NID B.DES · DAT PRELIMS · SAMPLE TEST PAPER 2024

Answer Key & Model Solutions

23 questions · 100 marks · Objective (Q1–Q19) + Studio / descriptive (Q20–Q23)

Please note: NID does not publish an official answer key for the DAT Prelims. The objective answers below are solved and reasoned by Creative Edge subject experts. Answers marked † rely on the printed figure in the question paper (spatial / visual items) — do a final visual check against your copy. Studio questions (Q20–Q23) are open-ended: we give the model approach and the marking focus rather than one 'correct' answer.

1 · Objective answers at a glance

Quick-check grid for Q1–Q19. († = confirm against the figure.)

Q1	Q2	Q3	Q4	Q5	Q6
B†	C	B	A	C	D
Q7	**Q8**	**Q9**	**Q10**	**Q11**	**Q12**
B	A†	A†	B	A	C
Q13	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**
B	B†	A†	B	C	B
Q19					
B					

2 · Detailed solutions (Q1–Q19)

Q	AREA	ANS	WHY
Q1	Design judgment — functional clock	B†	The most functional clock is the one whose hour and minute hands are clearly distinguishable and sit at an unambiguous, easy-to-read angle. Confirm against the printed faces.
Q2	Natural science — insects	C	A dragonfly has two pairs of wings — **4** in total.

Q	AREA	ANS	WHY
Q3	Materials & environment	**B**	Neither glass nor plastic breaks down naturally, so **glass and plastic are not biodegradable**.
Q4	General knowledge — terms	**A**	**Demography** is the statistical study of **human populations** — their size, structure, distribution and change.
Q5	Nature observation	**C**	Night-blooming flowers are usually **white / pale** — colour is useless in the dark, so they reflect moonlight and draw insects by scent.
Q6	Ecology — food chain	**D**	A food chain is driven by **predator–prey** interactions as energy passes up the chain.
Q7	Human biology — the eye	**B**	The **pupil** is the opening that widens or narrows to control how much light enters the eye.
Q8	Spatial reasoning — same plane	**A**†	The two pencils lying fully flat on the floor share one plane; the rest rest on top at an angle. Confirm which two touch the ground along their length.
Q9	Abstract reasoning — sequence	**A**†	Track the rotating shaded triangle and the moving dots around the hexagon to the next step. Figure-dependent — confirm against the printed sequence.
Q10	Astronomy	**B**	The **Sun and Alpha Centauri are both stars** — same nature. The Moon is a satellite, Earth a planet and Halley's a comet.
Q11	Colour theory — relationships	**A**	'Yellow-Green / Yellow / Yellow-Orange' is tertiary / primary / tertiary — a primary flanked by its two neighbouring tertiaries. **Red-Orange / Red / Magenta** is the same pattern around Red.
Q12	Map sense — directions	**C**	Ahmedabad lies almost due **west** of Bhopal (nearly the same latitude, further west), so the travel direction is westward.
Q13	Spatial — buildable or not	**B**	Fig. 2 is a visually **impossible structure** — its joints can't exist in real 3-D space, so the logs cannot be assembled into it. The answer is **No**.
Q14	Visual equation — count	**B**†	Read the shapes as counts and solve for the missing multiplier. The rendered figure is ambiguous (5- vs 6-point star); our best reading is 2 — confirm the intended logic.
Q15	Abstract reasoning — matrix	**A**†	Apply the row-and-column transformation rule of the 3×3 grid to the missing cell. Figure-dependent — confirm the derived symbol against the printed matrix.

Q	AREA	ANS	WHY
Q16	Science — pressure & altitude	B	Correct statements: **2 (boiling depends on pressure)** and **3 (oxygen is low at high altitude)**. Boiling point does change with altitude and the air-fuel mix must be re-tuned, so 1 and 4 are false.
Q17	Civics — rights & duties	C	Rights and duties are **interrelated** — every right carries corresponding responsibilities and obligations.
Q18	Social concepts	B	**Homogeneity** = similarity of characteristics within a group; **diversity** = variation in those characteristics.
Q19	Culture — crafts & states	B	Correct pairing: Papier Mache–Jammu & Kashmir, Madhubani–Bihar, Bidri work–Karnataka, Dokra–Chhattisgarh — option (B).

3 · Studio & descriptive questions — model approach

These carry the bulk of the marks. There is no single key; examiners score ideation, observation, communication and craft.

Q20 Visualisation — unfolding a cut pattern

15 marks

Draw the sheet from Fig. 1 **unfolded** after the cuts — fold lines as dotted lines, cut-outs shaded.

MODEL APPROACH

- Each cut mirrors across every fold line, so unfolding repeats the cut symmetrically on both sides of each fold.
- Work outward fold by fold; the number of fold lines sets how many times the cut-out repeats.
- Mark every fold line dotted and shade the removed (cut-out) areas.

What examiners look for: Marks for correct mirror-symmetry logic, the right number and position of repeated cut-outs, clean dotted fold lines and accurate shading.

Q21 Product design — carrying 20 L of water in the mountains

20 marks

Analyse the potable-water problem in hilly regions and design a product to carry **20 litres** effectively (21A illustration 12, 21B how it's carried 8).

MODEL APPROACH

- Analyse context: steep terrain, long distances, ~20 kg load, contamination risk, often carried by women and children.
- Give clear functional features — a stable wide base or rolling drum, ergonomic straps/harness, a sealed lid for hygiene, sturdy handles, lightweight durable material (e.g. HDPE).
- 21B: show a realistic carrying method — back-harness, head-load with support, or rolled along the ground — with the body drawn in proportion.

What examiners look for: Rewards real context analysis, labelled functional features and materials, human-factors / ergonomics, and a believable, well-drawn carrying method.

Q22 Process thinking — three key activities

5 × 4 = 20 marks

For each pair, sketch or diagram the **three crucial activities** that turn the original into the final thing.

MODEL APPROACH

- Potato → Chips: wash & peel → slice thin → fry & season.
- Bees → Candle: bees build beeswax comb → collect & melt / purify the wax → mould it around a wick.
- Mango / fruit → Pickle: cut & salt → add spices & oil → sun-dry / ferment & jar.
- Seashells / beads → Jewellery: clean & drill → string / arrange → finish into a piece.

What examiners look for: Each pair scores on three correct, logically-ordered steps shown clearly as a labelled diagram or sketch (5 marks × 4 pairs).

Q23 Observation & empathy — a space in the house

20 marks

Recall a home space used by an **elderly person** or a **child**; draw it in the given orientation (23A 10), detail one object + its function (23B 5), then suggest + redraw an improvement (23C 5).

MODEL APPROACH

- 23A: pick a real space (kitchen corner, bathroom, study nook) and draw it respecting the marked TOP / BOTTOM orientation, with relevant objects.
- 23B: choose one object (grab-bar, low stool, child's chair) and show its key function for that specific user.
- 23C: propose one meaningful functional improvement and redraw the improved version.

What examiners look for: Marks for a realistic, well-observed space in correct orientation, an object whose function is tied to the user, and a thoughtful, clearly-drawn improvement.

4 · Marks distribution

Section	Questions	Marks
Objective — 1 mark	Q1–Q13	13
Objective — 2 marks	Q14–Q19	12
Visualisation — paper unfold	Q20	15
Product design	Q21 (A+B)	20
Process thinking	Q22	20
Observation & empathy	Q23 (A+B+C)	20
Total	**23 questions**	**100**