INSTRUCTIONS TO CANDIDATES:

Read these instructions carefully.

1. ■ Write your name, Registration number and the Examination Centre in the space provided on the cover page of this answer book.

   ■ Make sure that you sign in the space provided on the cover page.

   ■ Entering your name or registration number anywhere else (other than in the space provided on the cover page) is strictly forbidden.

   ■ No distinctive mark of any sort is to be put anywhere in the answer book.

   ■ Violation of these instructions or adoption of malpractices in the examination hall will lead to disqualification.

2. Write your answers **ONLY IN ENGLISH**.

3. Write or draw your answers **only in the space provided for each question.**

   In some questions, space for rough work has been provided below the question. This should be used for ROUGH WORK ONLY. The final answer should be provided ONLY in the space marked as "Space for Final answer".

4. Extra pages are provided **at the end of this book for ROUGH work.** DO NOT DETACH any of these pages.

5. **DO NOT REMOVE** ANY SHEET from this answer book.

6. Before leaving the examination hall, **submit this question-cum-answer paper to the invigilator.**

DRAWING AND VISUALISATION

Question 1 .....**(15 Marks)**

Make a pencil sketch of a loaf of bread, partially sliced, and a knife, kept on a plate.

(DO NOT USE ANY INSTRUMENT LIKE RULER. DO NOT USE COLOURS)

➜ Your drawing will be evaluated by the ability to achieve a realistic three-dimensional effect, sense of composition, proportion and quality of drawing.

Space for ROUGH WORK

Question 1: SPACE FOR ROUGH WORK

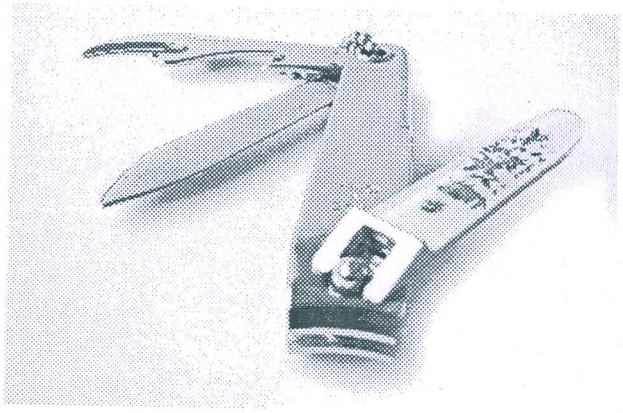
Question 1: Space for FINAL SKETCH

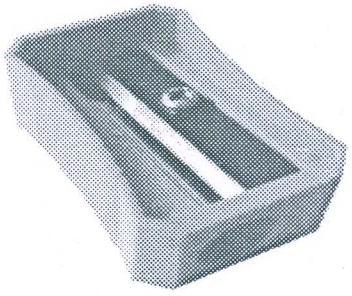
TECHNICAL REPRESENTATION

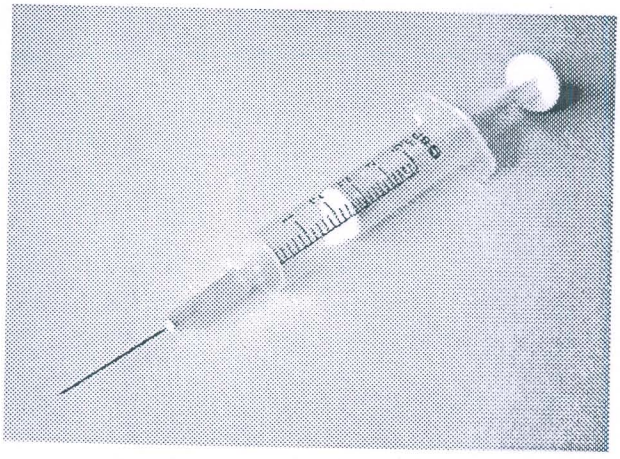
Question 2 .....(15 Marks)

Three products are shown below. **CHOOSE ONE** of them and show the details of the product through a combination of exploded diagram and sectional view, so that the construction of the product is clear.

