Unit 15 · Geology

WORKSHEET

Full marks 46

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 46

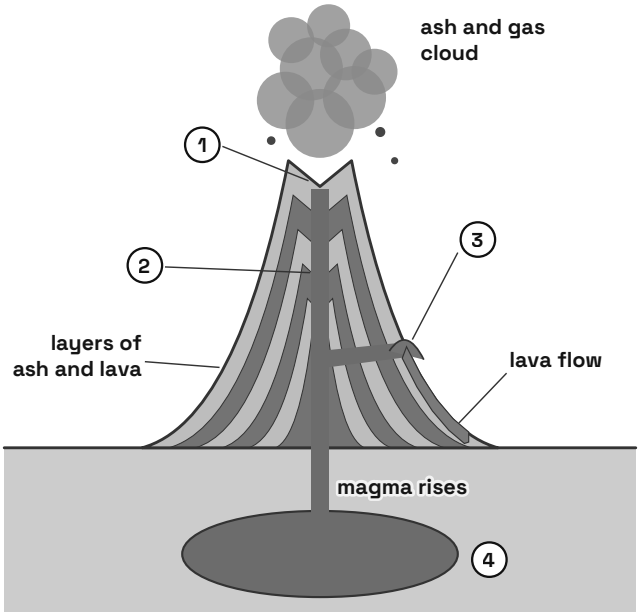
1 Key words [3]

Match each word in Column A with its description in Column B. Write the letter in the box. One description in Column B is not needed. Each match carries 0.5 mark.

Column A		Column B
1. lithosphere	☐	**a.** the point inside the Earth where the rock first slips
2. asthenosphere	☐	**b.** a mudflow of volcanic ash and water
3. subduction	☐	**c.** a low-angle fault along which a sheet of rock is pushed over the rock in front
4. thrust	☐	**d.** the sinking of an oceanic plate under another plate
5. lahar	☐	**e.** the point on the surface directly above the focus
6. epicenter	☐	**f.** the stiff crust and topmost mantle, broken into plates
		g. the soft, slowly creeping layer the plates ride on

2 Label the diagram [2]

The diagram shows a composite volcano cut in half. Name the numbered parts. Each carries 0.5 mark.



1. _____ **2.** _____

3. _____ **4.** _____

3 Multiple choice [4]

Choose the correct option for each of the following questions.

i. The tectonic plates are pieces of the: [1]

a. core
b. asthenosphere
c. lithosphere
d. outer core and mantle

ii. A fold lying almost flat on its side is: [1]

a. symmetrical
b. asymmetrical
c. overturned
d. recumbent

iii. Mount Fuji, which last erupted in 1707, is an example of: [1]

a. an active volcano
b. a dormant volcano
c. an extinct volcano
d. a shield volcano

iv. The point on the Earth's surface directly above the focus of an earthquake is the: [1]

a. hypocenter
b. epicenter
c. fault
d. crater

4 Very short answers [4]

Write very short answers to the following questions.

a. At which kind of plate boundary do the plates slide past each other? [1]

b. Name the sea on whose floor the rocks of the Tethys Himalaya were laid down. [1]

c. Which seismic waves can pass only through solids? [1]

d. On which scale is the intensity of an earthquake measured? [1]

5 Short answers [8]

Write short answers to the following questions.

a. Fossils of sea animals are found high in the Himalaya. [2]

b. There are no volcanoes in Nepal, though there are many earthquakes. **[2]**

c. Building houses according to the building code reduces the loss of life in earthquakes. **[2]**

d. Magma and lava **[2]**

6 Long answers **[12]**

Write long answers to the following questions.

a. Describe the three kinds of plate boundary, with an example of each. **[4]**

b. What is an earthquake? Explain how an earthquake occurs, using the elastic rebound theory. **[4]**

c. Suggest any five measures to reduce the impacts of earthquakes in Nepal. **[4]**

7 Numerical problems **[10]**

Solve the following problems. Show your working.

a. A plate has moved 1,800 km in 40 million years. Find its average speed in cm per year. **[2]**

Answer: _____

b. A layer of rock, 50 km long, is squeezed and folded until its ends are 35 km apart. (a) Find the shortening in km and as a percentage. (b) If the squeezing happened at 1.5 cm a year, how long did it take? **[3]**

Answer: _____

c. Earthquake A has a magnitude of 7.0 and earthquake B of 5.0. How many times (a) higher are A's waves on a seismograph, and (b) more energy does A release? **[2]**

Answer: _____

d. At a seismograph station, the S waves of an earthquake arrive 20 seconds after the P waves. Taking the speed of P waves as 6 km/s and of S waves as 3.5 km/s, find the distance of the earthquake's focus from the station. **[3]**

Answer: _____

8 Think [3]

Your friend says, "The Himalaya are so high that they must be very old mountains, older than the Aravalli hills of India." Do you agree? Use what you know about how mountains rise and wear down.

9 Activity: Rocks and minerals of the Himalayan region (Practical 28) (not marked)

Fill in the chart for the belts of Nepal from south to north, using the unit, your Grade 7 and Grade 8 books, and any rock samples you have.

Belt	Main rocks	Some minerals and where
Terai		
Chure (Siwalik)		
Lesser Himalaya		
Higher Himalaya		
Tethys Himalaya		

Why do the rocks change from south to north?