S5 Geography Practice Paper: Population Structure and Transition, River Landforms and Flood Management, Coastal Landforms and Sea-Level Rise, Urban Land Use and Urban Problems, Industrial Location and Manufacturing Shift, Agricultural Systems and the Energy Mix (100 marks)

Level: S5 | Subject: Geography | 75 minutes | 100 marks | 24 questions | question paper

Part A: Population Structure and Transition (17 marks)

Each question carries 4-5 marks; show the formula and units, then state the result in one sentence.

#	Question	Marks
1	District A has an area of 78 km2 and a population of 486,000. Calculate its population density in persons per km2 (1 d.p.).	4
2	In the same year there were 5,832 births and 3,402 deaths with a mid-year population of 486,000. Calculate the rate of natural increase (per 1,000, 1 d.p.) and identify the stage of demographic transition.	4
3	Age structure: 68,040 aged 0-14, 330,480 aged 15-64 and 87,480 aged 65 or above. Calculate the young dependency ratio, the old dependency ratio and the total dependency ratio (1 d.p. each).	5
4	Using the data above, identify the shape of the population pyramid and state two corresponding socio-economic characteristics.	4

Part B: River Landforms and Flood Management (17 marks)

Show units in all calculations; explanations must give causal links, not a list of features.

#	Question	Marks
5	A catchment covers 620 km2 with annual rainfall of 2,400 mm and a runoff coefficient of 0.45. Calculate the annual runoff volume in m3 (3 significant figures).	4
6	180 mm of rain falls in 24 hours over the same catchment. Calculate the mean discharge for that day in m3/s (whole number) and explain why the actual peak discharge is higher than the mean.	5
7	The designed channel capacity is 600 m3/s with a return period of 50 years. Find the probability that this discharge occurs at least once in 50 years (%, 1 d.p.).	4
8	Compare the mean discharge with the channel capacity, identify the flood risk, and suggest two flood-management measures with one limitation each.	4

Part C: Coastal Landforms and Sea-Level Rise (16 marks)

Each question carries 4 marks; support every judgement with the data given.

#	Question	Marks
9	Longshore drift moves 45,000 m3 of sediment per year. After a sea wall is built the downdrift beach loses the same volume each year and currently holds 135,000 m3. How many years until the beach disappears?	4

10	Sea level rises by 4.2 mm per year. How much will it rise in total after 30 years, in cm?	4
11	The coast retreats at 1.8 m per year and a building stands 45 m from the shoreline. After how many years will the sea reach the building? Give one factor that makes this estimate too low.	4
12	Option 1: build a 1.2 km sea wall at $38,000 per metre. Option 2: beach nourishment of 45,000 m3 at $180 per m3. Calculate both costs and give one advantage of each.	4

Part D: Urban Land Use and Urban Problems (17 marks)

Give answers to 1 d.p.; evaluation questions need an explicit conclusion.

#	Question	Marks
13	A city has 610,000 people in a built-up area of 50 km2, of which 42% is residential. Calculate the overall population density and the residential density (persons per km2, 1 d.p.).	5
14	Land use shares: residential 42%, commercial 9%, industrial 6%, roads 18%, open space 8%, others 17%. Verify that the total is 100% and identify the use most likely to occupy the city centre, with a reason.	4
15	Commuters travel 12.4 km each way on average and work 240 days a year. Calculate the total distance each commuter travels per year in km.	4
16	Open space covers 4.0 km2 of the 50 km2 built-up area for 610,000 people, against a standard of 2 m2 per person. Calculate the share of open space and the actual open space per person, then judge whether the standard is met.	4

Part E: Industrial Location and Manufacturing Shift (16 marks)

Keep all costs and profits for the same period (per month); comparison questions need a clear verdict.

#	Question	Marks
17	A factory of 1,800 m2 rents at $28 per m2 per month and employs 120 workers at $16,500 per month. Calculate the monthly rent and total wage bill.	4
18	Monthly revenue is $6,200,000 and materials plus transport cost $3,600,000, on top of the rent and wages above. Calculate the monthly profit and the profit margin (%, 1 d.p.).	5
19	The firm considers relocating: wages fall 35% but materials and transport rise 18% (rent unchanged). Calculate the new monthly total cost and judge whether relocation is worthwhile.	4
20	Fixed costs are $1,200,000 per month, the unit price is $240 and unit variable cost is $165. Calculate the break-even output in units.	3

Part F: Agricultural Systems and the Energy Mix (17 marks)

Give units with every calculated answer; justify every suggestion.

#	Question	Marks
21	A farm has 320 hectares of farmland and produces 1,920 tonnes of rice a year. Calculate the yield in tonnes per hectare.	4
22	Local food output is 15,600 tonnes against total demand of 104,000 tonnes. Calculate the food self-sufficiency rate (%).	4
23	Energy mix: coal 38%, natural gas 26%, nuclear 15%, renewables 21%, with total generation of 42,000 GWh. Verify the percentages and calculate renewable generation in GWh.	5

24	Annual generation emits 26.4 Mt of CO2 for 42,000 GWh. Calculate the carbon intensity in g CO2/kWh and suggest two ways to cut emissions.	4

TutorZone - original practice paper. Time allowed: 75 minutes. Total: 100 marks.