Specification Grid
Subject: Computer Science
Grade 9

Full Marks: 50   **Time: 2 Hours**

S.N.	Area/Unit	Working Hour	Full marks	Knowledge			Understanding			Application			Higher Ability			Total marks		
				MCQ	S	L	MCQ	S	L	MCQ	S	L	MCQ	S	L	MCQ	S	L
1	Computer System	15	11	1		1		1		1	1		1			3	2	1
2	Number System	6	4					1			1						2	
3	Block Programming	6	5	1					1							1		1
4	Web Technology	10	8				1			1	1				1	2	1	1
5	Internet and Social Media	6	5	1				1						1		1	2	
6	Digital Citizenship and Cyber Security	6	5						1				1			1		1
7	Programming Concept (python)	15	12	1	1					1	1	1	1			2	3	1
	Total	64	50	4	1	1	1	3	2	3	4	1	2	2	1	10	10	**5**
	Percentage			20%			30%			30%			20%					

Types and number of questions, marks and time allocation

Types of question	Number of questions	Marks	Time allocation
Multiple Choice Question (MCQ)	10 x 1 =10	10	2 hours
Short Question (SQ)	10 x 2 =20	20	
Long Question (LQ)	5 x 4 =20	20	
Total	25	50	

- Item format in composite should be met as per the specification grid.
- Designated weightage of the units/content areas should be met.
- In case of SQ and LQ, ensure that 1 mark is assigned for each element expected as correct response.
- The distribution of cognitive domains of questions should approximately 20% knowledge/remembering, 30% understanding, 30% applying and 20% higher ability level. A variation of ±2 marks will be allowed in the designated percentage.

Optional II Computer Science Grade 9 Model Question

Attempt all the questions.

Time: 2 hours   Full Marks: 50

Group A

Choose the correct answer and write in your answer sheet.   (10x1=10)

1. Which of the following is the tangible part of a computer?

   a. Software   b. Freeware   c. Hardware   d. Firmware

2. How many Megabytes are there in 1 Gigabyte?

   a. 1024 Megabyte   b. 1042 Megabyte   c. 2000 Megabyte   d. 2048 Mega byte

3. Which of the following devices would you use to transfer file from one computer to another?
   a. Hard disk   b. Mouse   c. Pen drive   d. RAM

4. Which is the character that performs an action on the stage of the Scratch window?

   a. Sprite   b. Stage   c. Backdrop   d. Block

5. Which of the following is an empty tag?

   a.   b.<title>   c. <sup>   d.

6. Which of the following is correct syntax for inserting external CSS?

   a. < link real="stylesheet" type="text/CSS" href="file.css">
   b. <link reel="stylesheet" type="css/text" href="file.css">
   c. <link rel="stylesheet" type="text/css" href="css.file">
   d. <link rel="stylesheet" type="text/css" href="file.css">

7. What does URL stand for?

   a. Unique Resource Location   b. Uniform Resource Locator
   c. Universal Reference Link   d. Unified Retrieval Link

8. What advice would you give to a friend who wants to start a blog but doesn't have any ideas?

   a. Stop thinking about blog.
   b. Copy content from similar blog.

c. Write only about your locality.

d. Choose topic and write in own language.

9. Which of the following is an arithmetic operator?

    a. $>$ b. $**$ c. $<$ d. \

10. Why is 3Number an invalid identifier?

   a. It has capital N.

   b. It starts with number.

   C. It is a keyword.

   d. It has only 7 characters.

Group B

Write short answer to the following questions. (10x2=20)

11. What are the types of computers based on working principles?

12. Write any two differences between impact and non-impact printers.

13. Convert $(10011)_2$ into a decimal number system and $(105)_{10}$ into an octal number system.

14. Perform $(1011) - (101)_2$ and $(1101)_2 + (1100)_2$ binary operations.

15. Create a table having two rows and two columns using HTML tags.

16. Define social media. List any two examples of social media platforms.

17. What are two major benefits of using blog in education?

18. Study the following Python code and answer the questions below:

```
a=2
for k in range(1,8):
        print(a)
        a//=10
```

Questions

   a. How many times does the loop execute?

   b. List the integer type of variables.

