# CONCEPT APPLICATION LEVEL - II

## SECTION - A

- **FILL IN THE BLANKS**

Q.1 _____ in any figure bounded by four straight lines.

Q.2 Solids are _____ dimensional figures that have _____ .

Q.3 An edge forms when two _____ meet.

Q.4 The _____ is the point here three or more edges meet.

Q.5 A cube is a special type of _____ .

Q.6 In an _____ triangle, the hypotenuse is $\sqrt{2}$ times either of the other two sides.

Q.7 If a line segment whose end points lie on the circle is called _____ to the circle.

Q.8 Each face of the cuboid is _____ .

Q.9 Find the surface area of a cube whose side is 5 cm. _____ .

Q.10 Cube is a cuboid whose all the edges are equal. It is true ? _____ .

Q.11 1 litre = _____ _____ $cm^3$.

Q.12 An open box(without lid) whose length, breadt and height are 3cm, 2cm and 1cm is formed. Find its surface area ._____

Q.13 Ratio of the surface areas of two cubes is 36 : 49. Find the ratio of their edges. _____ .

## SECTION - B

- **TRUE & FALSE**

Q.1 The face of a solid is two-dimensional in shape.

Q.2 If a solid has a curved surface then it has no faces.

Q.3 Area is the length of the boundary of a closed figure.

Q.4 Area is the total surface covered by a closed figure.

Q.5 Perimeter of a triangle with side a, b, c is $3a + 3b + 3c$.

Q.6 The parallel sides are called bases of the trapezium.

Q.7 $\pi r$ is the circumference of a circle.

Q.8 The whole arc of the circle is called the radius of the circle.

Q.9 An isosceles right angle has area 32 $cm^2$, then hypotenuse is $8\sqrt{2}$ cm.

## SECTION - C

- **MULTIPLE CHOICE QUESTIONS**

Q.1 The area of a square whose perimeter is 16cm is

(A) 64 $cm^2$ (B) 16 $cm^2$ (C) 32 $cm^2$ (D) 128 $cm^2$

Q.2 A rectangular field has dimensions of 72m and 65m. The area of the field is

(A) 4680 $m^2$ (B) 4400 $m^2$ (C) 4880 $m^2$ (D) 4360 $m^2$

Q.3 The area of a right angled triangle, whose base is 8cm and hypotenuse is 10cm, is :
(A) 40 $cm^2$ (B) 48 $cm^2$ (C) 24 $cm^2$ (D) 80 $cm^2$

Q.4 Two parallel sides of a trapezium are of lengths 16 cm and 10cm and the distance between them is 8 cm. Area of the trapezium is
(A) 104 $cm^2$ (B) 208 $cm^2$ (C) 52 $cm^2$ (D) 1280 $cm^2$

Q.5 Two parallel sides of a trapezium are of lengths a cm and b cm and distance between them is d cm. The area of the trapezium is given by :
(A) $(a + b) \times d$ $cm^2$ (B) $\frac{1}{2}(a + b) \times d$ $cm^2$ (C) $2(a + b) \times d$ $cm^2$ (D) none of these

Q.6 The area of a trapezium of height 4 cm is 16 $cm^2$. If one of the parallel sides is 4 cm, the other side will be
(A) 8 cm (B) 2 cm (C) 3cm (D) 4 cm

Q.7 In a trapezium, sum of two parallel sides is 20 cm and distance between them is 5cm. Its area is:
(A) 100 $cm^2$ (B) 50 $cm^2$ (C) 25 $cm^2$ (D) 200 $cm^2$

Q.8 The volume of a cube whose edge is 5a is :
(A) 25 $a^3$ (B) 125 $a^2$ (C) 150 $a^2$ (D) 125 $a^3$

Q.9 The volume of a cuboid whose length, breadth and height are 2a, 3b and 4c is :
(A) 6 abc (B) 24 abc (C) 48 abc (D) none of these