➜ You will be evaluated on your understanding of correct usage of exploded diagram and sectional view and the understanding of the product construction and materials.







Question 2: SPACE FOR ROUGH WORK

Question 2: SPACE FOR ROUGH WORK

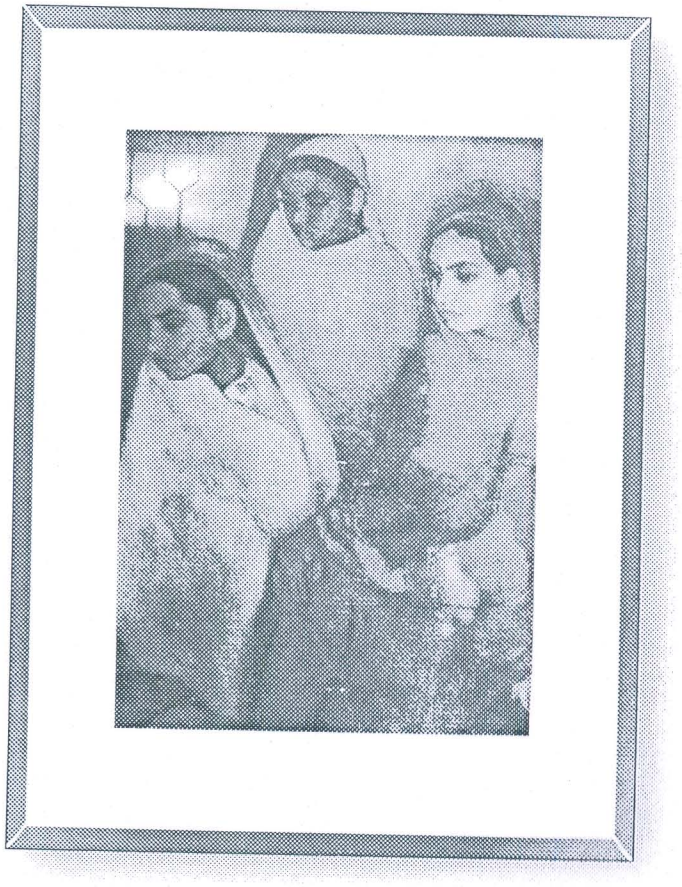
Question 2: SPACE FOR FINAL WORK

PROCESS PLANNING

Question 3 .....(10 Marks)

A picture frame consists of a frame, a glass front, a white mount board and a back support for holding the picture together.
Illustrate with visuals, a step-by-step procedure for framing the picture as indicated below, in a maximum of SEVEN steps. Supplement your visuals with appropriate text.

➜You will be evaluated by your ability to articulate clearly the sequential instructions and ability to design visual based instructions.