19. Write the output of the given program and show them in dry run table.

```
Import math
n = 13
d = 0
p = 0
while n != 0:
    c = n % 2
    d = d + c * pow(10, p)
    p += 1
    n //= 2
print(f"The final output is {d}")
```

20. Write a Python program to enter any three numbers and display their average.
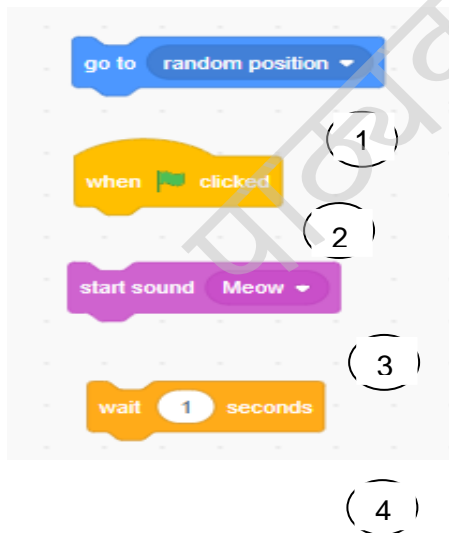
Group C

Write long answer to the following questions.   **5 x 4=20**

21. What is a memory unit? Write any three differences between primary and secondary memories.   [1+3]

22.Arrange the blocks so that sprite moves to a random position, waits 1 second and then plays a sound.

Scratch Blocks:

23. Write the HTML code to create the given form.

Username: [ ]

Password: [ ]

[Login] [Cancle]

24. Define cybercrime. Explain any three safe browsing techniques.   [1+3]

25. Write a Python program that takes the monthly unit consumption as input and calculates the total bill based on the given criteria.

Monthly electricity consumption	Charge
0-20 units	Rs 30 (Minimum charge)
21 - 45 units	Rs 5 / unit
Above 45 units	Rs 7 / unit

All the best !

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Marking Scheme

<table>
<tr><td colspan="3" align="center">Group A</td></tr>
<tr><td>Q.No.</td><td align="center">Correct answer</td><td>Marks [10x1=10]</td></tr>
<tr><td>1.</td><td>c. Hardware</td><td>1</td></tr>
<tr><td>2.</td><td>a. 1024 Megabyte</td><td>1</td></tr>
<tr><td>3.</td><td>c. Pen drive</td><td>1</td></tr>
<tr><td>4.</td><td>a. Sprite</td><td>1</td></tr>
<tr><td>5.</td><td>d.
</td><td>1</td></tr>
<tr><td>6.</td><td>c. <link rel="sytlesheet" type="text/css" href="file.css"></td><td>1</td></tr>
<tr><td>7.</td><td>b. Uniform Resource Locator</td><td>1</td></tr>
<tr><td>8.</td><td>d. Choose topic and write in own language.</td><td>1</td></tr>
<tr><td>9.</td><td>b. **</td><td>1</td></tr>
<tr><td>10.</td><td>b. It starts with number.</td><td>1</td></tr>
<tr><td colspan="3" align="center">Group B</td></tr>
<tr><td>Q.No.</td><td align="center">Answer</td><td align="center">Marks [10x2 = 20]</td></tr>
<tr><td>11</td><td>Correct identification of all three types:
  a. Analog Computer
  b. Digital Computer
  c. Hybrid Computer</td><td align="center">1</td></tr>
<tr><td></td><td>At least two types correctly explained in one line each</td><td align="center">1</td></tr>
<tr><td>12</td><td>Impact Printer

