

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Examination, 2025
SUBJECT NAME DESIGN THINKING AND INNOVATION (Q.P. CODE 109)

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its’ leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in News Paper/Website etc may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark(✓) wherever answer is correct. For wrong answer CROSS ‘X” be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.

9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____(example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past:-</p> <ul style="list-style-type: none"> • Leaving answer or part thereof unassessed in an answer book. • Giving more marks for an answer than assigned to it. • Wrong totaling of marks awarded on an answer. • Wrong transfer of marks from the inside pages of the answer book to the title page. • Wrong question wise totaling on the title page. • Wrong totaling of marks of the two columns on the title page. • Wrong grand total. • Marks in words and figures not tallying/not same. • Wrong transfer of marks from the answer book to online award list. • Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) • Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any un assessed portion, non-carrying over of marks to the title page, or totaling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the “Guidelines for spot Evaluation” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

MARKING SCHEME

DESIGN THINKING AND INNOVATION

SECTION A

(Objective Type Questions)

- | | | | |
|----|-------|--|---|
| 1. | (i) | (C) Physical Barrier (NCERT, Unit-1, Pg. No. 21) | 1 |
| | (ii) | (B) Control Key (NCERT, Unit-3, Pg. No. 66) | 1 |
| | (iii) | (A) Measurable (NCERT, Unit-2, Pg. No. 55) | 1 |
| | (iv) | (B) Life below water (NCERT, Unit-5, Pg. No. 112) | 1 |
| | (v) | (D) A strength in recognizing weakness and taking action. (NCERT, Unit-2, Pg. No. 51) | 1 |
| | (vi) | (B) Dividing income (NCERT, Unit-4, Pg. No. 93) | 1 |
| 2. | (i) | (B) A stop-motion technique using live actors as frame by frame subjects. Facilitators handbook. (Ch. 5, Pg. 49-50) | 1 |
| | (ii) | (C) Animatics as Prototype (Facilitators Handbook, Ch. 7, Pg. 68) | 1 |
| | (iii) | (A) The evolution of technology in the household. (Facilitators Handbook, Ch-1, Pg. 13) | 1 |
| | (iv) | (A) Protagonist (Facilitators Handbook, Ch-2, Pg. 23-25) | 1 |
| | (v) | (D) Creative doodling can enhance memory retention and improve focus during learning activities. (Facilitators Handbook, Ch-3, Pg. 32) | 1 |
| | (vi) | (B) Install energy-efficient appliances and reduce water consumption. (Facilitators Handbook, Ch-6, Pg. 61) | 1 |
| 3. | (i) | (B) Integrating features from different product categories to address diverse needs. (Facilitators Handbook, Ch-6, Pg. 57) | 1 |
| | (ii) | (C) The products' longevity and improvement with age. (Facilitators Handbook, Ch-3, Pg. 33) | 1 |
| | (iii) | (C) Overloading slides with excessive text (Facilitators Handbook, Ch-1, Pg. 14) | 1 |

- (iv) (A) The fox contrasts with the grapes to highlight his inability to reach them, showing how people rationalize their failure. (Facilitators Handbook, Ch-2, Pg. 24-25) 1
- (v) (C) Stop motion (Facilitators Handbook, Ch-5, Pg. 49-50) 1
- (vi) (D) Prototyping (Facilitators Handbook, Ch-7, Pg. 66) 1
- 4. (i) (C) Cultivation of cereals and spice cultivation in the south. (Facilitators Handbook, Ch-6, Pg. 56-57) 1
- (ii) (C) Spontaneous cognitive creativity (Facilitators Handbook, Ch-3, Pg. 30) 1
- (iii) (B) She might be accused of plagiarism and lose credibility (Facilitators Handbook, Ch-1, Pg. 11) 1
- (iv) (B) Both Assertion and reason are true, but reason is not the correct explanation of Assertion. (Facilitators Handbook, Ch-2, Pg. 20) 1
- (v) (B) Drawing characters from personal observation, like people at a bus stop or street market. (Facilitators Handbook, Ch-5, Pg. 51) 1
- (vi) (D) Adding complex visual effects (Facilitators Handbook, Ch-7, Pg. 68) 1
- 5. (i) (A) Animating a bouncing ball (Facilitators Handbook, Ch-5, Pg. 48) 1
- (ii) (D) Make adjustments to the cardboard pieces, including fitting them together better and adding colour and sketches for details (Facilitators Handbook, Ch-7, Pg. 68-69) 1
- (iii) (C) By redesigning packaging to be easily reusable for other purposes. (Facilitators Handbook, Ch-6, Pg. 60) 1
- (iv) (A) Using leaves as bookmarks or coasters. (Facilitators Handbook, Ch-2, Pg. 32) 1
- (v) (B) Crisis, climax and conclusion (Facilitators Handbook, Ch-2, Pg. 23) 1
- (vi) (D) Use hand gestures to emphasize important aspects of the issue (Facilitators Handbook, Ch-1, Pg. 13-14) 1
- 6. The pollution of rivers and ponds due to the dumping of garbage is expected to lead to a scarcity of clean water for drinking and cleaning purposes in the future. (NCERT, Ch-5, Pg. 105) 2

