Landforms and their Evolution

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. A low plain left after long stream erosion, with resistant remnants called monadnocks, is a:

(a) floodplain **(b)** delta plain **(c)** pediplain **(d)** peneplain

2. Which agent forms a stalactite?

(a) wind **(b)** waves **(c)** groundwater **(d)** glaciers

3. What is a wave-cut platform?

(a) a remnant of a mountain left in a desert
(b) a surface marking an old valley floor level
(c) deposits on the convex side of a meander
(d) a gently sloping rock floor at the foot of a sea cliff

4. Which of these is a depositional landform?

(a) barchan **(b)** lapies **(c)** sinkhole **(d)** sea stack

5. How are seifs formed?

(a) crescents with wings downwind, under a steady moderate wind
(b) long low ridges where sand is poor and wind steady
(c) barchans with only one wing, when the wind shifts
(d) reversed barchans on partly vegetated sand

6. Where does a medial moraine lie?

(a) as an irregular sheet of till on the valley floor
(b) a sinuous ridge from a stream under the ice
(c) in the centre, between lateral moraines
(d) along the sides of the glacial valley

7. Suppose a glacier moves 20 cm a day. How many metres does it move in 300 days?

(a) 600 m **(b)** 6,000 m **(c)** 60 m **(d)** 70 m

8. A river falls 2,862 m over 159 km. What is its average gradient in metres per km?

(a) 20 m per km **(b)** 180 m per km **(c)** 18 m per km **(d)** 159 m per km

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

9. Distinguish between a gorge and a canyon.

10. Name the agent that forms each: (a) spit (b) seif

11. What is each? (a) hanging valley (b) stalagmite

12. How does each kind of dune form: (a) transverse dunes (b) seifs

13. Where does each lie? (a) ground moraine (b) medial moraine

14. Suppose a sea cliff retreats 25 cm a year. How many metres will it retreat in 340 years, and what may be left standing offshore?

15. Is each landform erosional or depositional? (a) horn (b) alluvial fan

16. River A falls 520 m over 13 km; river B falls 64 m over 8 km. Find each gradient in m per km. Which is more likely to be in its youthful stage?

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

17. Describe the stages of youth, maturity and old age in a river landscape.

18. Match each with its description: (a) inselberg (b) esker (c) point bar. Choose from: a remnant of a mountain left in a desert; a sinuous ridge left by a stream under the ice; deposits on the convex side of a meander.

19. Suppose a valley glacier moves 50 cm a day. (a) How many metres does it move in 260 days? (b) How many cm in a week? (c) Name two depositional landforms the glacier leaves when it melts.

20. A river falls 1,254 m over 22 km in its upper course and 762 m over 254 km in its lower course. (a) Find each gradient in m per km. (b) Which stage does each part suggest? (c) Name two landforms of each part.

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Answer key

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Q	Answer	Working
1	(d) peneplain	—
2	(c) groundwater	—
3	(d) a gently sloping rock floor at the foot of a sea cliff	—
4	(a) barchan	—
5	(c) barchans with only one wing, when the wind shifts	—
6	(c) in the centre, between lateral moraines	—
7	(c) 60 m	20 × 300 ÷ 100
8	(c) 18 m per km	2,862 ÷ 159
9	A gorge is deep with near-vertical sides, equally wide at top and bottom; a canyon has step-like sides and is wider at the top.	—
10	(a) waves (b) wind	—
11	(a) a side valley high above a main glacial valley (b) a deposit rising from a cave floor	—
12	(a) ridges at right angles to the wind (b) barchans with only one wing, when the wind shifts	—
13	(a) as an irregular sheet of till on the valley floor (b) in the centre, between lateral moraines	—
14	85 m; sea stacks	25 × 340 ÷ 100
15	(a) erosional (b) depositional	—
16	A 40, B 8 m per km; river A, being steeper	520 ÷ 13; 64 ÷ 8
17	Youth: few streams, shallow V-valleys, waterfalls; maturity: many streams, deep V-valleys, wider floodplains, sharp divides; old age: free meanders, levees, ox-bow lakes and land near sea level.	—
18	(a) a remnant of a mountain left in a desert (b) a sinuous ridge left by a	—

Q	Answer	Working
	stream under the ice (c) deposits on the convex side of a meander	
19	**(a) 130 m (b) 350 cm (c) moraines and eskers (also drumlins and outwash plains)**	50 × 260 ÷ 100; 50 × 7
20	**(a) upper 57, lower 3 m per km (b) upper: youth; lower: old age (c) upper: gorges, waterfalls, potholes; lower: meanders, ox-bow lakes, natural levees, floodplains**	1,254 ÷ 22; 762 ÷ 254