Question 3: SPACE FOR ROUGH WORK

Question 3: SPACE FOR FINAL WORK

Question 3: SPACE FOR FINAL WORK

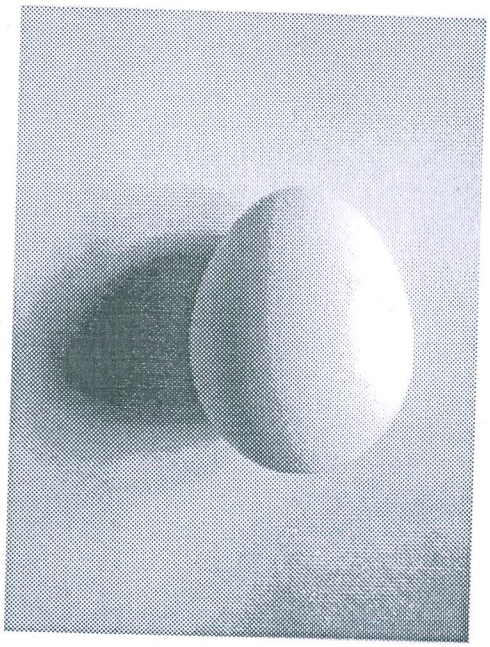
CREATIVITY

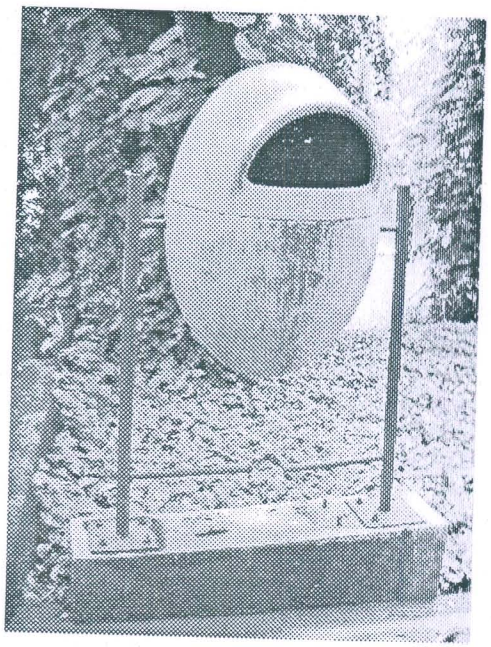
Question 4 ..... **(10 marks)**

Visualise **TEN** different products which use shape of the egg given below.

You can use shape of the egg as a whole or a part of it, or in combination with other shapes.
A garbage bin is shown below as an example.

➜ You will be evaluated by the variety of ideas and usefulness of the proposed products.





Q 4. SPACE FOR FINAL WORK

Q 4: SPACE FOR FINAL WORK

Q 4: SPACE FOR FINAL WORK

PROBLEM ASSIMILATION

Question 5 ..... **(5 Marks)**

The photograph given below shows a nest built on a cloths-line.
Assuming that you are a 'designer bird', write down the different factors you will consider in making the nest.

➜ You will be evaluated based on your ability to visualise and assimilate different factors associated with the design and construction process.

Question 5

STORY TELLING

Question 6..... (15 Marks)

Based on the given story, create a storyboard with ONLY the images provided on the next page. Do not use any text for the story board. The given images may be simplified, repeated as many times as required, scaled up or down. You may add elements to enhance the atmosphere of the story.

➜ You will be evaluated on your ability to translate the written narrative into visual form.

The Crow and the Eagle

It was a bright spring day. The sun was high in the blue sky. A herd of sheep was grazing contentedly on the hillside. The little lambs with their soft white coats and curly tails were playing among themselves.

The Shepherd, seeing that his flock was safe and happy, had fallen asleep under the spreading branches of a large old tree.

Suddenly an Eagle swooped down from the sky. It pounced on a little lamb and carried it off so swiftly that none of the other lambs even had the time to bleat. The sleeping Shepherd heard nothing.

A Crow was sitting on the tree under which the Shepherd lay asleep. He had seen how the Eagle had caught the lamb and carried it off to his nest.

'What a wonderful way to get dinner!' he thought. 'Why do crows look for old smelly food?'

The Crow decided to do exactly as the Eagle had done. It had looked easy enough. All he had to do was decide which sheep he wanted, swoop down upon it, hold it as firmly as he could in his claws, and fly off with it. Easy! If the Eagle could do it, then so could he!

The Crow looked down at the flock of sheep to decide which sheep he wanted. Just below the tree, by the Shepherd, a big, old Ram was grazing. He had curling horns and a thick heavy fleece.

'Aha! He should be a good meal for me!' thought the Crow greedily. He was very hungry, and the thought of a large juicy Ram for lunch made his mouth water.

The Crow swooped silently and swiftly down onto the Ram, just as he had seen the Eagle do, and grasped it firmly by its fleece.

'And now to fly off with it to my nest,' said the Crow to himself. He flapped his wings with all his strength, but could not lift the Ram.

The Ram was large. He was much too heavy for the Crow to carry.

The Crow tried again and again, but without success. The Ram felt the Crow on its back, and was most annoyed. 'Just what do you think you are doing, you pesky bird?' he snapped, glaring at him over his shoulder. The Crow flapped harder still, trying to carry the Ram away.

