Grade 9 Computer, Explained

Final Exam Model Paper 2

ANSWER KEY

Full marks 50 · 2 hours

Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

A practice paper by Science Playground, made to CDC's Specification Grid, Computer Science, Grade 9 (2082); not an official CDC or exam board paper.

Group A

10 × 1 = 10

1. **(iii)** dot-matrix printer
2. **(i)** 4
3. **(ii)** LibreOffice, which is open source: anyone may use, copy and share it free.
4. **(ii)** Events
5. **(ii)** `<br>` and `<img>`
6. **(iii)** `p { color: blue; }`
7. **(iii)** Bing
8. **(iv)** `mango ladder river kettle`
9. **(iii)** `while`
10. **(ii)** 78

Group B

10 × 2 = 20

11. **[2]**

System software	Application software
Runs and manages the computer itself: its memory, devices, files and processes.	Made for the user's own tasks: writing, editing photos, billing.
Can run on its own; doesn't need application software.	Can't run without system software.
Runs from when the computer is switched on until it is switched off.	Runs when the user starts it, and stops when the user closes it.
Essential: the computer can't work without it.	Not essential to the computer itself.
Examples: Windows, Linux, device drivers.	Examples: Word, a web browser, Zoom.

(Any two.)

Marking scheme

- One correct difference with both sides (e.g. manages the computer / does the user's tasks).
- A second correct difference (e.g. runs on its own / needs system software).

12. **[2]**

a. A bigger unit into a smaller one: multiply by 1024. 3 GB = 3 × 1024 MB = **3,072 MB**.

b. A smaller unit into a bigger one: divide by 1024. 5,120 KB = 5,120 ÷ 1024 MB = **5 MB**.

Marking scheme

- a. 3 × 1024 = 3,072 MB.
- b. 5,120 ÷ 1024 = 5 MB.

13. **[2]**

a. Multiply each digit by its place value (powers of 8) and add:
$2 \times 8^2 + 4 \times 8^1 + 7 \times 8^0 = 128 + 32 + 7 = 167$
So $(247)_8$ = **$(167)_{10}$**.

b. Make groups of 3 bits from the right, and write each group as one octal digit:

101	101	110
5	5	6

So $(101101110)_2$ = **$(556)_8$**. Check: both are 366 in decimal.

Science Playground, Katunje, Bhaktapur
Book a class visit: https://science-playground.com/booking

Marking scheme

- a. Place values of 8 shown and $(167)_{10}$.
- b. Groups of three bits shown and $(556)_8$.

14. a. Multiply by each digit of 101 and add the rows, shifting each row one place left: **[2]**

```
       1 1 0 1
     ×   1 0 1
     ---------
       1 1 0 1      (1101 × 1)
     0 0 0 0 ×      (1101 × 0, shifted)
   1 1 0 1 × ×      (1101 × 1, shifted twice)
  -------------
  1 0 0 0 0 0 1
```

So the product is **$(1000001)_2$**. Check: 13 × 5 = 65.

b. Long division, each step 1 or 0:

```
           1 0 1
         -------
  1 1 0 ) 1 1 1 1 0
        - 1 1 0
          -----
              1 1 0
          -   1 1 0
              -----
                  0
```

- 110 goes into 111 once: write **1**; 111 − 110 = 1.
- Bring down 1: 11. 110 doesn't go: write **0**.
- Bring down 0: 110. It goes once: write **1**; 110 − 110 = **0**, the remainder.

So the quotient is **$(101)_2$**, remainder 0. Check: 30 ÷ 6 = 5.

Marking scheme

- a. $(1000001)_2$, with the rows shown.
- b. Quotient $(101)_2$ (remainder 0), with the division steps shown.

15. **[2]**

```
<a href="https://www.welcomenepal.com" target="_blank">Visit Nepal Tourism Board</a>
<img src="rara.jpg" alt="Rara Lake">
```

`href` gives the address the link opens and `target="_blank"` opens it in a new tab. `src` names the picture's file and `alt` gives the text shown, or read aloud, when the picture can't be seen.