7. This example challenges the misconception by showing that a business can succeed by enhancing an existing idea. By introducing wellness programs, the gym attracts a broader audience looking for a comprehensive approach to fitness, rather than just offering standard workout facilities. (NCERT, Ch-4, Pg. 95) 2
8. Spam refers to unsolicited and often irrelevant messages sent over the internet, typically to a large number of users, for the purposes of advertising, phishing or spreading malware. It is considered a problem because it clutters inboxes, consumes bandwidth, and can pose security risks. (NCERT, Ch-3, Pg. 77) 2
9.
 - Avoid delay or postponing any planned activity
 - Organize your room and school desk
 - Develop a 'NO DISTURBANCE ZONE' where you can sit and complete important tasks
 - Use waiting time productively
 - Prepare a 'To-do' List
 - Prioritise
 - Replace useless activities with productive activities(NCERT, Ch-2, Pg. 60) 2
10. A good feedback is one that is : 2
Specific
Timely
Polite
Offering Continuing Support (NCERT, Ch-1, Pg. 18)
11. This study helps in identifying the resources consumed, potential waste generated, and the overall environmental impact, allowing for an assessment of whether the breakfast process is sustainable or if there are areas for improvement. (Facilitators Handbook, Ch-6, Pg. 56) 2
12. Criss-crossing lines and shapes tend to evoke feelings of chaos and disorder, while horizontal lines and flat shapes create a sense of calmness and stability, reflecting the task's emphasis on how different design elements can influence emotional responses. (Facilitators Handbook, Pg. 34, Ch-3) 2

13. Steps include identifying by public transportation options, collecting data on usage and efficiency, interviewing commuters and officials, analyzing strengths and weaknesses, and writing a report with suggestions for improvement. (Facilitators Handbook, Pg. 10-12, Ch-1) 2
14. The learner can ensure an enjoyable storytelling process by fully immersing themselves in the story, using creative and expressive methods to convey emotions, and encouraging interaction or participation from the audience to make the experience fun and engaging for everyone involved. (Facilitators Handbook, Pg. 26, Ch-2) 2
15. Adding voiceover, music, and sound effects improves animatics by enhancing emotional engagement and clarifying narrative elements. For example, a voiceover can provide character dialogue or narration, music can set the mood or tone of a scene, and sound effects can simulate actions or environment (eq : footsteps or background noise), making the animatics more immersive and providing a clearer sense of the film's atmosphere. (Facilitators Handbook, Pg. 68, Ch-7) 2
16. Drawing a character in multiple poses and expressions is important to demonstrate the character's behavior, versatility, and emotional range, helping to bring them to life and make them relatable to the audience. (Facilitators Handbook, Pg. 51, Ch-5) 2
17. The chronological narrative structure tells a story in the order of events as they occur, creating a straight forward and linear progression from beginning to end. This structure allows readers to follow the story easily and understand the sequence of events. An example is "The tortoise and the Hare" where events unfold in a clear ordered fashion, highlighting the moral of the story through a linear plot.
In contract, the fractured narrative structure presents the story out of chronological order, often jumping between different time periods or perspectives. This approach can create a sense of mystery, build suspense, or highlight thematic connections between disparate elements. An example is "Alice in wonderland", where the story shifts abruptly between fantastical episodes, creating a non-linear experience that mirrors the whimsical and unpredictable nature of Alice's adventures. (Facilitators Handbook, Pg. 24-25, Ch-2) 4
18. Visual design principles, like the use of grids and minimal fonts and color, play a vital role in creating a coherent and visually appealing presentation. Grids help in organizing content consistently across slides, making it easier for the audience to follow along and understand the information. Using a limited number of fonts and color avoids confusion

and creates a harmonious design that enhances readability. By adhering to these principles, the presentation becomes more structured and professional, which in turn improves audience engagement and comprehension, as the content is presented in a clear and visually organized manner. (Facilitators Handbook, Pg. 14-15, Ch-1)

4

19. Eco-concrete is made from recycled materials such as glass and industrial by-products, which reduce the need for virgin raw materials and lower environmental impact compared to traditional concrete.