Q.10 The volume of a cuboid whose length, breadth and height are in the ratio of 3 : 1 : 2 is
(A) $8 \times breadth^3$ (B) $8 \times length^3$ (C) $6 \times breadth^3$ (D) length × breadth

Q.11 The volume of a water tank is 3 $m^3$. Its capacity in litres is :
(A) 30 (B) 300 (C) 3000 (D) none of these

Q.12 The capacity of a cubical mug is 1 lit. The length of its edge is :
(A) 1 cm (B) 10 cm (C) 1 m (D) none of these

Q.13 The surface area of an open box whose length, breadth and height are $l$, b and h respectively, is :
(A) $2(lb + bh + hl)$ (B) $2(lb + bh) + hl$ (C) $2(bh + hl) + lb$ (D) $2(lb + hl) + bh$

Q.14 Two cubes each of edge 5 cm are joined end to end. The surface area of the resulting cuboid is:
(A) 125 $cm^2$ (B) 240 $cm^2$ (C) 250 $cm^2$ (D) 500 $cm^2$

Q.15 If the ratio of the surface area of two cubes is 1 : 9, then the ratio of their volumes will be
(A) 1 : 9 (B) 1 : 27 (C) 1 : 36 (D) 1 : 18

Q.16 Surface area of a cube is $150m^2$. The length of its length is
(A) 5m (B) 10m (C) 15 m (D) 6m

Q.17 The total surface area of a cylinder whose height is twice the radius, 'r' is
(A) $8\pi^2$ (B) $36\pi^2r$ (C) $6\pi r^2$ (D) $81r^2$

Q.18 Radius of a cylinder is x cm and its height is 2x cm. Its volume is :
(A) $\pi x^3$ $cm^3$ (B) $2\pi x^3$ $cm^3$ (C) $3\pi x^3$ $cm^3$ (D) $4\pi x^3$ $cm^3$

Q.19 The ratio of radii of two cylinders is 1 : 2. If the ratio of their heights is 2 : 1, then the ratio of their volume will be
(A) 1 : 2 (B) 1 : 4 (C) 2 : 1 (D) 4 : 1

Q.20 If the height of a cylinder is equal to the radius of its base, then the curved surface area of the cylinder is:
(A) $2\pi r$ (B) $2\pi r^3$ (C) $\pi r^2$ (D) $2\pi r^2$

Q.21 If the base of a triangle is doubled and height is halved, its area will be
(A) Doubled (B) Halved (C) One-fourth (D) Same

Q.22 The area of square, whose diagonal is 12 cm, will be
(A) 144 $cm^2$ (B) 72 $cm^2$ (C) 36 $cm^2$ (D) 48 $cm^2$

Q.23 The ratio of the areas of a square and a rectangle of length 4 cm and width 3 cm is 4 : 3. The side of the square will be
(A) 4 cm (B) 3 cm (C) 12 cm (D) 9 cm

Q.24 The adjacent sides of a parallelogram are 4 cm and 12 cm. The distance between the longer sides is 6 cm. The distance between the shorter sides will be
(A) 2 cm (B) 14 cm (C) 18 cm (D) 8 cm

Q.25 The diagonals of a rhombus are 9 cm and 6 cm. Its area will be
(A) 54 $cm^2$ (B) 27 $cm^2$ (C) 108 $cm^2$ (D) 216 $cm^2$

Q.26 The length of the parallel sides of a trapezium is 12 cm and 8 cm. The distance between them is 4cm. The area of the trapezium will be
(A) 80 $cm^2$ (B) 40 $cm^2$ (C) 48 $cm^2$ (D) 32 $cm^2$

Q.27 The area of a trapezium is 28 $cm^2$ and one of its parallel sides is 6cm. If the distance between the parallel sides is 4cm, then the other parallel side is
(A) 4 cm (B) 7 cm (C) 8 cm (D) 6 cm

Q.28 The area of a rhombus is 24 $cm^2$ and one of its diagonals is 8 cm. Its perimeter is

(A) 20 cm (B) 24 cm (C) 40 cm (D) $4\sqrt{73}$ cm

Q.29 If each edge of a cube is doubled, how many times will its volume increase ?