Marking scheme

- a. `<a href="https://www.welcomenepal.com" target="_blank">` … `</a>` with the link's words.
- b. `<img src="rara.jpg" alt="Rara Lake">`.

16. **Remote login** is logging in to a computer somewhere else (the remote computer) over a network, and using it from your own computer (the local computer): your keys and clicks go to the remote computer, and a picture of its screen comes back to you. **[2]**
One more use (any one): working from home on an office computer and its files; looking after servers in a data center; a teacher showing a student how to do something on the student's own computer.

Marking scheme

- Remote login: using a computer somewhere else over a network, from your own computer.
- One more correct use (e.g. working from home on an office computer).

17. a. **Bcc** (blind carbon copy). Bcc recipients are hidden from everyone else, so no parent sees the other parents' email addresses, which keeps them private. (In To or Cc every parent would see all 30 addresses.) **[2]**

b. A clear subject such as **"Class 9 picnic this Saturday: notice for parents"**. Parents see the subject first in their inbox, so it tells them what the email is about before they open it, and it isn't mistaken for spam.

Marking scheme

- a. Bcc, because it hides the addresses from the other parents (keeps them private).
- b. A clear subject naming the picnic, with the reason (tells the reader what the email is about).

18. [2]

Compiler	Interpreter
Translates the whole program at once, before it runs.	Translates and runs the program line by line.
Shows the errors it finds together after reading the whole program; nothing runs until they are fixed.	Stops at the first error it meets; the lines before it have already run.
The compiled program runs faster.	The program runs slower.
Makes a separate machine-code file (such as an .exe).	Makes no separate file.
Example: GCC for C and C++.	Example: the Python interpreter.

(Any two.)

Marking scheme

- One correct difference with both sides (e.g. whole program at once / line by line).
- A second correct difference (e.g. errors together / stops at the first error; a machine-code file / none).

19. [2]

a. **4 times**: once for each item of the list.

b. Only prices above 80 are added: 120 + 85 + 150 = 355 (60 is left out).

```
prices = [120, 85, 60, 150]
total = 0
for p in prices:
    if p > 80:
        total = total + p
print("Total:", total)
```

OUTPUT

```
Total: 355
```

Marking scheme

- a. 4 times.
- b. `Total: 355`.

20. [2]

```
1  saving = 50
2  total = 0
3  for day in range(1, 11):
4      print(f"Day {day}: Rs {saving}")
5      total = total + saving
6      saving = saving + 10
7  print(f"Total saved: Rs {total}")
```

OUTPUT

Science Playground, Katunje, Bhaktapur
Book a class visit: https://science-playground.com/booking

```
Day 1: Rs 50
Day 2: Rs 60
Day 3: Rs 70
Day 4: Rs 80
Day 5: Rs 90
Day 6: Rs 100
Day 7: Rs 110
Day 8: Rs 120
Day 9: Rs 130
Day 10: Rs 140
Total saved: Rs 950
```

(Any correct program.)

Marking scheme

- A loop that runs 10 times, displaying each day's saving, going up by 10.
- The savings added up and the total (Rs 950) displayed.

Group C — 5 × 4 = 20

21. An **input device** is a device used to enter raw data and instructions into a computer. It turns a key press, a movement, a sound or a picture into signals the computer works with. **[4]**

Any three:

- **Keyboard:** to type text, numbers and commands.
- **Mouse:** a pointing device to point, click, select, drag and scroll.
- **Scanner:** to turn a paper document or photo into a digital picture.
- **Microphone:** to record sound, make voice and video calls and give spoken commands.
- **Webcam:** to capture live video for video meetings and online classes.
- **Joystick:** to play games and steer machines such as cranes and drones.
- **Touchscreen** or **touchpad:** to select, scroll and move the pointer with a finger.

Marking scheme

- Input device: a device that enters data and instructions into the computer.
- The first input device with its use (e.g. a keyboard to type text and numbers).
- The second (e.g. a scanner to turn a printed photo into a digital picture).
- The third (e.g. a microphone to record sound).

