Shaping of the Earth's Surface

Standard difficulty · 20 questions · 40 marks · Time: 37 minutes

Name: _____ Date: _____ Score: ____ / 40

Write full answers in Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. The three main layers of the Earth are the crust, the mantle and the:

(a) troposphere **(b)** lithosphere only
(c) ozone **(d)** core

2. Which describes the lithosphere?

(a) the rigid crust and upper mantle, broken into plates
(b) the solid, densest centre
(c) a fluid layer of iron and nickel
(d) the thick, mostly solid hot layer

3. Which agent forms a delta?

(a) waves **(b)** groundwater **(c)** glacier **(d)** running water

4. What is meant by "GLOF"?

(a) a sudden flood from a glacial lake **(b)** breaking rocks in place
(c) a rock shaped by wind-blown sand **(d)** a pillar rising from a cave floor

5. Which is an example of a continent–continent convergent boundary?

(a) the Deccan Plateau **(b)** the Himalaya
(c) the Ganga delta **(d)** the San Andreas Fault

6. Suppose a plate moves 7 cm a year. How many metres would it move in 6,000 years? (100 cm = 1 m)

(a) 420 m **(b)** 520 m **(c)** 42,000 m **(d)** 4,200 m

7. In the book's figure, the asthenosphere is about 200 km thick and the mantle about 2,900 km. About how much thicker is the thicker one?

(a) 3,700 km **(b)** 3,100 km **(c)** 2,800 km **(d)** 2,700 km

8. Which of these is formed by deposition rather than erosion?

(a) a stalagmite **(b)** a yardang
(c) a waterfall **(d)** a V-shaped valley

Section B — Short answer — 8 × 2 = 16 marks

9. What causes tectonic plates to move?

10. Which agent forms each? (a) a meander (b) a moraine

11. Describe each layer: (a) the outer core (b) the inner core

12. Explain each term: (a) GLOF (b) ventifact

13. The crust is about 38 km thick under a continent and 6 km under an ocean. How much thicker is it under the continent, and about how many times as thick (to one decimal place)?

14. The Gujarat earthquake was in 2001 and the Chamoli flood in 2021. How many years apart were they, and how many years before 2048 was the Chamoli flood?

15. The book's figure shows the inner core about 1,250 km thick and the outer core about 2,200 km. Which is thicker, and by about how much?

16. A hillside is cut into 20 terraces, each 3 m higher than the one below. How high does the slope rise, and why does terracing help farmers?

Section C — Longer answers — 4 × 4 = 16 marks

17. Describe the three kinds of plate boundaries with an example of each.

18. Match each with its agent: (a) a sinkhole (b) a V-shaped valley (c) a sea arch. Choose from: running water; waves; groundwater.

19. Suppose two plates move apart at 8 cm a year. (a) How many km apart would they move in 8,000,000 years? (100,000 cm = 1 km) (b) What kind of boundary is this? (c) Name a landform formed at such a boundary.

20. Explain how a sea stack and a barchan dune are formed.

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Answer key

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Q	Answer	Working
1	**(d) core**	—
2	**(a) the rigid crust and upper mantle, broken into plates**	—
3	**(d) running water**	—
4	**(a) a sudden flood from a glacial lake**	—
5	**(b) the Himalaya**	—
6	**(a) 420 m**	7 × 6,000 = 42,000 cm
7	**(d) 2,700 km**	2,900 − 200
8	**(a) a stalagmite**	—
9	**Convection currents in the mantle, as hot material rises and cool material sinks.**	—
10	**(a) running water (b) glacier**	—
11	**(a) a fluid layer of iron and nickel (b) the solid, densest centre**	—
12	**(a) a sudden flood from a glacial lake (b) a rock shaped by wind-blown sand**	—
13	**32 km thicker; about 6.3 times**	38 − 6; 38 ÷ 6
14	**20 years; 27 years**	2021 − 2001; 2048 − 2021
15	**the outer core, by about 950 km**	—
16	**60 m; it slows water, stops soil being washed away and makes flat land to farm.**	20 × 3
17	**Convergent: plates meet, forming the Himalaya; divergent: plates move apart, forming the Mid-Atlantic Ridge; transform: plates slide past, as at the San Andreas Fault.**	—
18	**(a) groundwater (b) running water (c) waves**	—
19	**(a) 640 km (b) a divergent boundary (c) a mid-ocean ridge, like the Mid-Atlantic Ridge**	8 × 8,000,000 ÷ 100,000
20	**A sea stack: formed by waves; a barchan dune: formed by wind. Descriptions from the chapter.**	—