Traditional concrete production is associated with high carbon emissions due to cement manufacturing, which contributes to greenhouse gas emissions. Eco-concrete reduces these emissions by incorporating recycled components and often uses less energy during production.

The motivation for developing eco-concrete includes reducing construction waste, conserving natural resources, and lowering the carbon footprint of the construction industry. This product addresses sustainability issues such as resource depletion, waste management, and pollution. (Facilitators Handbook, Pg. 60, Ch-6)

4

20. To redesign a vendor cart, the first step is to thoroughly analyze the existing cart. This involves studying its functions, such as how it holds and displays items, its portability, and its overall construction.

Key factors to consider include the cart's mobility, ease of use, and the ability to withstand various weather conditions. To extend the carts' usefulness, one might focus on improving storage capacity, ease of setup and takedown, and features that enhance customer interaction. For instance, a redesign could incorporate collapsible shelves to increase storage space while maintaining portability. Additionally, integrating wheels with a locking mechanism could make the cart easier to maneuver and secure in place.

Example : A redesign could involve adding modular compartments that can be adjusted or removed based on the vendor's needs. This flexibility allows for customization depending on whether the cart is used for fruits, vegetables or street food. Enhanced portability could be achieved by using light-weight, durable materials and adding an ergonomic handle for easy pushing and pulling. (Facilitators Handbook, Pg. 35, Ch-3)

4

21. Using Claymation and cutout Animation Techniques :

4

Claymation (for the dinosaur) : Ankita should start by sculpting the dinosaur from clay. She needs to manipulate the clay dinosaur incrementally, making slight adjustments in each frame to capture its movement. It's important to maintain consistency in the dinosaur's shape

and details throughout the animation. Cutout Animation (for the spaceship) : Ankita should create the spaceship as a paper cutout, with different parts or layers if needed for animation. She should position and move the cutout spaceship in small increments, capturing each frame as it appears to fly or interact with the dinosaur.

Challenges and solutions :

Consistency in Movement : Ensuring smooth transitions between frames can be challenging. Ankita can overcome this by keeping a careful record of each position and movement of the dinosaur and spaceship, possibly using a reference grid.

Object stability : Clay objects can deform over time, and paper cutouts might shift. To address this, Ankita should use a fixed setup for the camera and ensure objects are securely placed. Using a light adhesive or fixing them with sticky tack can help maintain their position. Lighting can cause flickers or shadows. Ankita should use a consistent light source and position it in a way that minimizes shadows or uneven lighting. (Facilitators Handbook, Pg. 50, Ch-5)

22. (a) Using Low-fidelity Prototyping Methods :

4

Effective Use : Sachin can create a scaled-down version of his ergonomic chair using cardboard to represent the structure and foam for cushioning. He can use markers to highlight different features such as adjustable components or ergonomic curves. This approach allows him to quickly visualize and test the basic functionality and form of the chair.

Advantages : Cardboard is easy to cut, shape and assemble, making it ideal for quickly iterating design ideas. Foam provides a simple way to simulate cushioning and comfort. Both materials are inexpensive and readily available, enabling Sachin to create multiple iterations without significant cost or time investment.

(b) Gathering Feedback and Making Improvements :

Feedback Collection : By presenting his cardboard and foam prototype to peers and instructors, Sachin can gather feedback on the design's ergonomics, inability and aesthetics. Observations and suggestions can be easily incorporated into subsequent version of the prototype.

Iterative Improvements : Low-fidelity prototypes allow Sachine to make quick changes based on feedback. For instance, if users find the chair uncomfortable, he can modify the foam cushioning or adjust the cardboard structure to better meet user needs. (Facilitators Handbook, Pg. 66-70, Ch-7)