Uses mechanical impact to print

Noisy while printing

Slower in speed

Or any other satisfactory answers

Example: Dot matrix printer or other related examples

Non-Impact Printer

Does not use mechanical impact to print

Quieter while printing

Faster in speed</td><td>Correct complete difference – 1+1 mark

Incomplete or vague differences – 0.5 to 1 mark

Only names /examples without explanation – 0.5mark each</td></tr>
</table>

	Or (any other satisfactory answers any two) Example: Inkjet or Laser printer or other related examples	
13	Correct conversion of $(10011)_2$ to decimal with steps $(19)_{10}$ Correct conversion of $(105)_{10}$ to octal with steps $(151)_8$	Correct conversion 1+1 mark Correct steps shown but minor calculation error - 0.5 mark each
14	Correct binary subtraction $(1011 – 101 = 110)$ Correct binary addition $(1101 + 1100 = 11001)$	Correct operation (addition or subtraction) [1+1 mark] Minor mistake in carry/borrow but correct approach [0.5 mark (each)]
15	Correct use of basic table structure tag (<table>, <tr>, <td>) [1 mark] Two rows and two columns implemented correctly [1 mark]	Only one row or one column created [0.5 to 1 mark] Missing table tag or wrong nesting of tags [0.5 marks]
16	Social media is an online community where people can create, share *and* interact with content and communicate in real time. *Or (any other satisfactory answer.)* [1 mark] Examples: Facebook, Instagram or any other related examples. [1 mark]	Only definition correct, no valid examples [1 mark] Only two correct examples, no definition [1 mark] One correct example + vague/incomplete definition [0.5 to 1 mark]
17	a. Blog enhances the academic writing skill and communication skills. b. Blog promotes the collaborative learning. *Or (any other satisfactory answers*.) (Total 2 marks)	One correct benefit clearly written [1 mark] Two vague or unclear benefits [0.5 to 1 mark] One benefit + one irrelevant point [0.5 to 1 mark]

18	Correct answer for (a): 7 times [1 mark] Correct list for (b): a, k (both are integers) [1 mark]	Only part (a) correct [1 mark] Only part (b) correct [1 mark] One part partially correct (e.g., missing one variable) [0.5 mark]
19	Correct dry run steps or logic (stepwise or table) [1 mark] | N	Condition	c=n%2	d=d+c*10^p	p=p+1
---	---	---	---	---
13	True	1	1	1
6	True	0	1	2
3	True	1	101	3
1	True	1	1101	4
0	False	-	-	- | Output: **The final output is 1101.** [1 Mark]	Only dry run/steps with no output [1 mark] Only final output correct (1101), no dry run [1 mark] Partial dry run and/or minor mistake in final output [0.5 – 1 mark]

20	#program to find average of 3 numbers
	num1=float(input("Enter first number"))
	num2=float(input("Enter second number"))
	num3=float(input("Enter third number"))
	average=(num1+num2+num3)/3
	print(f"The average of {num1}, {num2} and {num3} is {average}")
	(or any other correct coding)
	
	Correct input statements for three numbers [1 mark]
	
	Correct calculation and display of average [1 mark]
		Inputs taken correctly but average calculation wrong [0.5 to 1 mark]
		
		Average calculation correct but inputs missing or incorrect [0.5 to 1 mark]
		
		Correct logic but syntax errors (minor) [1 to 2 marks] (depending on attempt)

Group C

Q.No.	Answer	Marks [5 x 4=20]
21.	Memory unit is the part of the computer system which is used to store data and instructions either temporarily or permanently. *Or any other correct answer.* [1] 3 marks for any three correct differences:	Clear definition of memory unit [1]. Vague definition of memory unit. [0.5] 3 clear differences [3 marks]
22	2- When Green Flag clicked (Event block) 1- Go to random position (Motion block) 4- Wait 1 seconds (Control block) 3- Start sound Meow (Sound block)	1 mark for arranging each block in correct order.
23	1 Mark for proper use of <form> tag 1 Mark for crating 2 textboxes 0.5 each 2 marks for creating two buttons. (1 Marks each)	Proper opening and closing of <form> and other tags. 1 Correct opening but not closing [0.5]
24	The illegal activities conducted using computers, internet or other digital devices is known as cybercrime.*(Or other related correct answers)* .[1 mark] Three marks for three safe browsing techniques such as: i. Avoid suspicious links and websites ii. Using strong password iii. Keep software and security tools updated (*or any other correct answer*)	Vague definition of cybercrime [0.5] Vague, unclear browsing techniques [1 mark].

25.	*# Input: monthly unit consumption*
	units = int(input("Enter the monthly unit consumption: "))
	# Calculate total bill based on the given conditions
	if units <= 20:
	   bill = 30 *# Minimum charge*
	elif units <= 45:
	   bill = units * 5
	else:
	   bill = units * 7
	
	# Output: total bill
		[0.5 mark] Incorrect input such as no type conversion.
		[0.5 mark] incomplete if elif condition
		[0.5 mark] for incomplete or improper display

	print("Total Electricity Bill = Rs", bill) *(or other correct code.)* 1 mark for correct input of unit 1 mark for correct calculation based on charges 1mark conditional statement (if elif) 1 mark for proper display of result	

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