Grade 8 Computing

Unit 10 · Generative AI

ANSWER KEY · FOR TEACHERS

Full marks 31

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

1 Key words

1. generative AI
2. prompt
3. large language model
4. tokens
5. hallucination
6. diffusion model
7. deepfake
8. back-translation

Each carries 0.5 mark. **K · 4**

2 Multiple choice

i. **b.** what you type to tell a generative AI what you want **K · 1**

The prompt is your request; the answer is the AI's output. The text it learned from is its training data.

ii. **b.** Each pair of words was in its text, and it looks only at the last word, so it can't tell the sentence went wrong. **U · 1**

"Rara is", "is the", "the birthplace", "birthplace of", "of the", "the Buddha": every pair was in its true sentences. Joined together, they make a false one. A model that predicts words builds sentences that sound right; whether they are true is a different question, which nothing in it asks.

iii. **c.** Search for the book yourself, and use it only if you find it and it really says what you need. **A · 1**

Chatbots can make up books that sound real. Asking the chatbot doesn't help: it may say yes either way. Only finding the book yourself shows that it exists and says what you need.

iv. **b.** working out a student's grade from a mark, by the school's grading rules **U · 1**

Grade boundaries are decided by people and must be applied exactly, the same for everyone. The others have no rules anyone could write down.

v. **c.** Hang up, and call her son, or his friends or employer, on numbers she already has. **A · 1**

A cloned voice can say anything, including his name. Hurry and secrecy are the signs of a scam. Calling back on a known number takes a minute and finds out the truth.

3 A next-word model in Python

MARKING SCHEME **A · 3**

- ✓ `After is: 3`: "is" is at positions 2, 6 and 10.
- ✓ `full came 2 times`: `words[i + 1]` is "full" after the second and third "is".
- ✓ 2 in 3.

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4 Write a program

ANSWER A · 3

```
temps = [-3, -7, -2, -5, -9, -4, -6]
highest = temps[0]
lowest = temps[0]
for t in temps:
    if t > highest:
        highest = t
    if t < lowest:
        lowest = t
print("Highest:", highest)
print("Lowest:", lowest)
```

It prints `Highest: -2` and `Lowest: -9`. Starting from 0 was the AI's bug: every temperature is below 0, so none was ever higher, and 0 is not in the list. Starting from the first value works for any list. (`max(temps)` and `min(temps)` also give the marks.)

MARKING SCHEME

- ✓ `highest` and `lowest` start from the first value, `temps[0]` (not 0).
- ✓ A loop over the list, with `if t > highest:` and `if t < lowest:` keeping the best so far.
- ✓ Prints Highest: -2 and Lowest: -9.

5 Check the AI's program

a. **MARKING SCHEME** A · 3

- ✓ i. 45 × 3 − 10 = Rs 125.
- ✓ ii. It prints `Total: 105`: `- 10 * count` takes Rs 10 off each notebook.
- ✓ iii. `total = price * count - 10`.

b. **ANSWER** A · 4

Mark	Should print	The program prints
95	A+	A+
90	A+	**A**
85	A	A
80	A	**below A**
79	below A	below A

The fix: >= in place of > on lines 2 and 4 (`if mark >= 90:` and `elif mark >= 80:`). The marks at the boundaries, 90 and 80, are the ones that show the bug.

MARKING SCHEME

- ✓ 95, 85 and 79: right in both columns.
- ✓ 90: should be A+, the program prints A (`90 > 90` is `False`).
- ✓ 80: should be A, the program prints below A.
- ✓ The fix: >= in place of > on lines 2 and 4.

6 Short answers

a. **MARKING SCHEME** A · 3

- ✓ A clear task, such as "Explain why Nepal has many earthquakes".
- ✓ Context: who it is for and what they know ("for a Grade 8 student in Nepal, who knows the crust is made of plates").
- ✓ A format and a limit, such as "in 5 short sentences, with one example" and "tell me which facts to check in my textbook".

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b. ANSWER U · 4

i. **Fixed steps:** go through the list and keep the lowest price so far (Unit 2's "highest so far", turned round). Exact, quick, no learning needed.

ii. **Rules people write:** the rules are published and must be applied exactly and the same for everyone, and anyone must be able to see why a student was or wasn't chosen.

iii. **Learning from data:** nobody can write rules for every disease's look in every light; a model trained on photos named by experts can suggest one, to be checked by an agriculture technician.

iv. **A mix:** AI to understand the customer's question, and an ordinary program to look up the exact balance from the company's records.

MARKING SCHEME

✓ i. Fixed steps: go through the list keeping the lowest price so far; exact and quick.

✓ ii. Rules people write: the published rules must be applied exactly and the same for everyone, and people must see why.

✓ iii. Learning from data: nobody can write rules for every disease's look; a model trained on experts' photos, checked by a technician.

✓ iv. A mix: AI to understand the question, and an ordinary program to look up the exact balance.

7 Think

ANSWER HA · 2

Any two of: **exact every time:** an ordinary program always gives the right total, while a model predicting likely words can get arithmetic wrong, and a wrong bill is a real loss; **it can be checked:** anyone can read the program's steps and see why the total is what it is, but nobody can read a model's billions of numbers; **cost:** an ordinary program uses a tiny amount of electricity on the shop's own computer, with no internet, while a chatbot sends every bill to a data center and stops when the internet does.

MARKING SCHEME

✓ A first reason, such as: always exact, while a model can get sums wrong.

✓ A second reason, such as: its steps can be read and checked; or it costs far less and works without the internet.

8 Activity: There and back again

(not marked)

WHAT STUDENTS SHOULD FIND

Often the back-translation is close, but the politeness changes (तपाईं becomes तिमी), the saying becomes a strange word-by-word sentence, or the sister turns into a boy on the way back (गई becomes गयो). Back-translation shows some mistakes, though not all: a person who knows both languages well is the real check.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	5	6	18	2	**31**

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