'Now stop that!' cried the Ram. 'Go away! Shoo! Leave me in peace!' He jumped and bucked and tried to shake the Crow off his back.

'Oh oh!' thought the Crow, alarmed at the Ram's fierce antics. 'Maybe this wasn't such a good idea after all! Perhaps I should look for my dinner elsewhere! I had better let the Ram be!'

The Crow tried to fly away, but he found he could not move. His claws were caught in the Ram's thick fleece!

The Crow pulled his feet this way and that. He flapped his wings as hard as he could. But no matter what he did, he only seemed to get stuck more firmly.

Oh, how was he ever going to get free? The Crow squawked loudly in fear and despair. The Ram started running around the tree, bellowing with rage. The Shepherd woke up with a start. Who was making that horrible noise? Were his sheep in danger? He sat up.

What a sight met his eyes! The Ram was running around the tree. On his back was the Crow, squawking and trying to rise in the air.

The Shepherd began to laugh.

At last, wiping his eyes, the Shepherd stood up. He stopped the Ram as he ran by and calmed him with gentle words.

When the Ram was still, the Shepherd took a

Contd...

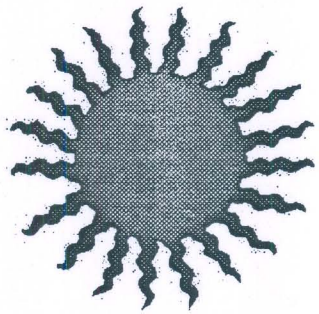
pair of shears from his sack. Holding the Crow with one hand, he deftly snipped the fleece until the Crow was free. "What did you think you were doing, my fine friend?", asked the Shepherd looking at the Crow. "Playing at being an eagle, were you?", the Shepherd burst out laughing again.

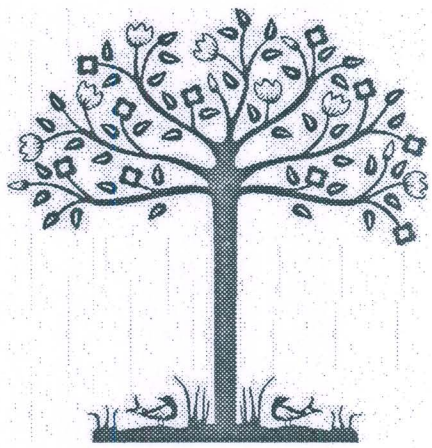
The Crow was too embarrassed even to croak. He wished only that the Shepherd would let him grow so he could fly away to his nest and hide his foolish head.

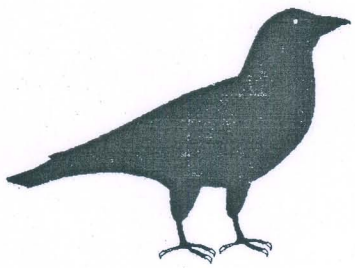
Finally, when the Shepherd let the Crow go, the Crow flapped his wings and flew off as fast as he could.

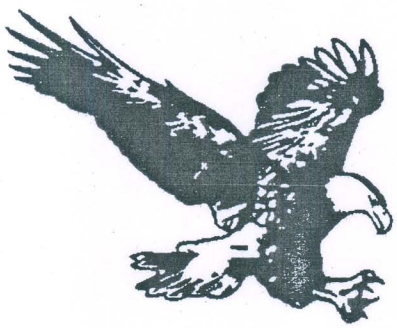
"And the next time you want to be an eagle, make sure you pick an animal your size!", called the Shepherd after him.

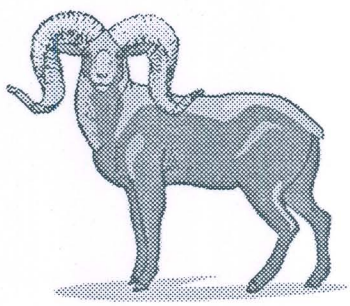
The Crow feeling silly and foolish, promised himself that from now on he would only do as other crows did.











