using a <style> element in the HTML <head> section.
- (ii) Inline – CSS can be added by using a style attribute of an HTML element.

- (iii) A CSS declaration always ends with a semicolon, and declaration blocks are surrounded by curly braces.

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

33. Which of the following is the correct decimal representation of given binary number?

$(101 \cdot 101)_2$

- A. 5.625
- B. 56.25
- C. 5.620
- D. 562.5

34. Using Selection Pane in MS-Word 2016, you can _____.

- A. Insert the line number
- B. Insert the header
- C. Insert the footer
- D. See a list of all inserted objects

35. Which of the following options under category view of Control Panel will allow you to add or remove printers and other hardware, change system sounds, play CDs automatically, update device drivers, etc. in Windows 10?

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

36. Identify the following.

- It is a type of connector commonly used for Ethernet networking.
- It has eight pins.
- It is a common data networking interface that is employed with twisted pair cables and an 8-pin modular jack.

- A. RJ45
- B. RJ11
- C. Cat6
- D. RJ10

37. Match the following and select the correct option with respect to MS-Access 2016.

Column-I	Column-II
(a) 	(i) Object Dependencies
(b) 	(ii) Relationships
(c) 	(iii) Table Design
(d) 	(iv) Rename/Delete

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

38. Identify the following networking terms referred as (X) and (Y), with the help of given information.

- (X) : It acts as an internet working device that is used to connect two or more LAN segments of the same type together.
 (Y) : It can strengthen a signal and retransmit it to its destination.

(X)	(Y)
A. Hub	Repeater
B. Modem	Bridge
C. Bridge	Repeater
D. Bridge	Modem

39. Which operations of Picture Tools Picture Format tab will change the Image-I into Image-II in MS-PowerPoint 2016?



Image-I



Image-II

- A. Picture Styles
 B. Crop to Shape
 C. Fit
 D. Picture Effects

40. What is the correct hexadecimal representation of the given binary number?

01111100

- A. 10C
 B. 7C
 C. A5
 D. F5

AI, ROBOTICS AND INFORMATION TECHNOLOGY

41. Identify the following.

- It is a cloud-based, cross platform, encrypted instant messaging service founded by Nikolai and Pavel Durov.
- It has social networking features, allowing users to post stories, create large public groups with upto 2,00,000 members.



42. Which of the following statements is/are correct about neural networks in AI?

- (i) These systems are modelled on the human brain and nervous system.
 (ii) It is useful when solving problems for which the data set is very large.
 (iii) These systems work on continuous data.
- A. (i) only
 B. (ii) only
 C. (i) and (iii) only
 D. (i), (ii) and (iii)

43. Identify the following.

- It is being used in industries such as medical science, bionics, scientific research, military, etc.
- It is an interdisciplinary branch of technology requiring applications of mechanical engineering, electronics, and computer science, among others.

- A. Robotics
 B. Applications
 C. Cloud computing
 D. None of these

44. Identify the following.

- It is a verification tool for authenticating users logging into an account, network or system.
 - It can be sent to a user by email, phone call, authenticated app, text message, or as a push notification.
 - It can only be used once and expire after a set amount of time.
- A. Login session
B. OTP

- C. Biometric
D. CAPTCHA

45. Which of the following engineering structure, controlling, intelligence (sense) disciplines deals with the movement, development, and observation of robots?

- A. Computer
B. Electrical
C. Mechanical
D. All of these

ACHIEVERS SECTION

46. Which of the following services offered by cloud is/ are correctly matched?

- (i) **Software-as-a Service (SaaS)** – It offers specific software in which the applications are hosted by a cloud service provider.
- (ii) **Platform as a Service (PaaS)** – It is a cloud computing model where a third-party provider delivers hardware and software tools to users over the internet.
- (iii) **Infrastructure as a service (IaaS)** – It provides platform for same cloud that can run on different operating systems.

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

47. Which of the following statements hold(s) true about network security protocols?

Statement 1 : SFTP (Secure File Transfer Protocol) helps securely transfer files across a network by using public-key encryption and authentication of the client and server.

Statement 2 : SSL (Secure Sockets Layer) helps secure internet connections and safeguard sensitive data using encryption.

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

48. What would be the output of the following HTML code?

```
<h3> Computer Code </h3>
<code>
a=3;<br>
b=2;<br>
c=a+b;
</code>
```

A. **Computer Code**

a=3;
b=2;
c=a+b;

B. **Computer Code**

a=3;
b=2;
c=a+b;

C. **Computer Code**

a=3;
b=2;
c=a+b;

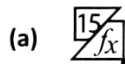
D. **Computer Code**

a=3;
b=2;
c=a+b;

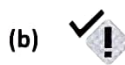
49. Match the MS-Excel 2016 icons given in Column-I with their suitable descriptions given in column-II.

Column-I

Column-II



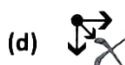
(i) Debug a complex formula, evaluating each part of the formula individually.



(ii) Remove the arrows drawn by Trace Precedents or Trace Dependents.



(iii) Display the formula in each cell instead of the resulting value.



(iv) Check for common errors that occur when using formulas.

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

50. Which of the following are major activities of an operating system with respect to memory management?

- (i) It is used to keep track of the status of memory locations, where it is free or allocated.
- (ii) It is classified into two main categories named as contiguous and non-contiguous memory management techniques.

(iii) It is used for creating and deleting both user and system processes.

(iv) It provides mechanisms for process communication.

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

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