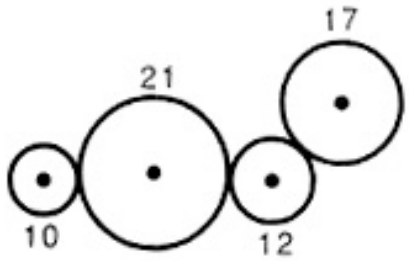
SAMPLE QUESTION PAPER OF CEED

1. The illustration shows part of a fixed axle gear mechanism which consists of four cog wheels in mesh. The largest cog wheel has 21 teeth and provides the driving power to rotate three cog wheels which has 10, 12 and 17 teeth respectively.



If the gear mechanism starts from rest, how many revolutions will the large cog wheel have to turn before one full cycle is complete, and all four cog wheels are in the identical position from which they started.

510 ☐ 1020 ☐ 2040 ☐ 4080 ☐ None ☐

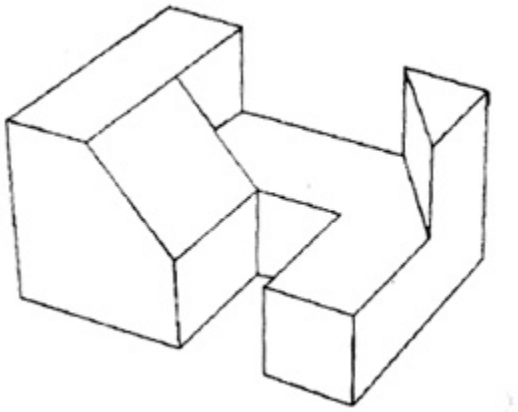
2. In the following passage there are some formatting errors. Circle the errors.

"Over the past few decades, electronic computer technology has made enormous strides. Moreover, there can be little doubt that in the decades to follow, there will be further great advances in speed, capacity and logical design. The computers of today may be made to seem sluggish and primitive as the mechanical calculators of yesteryears now appear to us. There is almost something frightening about the pace of development. Already computers are able to perform numerous tasks that had previously been exclusive province of human thinking, with a speed

and accuracy which far outstrip anything that a human being can achieve."

3. Draw a human hand holding a pencil. Use only black pencil to draw. Your sketch would be judged on the quality of lines, correctness of perspective and aesthetics of composition.

4. Two pieces of wooden block fit together to make a solid rectangular block of 4 x 2 x 2 units. One of the pieces is shown below. Imagine the other piece and count the number of surfaces on that.



5. Graphic symbols / pictograms can be used effectively to explore ideas / communicate messages universally without the use of language. (For example : traffic signs, Olympic sports symbols, etc)

Safety signs are required in factories to encourage the workers to observe safe working habits. From the options listed on the facing page, choose any five messages, and design graphic symbols / pictograms, for use as safety signs in factories. All symbols designed by you should have common graphic style so as to appear as part of a range of symbols.

Your symbols will be judged on the basis of the appropriateness of the visual used to express the message, and the graphic style.

Present your final designed symbols as finished drawing in the space provided above the message on the facing page.

Design symbols for "Wear helmet, Wear ear protection, Wear goggles,

Caution! Slippery floor, Caution! Electric hazard, Always use gloves, Remove footwear, and Emergency exit".

6. Design of bath room latches has not been critically looked at by designers and manufacturers. For instance, when leaving the bathroom after use, you have to open the latch with your hands, which you have cleaned. This is of course more annoying when using public toilets (like in trains).

   Develop a latch / lock for the train that can be opened from inside the bathroom, without using the hands and / or other body parts that you will prefer not to use from the viewpoint of personal hygiene. To enter, you must use the same latch / lock from the outside, but you can use hands if necessary.

   Please note that considering the available maintenance facilities in railways, sophisticated electronic / electrical latches are ruled out.

   Design your latch based on the following criteria.

   ✓ Essential Criteria

   Innovative solutions
   Ease of use, hygiene
   Choice of working principle (mechanisms, linkages)
   Ease of maintenances

   ✓ Desirable Criterion

   Aesthetics

   Your design will be evaluated on the quality of your innovation, effectiveness and the final presentation drawing.