Question 6: Space for ROUGH work.

Question 6. Space for ROUGH work.

Question 6: Space for **FINAL** work.

Question 6: Space for **FINAL** work.

MENTAL IMAGERY

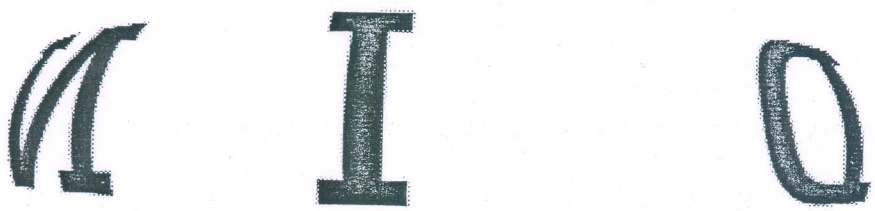
Question 7 .....(5 Marks)
Reflection and distortion of the word "BHARAT" on a spherical surface is illustrated below.
Visualise the reflected image of the word "DESIGN" on such a surface, and complete the reflected image shown on the next page.

➜ You will be evaluated based on your ability to visualise the distortion caused by reflection and mapping on spherical surfaces.

BHARAT

Question 7

DESIGN



TERMS /TECHNIQUES/ PROCESSES

Question 8:..... (5 Marks)
Fill in the blanks choosing appropriate words from the word-list given below.

WORD LIST

Rig	Throwing	Molding	Axis
FRP	Proportion	Catenary	Cantilever
Perspective	Casting	Collage	Welding
Scale	Etching	Pixel	Replica
Perspective	Helix	Welding	Forging
Format	Story boarding	Mental Model	Elevation
Blowing	Ceramics		

1. The process of shaping a pot on a potter's wheel is called .....

2. A glass bottle is made by the process of .....

3. The technique of producing a shape by pouring a molten substance into a hollow negative shape is called .....

4. Shape of a curve adopted by a slack chain or rope which is supported at both ends is called .....

5. A beam fixed at one end and freely supported at the other end is called .....

6. ..... is the art of shaping and baking clay articles.

7. In technical drawing ..... is the geometric projection of the object on a vertical plane.

8. ..... is the material made by bonding glass fibre together in a plastic compound.

9. The drawing technique for producing the illusion of spatial depth is called .....

10. In digitized computer graphics ..... is one of the minute squares from which the image field is composed.

COMMUNICATION SKILLS

Question 9 .....(10 Marks)
Read the following passage carefully.
Write a summary of the given passage in FIVE sentences in the space provided on the next page.

➜ You will be judged by your ability to comprehend and summarise the passage given to you.

Insects are the natural prey of most small birds, many mammals, frogs, lizards, almost all spiders, and of predatory members of their own insect group as well. Natural selection has produced innumerable adaptations to help them to escape being eaten.

The larger insects usually have some sort of individual defense. Many of them rely on concealment and many of them simply hide away in crevices or under debris where they are hard to find. Many night-flying moths spend the day motionless among foliage or long grass, but others rest in the open on tree trunks, and these rely on being colored or shaped to match their background.

The remarkable case of the peppered moth concerns camouflage of this kind. In its typical form this moth is speckled with black and white and is well concealed when at rest on a licensed tree trunk. Up to about 1850 this was the only form known, but at that time a black variety began to appear in and around Manchester, a large town in the north-western England. By 1990 it had almost completely replaced the normal form in and all the industrial town and cities of Britain. One consequence of industrialization is destruction, by atmospheric pollution, of all lichen on trees and also blackening of their trunks and branches by depositing shoot. Obviously in these conditions the black moth would have an advantage over the typical ones in terms of concealment from insect-eating birds, which are by no means absent from the environs of cities.

Many insects carry the camouflage principle further by resemblance to specific objects. Some caterpillars and the tropical stick-insects look like small twigs, and can only be detected if they move. The Kallima butterfly is shaped and colored like a leaf so it is very difficult to see when at rest.

