

Technology – Grade 9

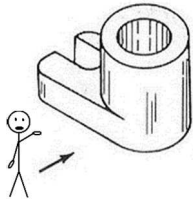
Welcome to your Conquesta Olympiad. When you have decided which of the answers is correct, scratch out the letter in the matching square on your answer sheet. Example:- If the answer to question 4 is c, then scratch out the letter c in the square containing c next to the number 4 (see example 1 below). If you've made a mistake and b should have been the answer, neatly cross out the mistake and then scratch out b (see example 2 below).

Example 1:- 4. a b ~~c~~ d

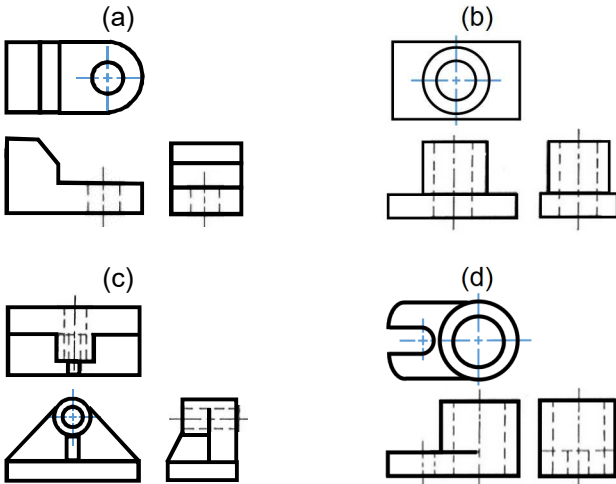
Example 2:- 4. a ~~b~~ ~~c~~ d

The Design Process Skills

1. The study of what machines look like, is called
- (a) Aesthetics. (b) Ergonomics.
(c) Visual presentation. (d) Anthropometrics.



2. Which of the diagrams below represent the 3D object shown above?

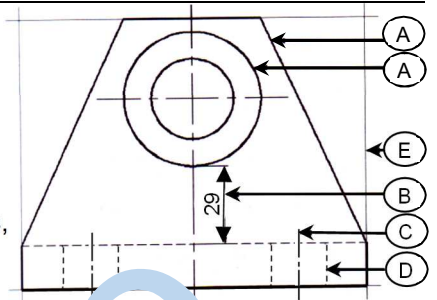


3. The designer of a portfolio container made use of which improvement technique/s when sketching the product on the right?



- (a) Texture.
(b) Thick and thin lines.
(c) Shade and shadow.
(d) All of the above are correct.

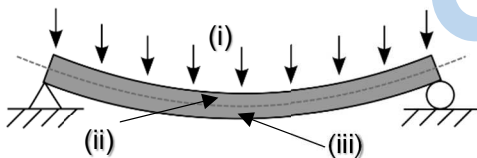
In the figure, label A represents outlines.



4. Identify the line types at B – E.
- (a) B = centre lines, C = dimension lines, D = construction lines, E = hidden detail lines.
(b) B = dimension lines, C = centre lines, D = hidden detail lines, E = construction lines.
(c) B = construction lines, C = centre lines, D = hidden detail lines, E = dimension lines.
(d) B = hidden detail lines, C = construction lines, D = dimension lines, E = centre lines.

5. Which of the following will be used to guide a designer in the completion of a drawing?
- (a) Centre lines. (b) Dashed lines.
(c) Outlines. (d) Construction lines.

Structure

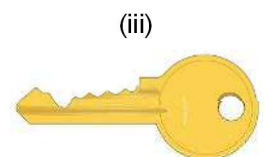


6. Identify the types of force at (i), (ii) and (iii), that the beam will experience in the diagram.

- (a) (i) Bending, (ii) Torsion, (iii) Compression.
(b) (i) Bending, (ii) Compression, (iii) Tension.
(c) (i) Shear, (ii) Tension, (iii) Compression.
(d) (i) Torsion, (ii) Compression, (iii) Tension.

7. Name the structures in order from (i) to (iii).

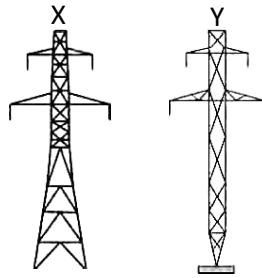
- (a) (i) Frame, (ii) Solid, (iii) Shell.
(b) (i) Solid, (ii) Shell, (iii) Frame.
(c) (i) Frame, (ii) Shell, (iii) Solid.
(d) (i) Shell, (ii) Solid, (iii) Frame.



8. What is the best method used to strengthen structures?

- (a) Tubing. (b) Triangulation. (c) Folding. (d) Framing.