22. **[4]**

a. **when green flag clicked** (an Events block) starts it; the script runs when the green flag is clicked.

b. It shows the question "What is 7 × 8?" and **waits** for the user to type a reply; the reply is kept in the Sensing block **answer**.

c. 54 is not equal to 56, so the condition is false and the **else** part runs: the sprite says **"Try again!"** for 2 seconds.

d. **if … then … else** is a **Control** block; **=** is an **Operators** block.

Marking scheme

- a. when green flag clicked; it runs when the green flag is clicked.
- b. It shows the question and waits for a reply, which is kept in answer.
- c. "Try again!" (for 2 seconds), because 54 is not 56.
- d. if … then … else: Control; =: Operators.

Science Playground, Katunje, Bhaktapur
Book a class visit: https://science-playground.com/booking



23. **[4]**

```
<table border="1">
  <tr>
    <th rowspan="2">Route</th>
    <th colspan="2">Departure</th>
  </tr>
  <tr>
    <th>Morning</th>
    <th>Evening</th>
  </tr>
  <tr>
    <td>Kathmandu–Pokhara</td>
    <td>7:00 AM</td>
    <td>2:00 PM</td>
  </tr>
  <tr>
    <td>Kathmandu–Chitwan</td>
    <td>6:30 AM</td>
    <td>1:00 PM</td>
  </tr>
</table>
```

Route is one cell two rows tall (`rowspan="2"`), so the second row has only two cells, Morning and Evening; Departure is one cell two columns wide (`colspan="2"`). (`<td>` in place of `<th>` for the headings is also accepted.)

Marking scheme

- `<table border="1">` with each row in `<tr>` … `</tr>`, tags closed in order.
- `rowspan="2"` on the Route cell.
- `colspan="2"` on the Departure cell.
- The Morning and Evening row and the two rows of times, each cell in `<td>` (or `<th>`).

24. A **digital footprint** is the record of information created by a person's activities online: searches, posts, messages, purchases and places visited. It is also called a digital shadow. **[4]**

- **Active digital footprint:** information a user leaves **knowingly**, by choosing to share it. Examples: a social media post or comment, an email sent, a form filled in.
- **Passive digital footprint:** information collected **without the user knowing** or choosing to share it. Examples: the searches a search engine keeps, a phone's location history, what you looked at while shopping online.

One way to protect yourself (any one): think before posting, since a post can stay forever; keep accounts private and share personal details only when needed; check the privacy settings and the apps' permissions (location, contacts); clear the browsing history and cookies, or use incognito mode on a shared computer, and log out.

Marking scheme

- Digital footprint: the record (trail) of a person's activities online.
- Active footprint, left knowingly, with an example (e.g. a post).
- Passive footprint, collected without knowing, with an example (e.g. location history, searches kept).
- One sensible way to protect yourself (e.g. think before posting; privacy settings).

Science Playground, Katunje, Bhaktapur
Book a class visit: https://science-playground.com/booking



25. [4]

```python
# Input: the visitor's age in whole years
age = int(input("Enter the visitor's age: "))
# Find the ticket price from the table
if age < 3:
    price = 0
elif age <= 12:
    price = 50
elif age <= 59:
    price = 100
else:
    price = 50
# Output: the price
print("Ticket price = Rs", price)
```

OUTPUT

```
Enter the visitor's age: 14
Ticket price = Rs 100
```

The conditions are checked in order, so `age <= 12` is reached only when the age is 3 or more. Test each band: 2 gives Rs 0, 9 Rs 50, 14 Rs 100, 65 Rs 50. (Any correct program.)

Marking scheme

- The age read with `int(input())`.
- The conditions with `if`, `elif` and `else` in the right order.
- The right price in each branch (0, 50, 100, 50).
- The price displayed.

Science Playground, Katunje, Bhaktapur
Book a class visit: https://science-playground.com/booking