Although most insects are edible, some have body fluids or secretions which are very ill-tasting and even poisonous. These fluids are immediately released when the insects are attacked.

Question 9:

1. ----------

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2. ----------

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3. ----------

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4. ----------

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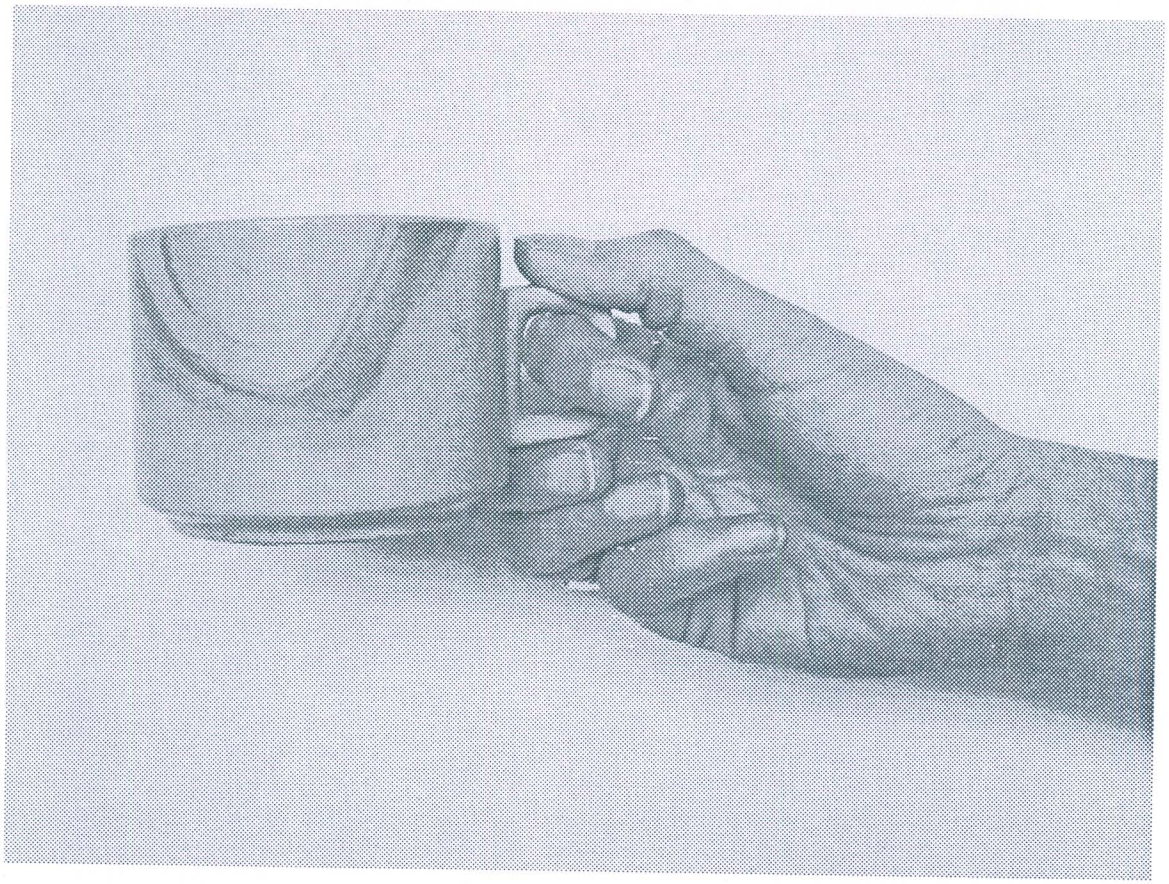
5. ----------

BIOMECHANICS

Question 10.....(10 Marks)

In the image shown, critically assess the role played by the different fingers while holding the cup. Use this image to express your views by labeling it.

➜ You will be evaluated based on your understanding of stability and different forces acting on the cup and fingers.