9. Refer to the pictures on the right. Which pylon is more stable and why?



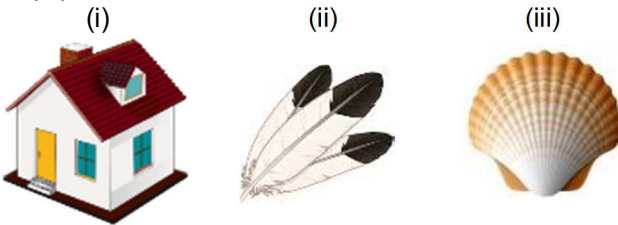
- (a) X, because the cross-beams have no triangular bracing.
- (b) X, because the cross-beams have triangular bracing.
- (c) Y, because the centre of gravity is over the middle of the base.
- (d) Y, because it has a wide base that can withstand strong winds.

10. What is the purpose of the shell of the tortoise?



- (a) To contain. (b) To protect.
- (c) To support. (d) Both (a) and (b).

11. Classify the following structures in order from (i) to (iii).



- (a) (i) Man-made shell, (ii) Natural frame, (iii) Natural shell.
- (b) (i) Man-made frame, (ii) Man-made frame, (iii) Natural shell.
- (c) (i) Man-made frame, (ii) Natural frame, (iii) Natural shell.
- (d) (i) Natural shell, (ii) Man-made shell, (iii) Natural frame.

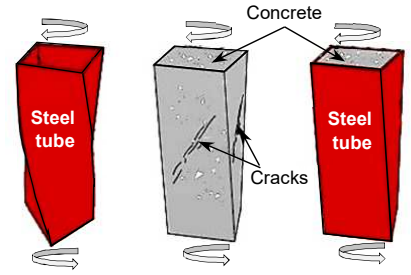
12. A beam that is only fixed at one end is called a

- (a) lintel. (b) tie beam. (c) cantilever. (d) column.

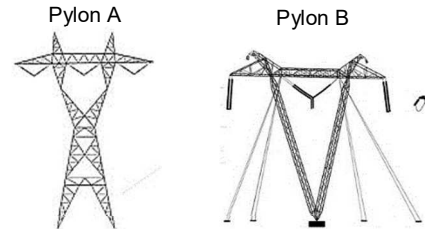
13. A curved structure supporting a horizontal structure is a/an

- (a) arch. (b) beam. (c) cantilever. (d) lintel.

14. What type of load or force contributed to the failure of these structures?



Do a short evaluation of the two structures on the right.

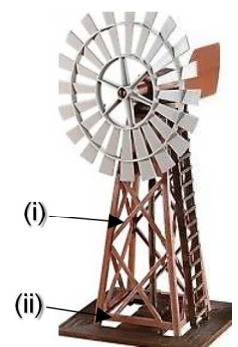


15. Which statements identify the most suitable structure to support the force of the wires?

- (i) Pylon A, with more struts, will not be able to withstand the forces of the wires.
 - (ii) Pylon A will withstand the force, because triangulation strengthens the pylon in order to prevent it from bending under the forces.
 - (iii) Pylon B has stays which give it anchors that will be able to withstand the force of the wires.
 - (iv) Pylon B, without stays, will still withstand the forces.
- (a) (i) and (iii). (b) (ii) and (iv).
 - (c) (ii) and (iv). (d) (ii) and (iii).

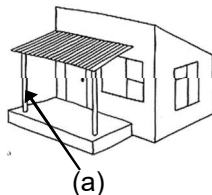
16. Study the labelled picture and then select the correct answer.

- (a) (i) is a strut under tension and (ii) is a tie beam under compression.
- (b) (i) is a tie beam under compression and (ii) is a strut under tension.
- (c) (i) is a strut under compression and (ii) is a tie beam under tension.
- (d) (i) is a tie beam under tension and (ii) is a strut under compression.

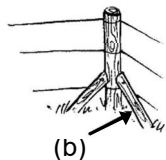


Using the pictures below, match (a) – (d) to the correct structural part named at questions 17 – 20.

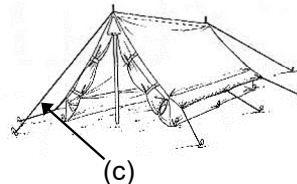
17. Column.



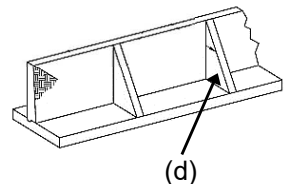
18. Strut.



19. Stay.



20. Buttress.



21. Name the loads shown below in order from (i) to (iii).

(i)



(ii)



(iii)



- (a) (i) Even load, (ii) Uneven load, (iii) Uneven load.
- (c) (i) Uneven load, (ii) Even load, (iii) Even load.

- (b) (i) Uneven load, (ii) Even load, (iii) Uneven load.
- (d) (i) Even load, (ii) Uneven load, (iii) Even load.