1.1 Data, algorithms and digital power

Name: _____ Class: _____ Date: _____ **Total: 30 marks**

KEY WORDS concepts • data

Data, algorithms and digital power

Objective

Supported preparation: Read a digital case through the concept lenses; Focus inquiry with the concept-content-context-example formula. This is original rehearsal, not completion of the assessed task.

1 Key knowledge and worked examples

> **Inquiry toolkit.** Seven concepts as lenses: change, expression, identity, power, space, systems, values and ethics (a concept is a question asked of a case). Data (3.1): raw capture, not information; ask collection, processing, storage; datasets have makers. Algorithms (3.2): assumptions in, decisions out; bias through. Seven contexts (cultural, economic, environmental, health, human knowledge, political, social). Focus formula: concept x content x context x real-world example. Worked: the school attendance app.

2 Practice

2.1 Name the seven course concepts. [7]

2.2 What is the difference between data and information, with one example? [2]

2.3 What three questions discipline the content area of data? [3]

2.4 What two things must be asked of an algorithm? [2]

2.5 Name any five of the seven contexts. [5]

3 Exam-style questions

3.1 *(Concept style.)* The attendance app flags rural students as late because one bell time serves all bus routes. Read the case through TWO named concepts. [4]

3.2 *(Data style.)* A dataset of school arrivals is called neutral evidence. Evaluate the claim with the toolkit. [4]

3.3 *(Focus style.)* Focus an inquiry on the attendance app with the full formula, and name the failure mode your focus avoids. [3]

Solutions

2.1 Change (1); expression (1); identity (1); power (1); space (1); systems (1); values and ethics (1).

2.2 Data is raw capture; information is data made meaningful (1); example: timestamps are data, a pattern of lateness is information (1).

2.3 How it is collected (what the sensor sees and misses) (1); how it is processed (cleaned, matched, modelled) (1); how it is stored (who holds it, how long) (1).

2.4 What the instructions assume (1); what decisions flow out (1).

2.5 Any five of: cultural, economic, environmental, health, human knowledge, political, social (5).

3.1 Values and ethics: one bell time for all routes treats unequal journeys equally, so the rule mislabels rural students (2); power: the power to define lateness moves from teachers to the rule's authors, and the flag decides without appeal (2). (Any two well-evidenced concepts accepted.)

3.2 The dataset is not neutral: collection sees only arrival time, not the journey's cause (2); processing embeds the one-bell assumption, so the label is made, not found (1); a dataset with makers and assumptions is an artefact, not a window, so the claim fails (1).

3.3 Any complete focus, such as: power (concept) x algorithms (content) x social and economic (contexts) x the attendance app (example) (2); avoids the concept-only essay (or case-only story or context dump) (1).

Local review guidance: (R1) 3.1 argues the concept, not the outrage; 3.2 uses collection and processing; 3.3 completes the formula. Authored guidance.