(A) 6 times (B) 8 times (C) 4 times (D) 16 times

Q.30 Three cubes, each measuring 8 cm, are joined end to end. The volume of the resulting cuboid will be

(A) 1536 $cm^3$ (B) 1024 $cm^3$ (C) 912 $cm^3$ (D) 576 $cm^3$

Q.31 The volume of a cuboid is 1680 $m^3$. If it is 14m long and 10m high, then its breadth will be

(A) 1.2m (B) 13 m (C) 12 m (D) 1.3 m

Q.32 How many cubes of 4 cm can be made from an iron cuboidal piece 24 cm long, 12 cm wide and 10 cm high ?

(A) 40 (B) 45 (C) 36 (D) 50

Q.33 How does the surface area of a cube change when its edge is halved ?

(A) 3 : 1 (B) 4 : 1 (C) 2 : 1 (D) 8 : 1

Q.34 If an edge of a cube is doubled, how many times its surface area will be increased ?

(A) twice (B) Thrice (C) Four times (D) Six times

Q.35 Surface area of a cuboid measuring 3m × 2m × 1.5m is

(A) 9 $m^2$ (B) 18 $m^2$ (C) 13.5 $m^2$ (D) 27 $m^2$

Q.36 The lateral surface of a cuboid whose length is 5m, breadth is 4m and height is 2m is

(A) 76 $m^2$ (B) 38 $m^2$ (C) 36 $m^2$ (D) 40 $m^2$

Q.37 The volume of a cylinder of base 7cm and height 25 cm is

(A) 1100 $cm^3$ (B) 3850 $cm^2$ (C) 3850 $cm^3$ (D) 1100 $cm^2$

Q.38 The volume of a right circular cylinder of base radius 35 cm is 154 $dm^3$. Its height will be

(A) 4 cm (B) 40 cm (C) 120 cm (D) 40 dm

Q.39 Two right circular cylinders of equal volume are such that their radii are in the ratio 2 : 3. The ratio of their heights will be

(A) 2 : 3 (B) 4 : 9 (C) 3 : 2 (D) 9 : 4

Q.40 A cylindrical tank has a capacity of 6160 cu m. If the diameter is 28m, then the depth will be

(A) 10 m (B) 15 m (C) 5 m (D) 50 m

Q.41 The area of the curved surface of a cylinder of base radius 7cm and height 25 cm is
(A) 1100 $cm^3$ (B) 1100 $cm^2$ (C) 1408 $cm^2$ (D) 1408 $cm^3$

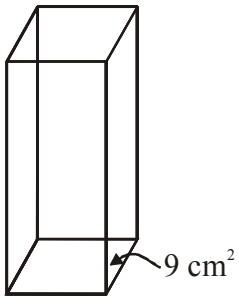
Q.42 The total surface area of the right circular cylinder whose diameter is 14 cm and height 20 cm is
(A) 1188 $cm^2$ (B) 1178 $cm^2$ (C) 2992 $cm^2$ (D) 2772 $cm^2$

Q.43 The radius of the cylinder with lateral surface area 704 $cm^2$ and height 16 cm is
(A) 3 cm (B) 4 cm (C) 8 cm (D) 7 cm

Q.44 The radius of a cylinder is doubled whose lateral surface area is unchanged. The height will be
(A) Halved (B) Doubled (C) Tripled (D) Constant

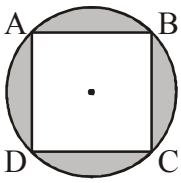
Q.45 If V and C stand respectively for volume and curved surface area of a cylinder with base radius r, then
(A) $VC = \pi$ (B) $2V = Cr$ (C) $2C = Vr$ (D) $2r = VC$

Q.46 The figure shows a rectangular block of wood which is $\frac{2}{5}$ m long. It has a square base of area 9 $cm^2$.
(a) What is the greatest number of 2 cm cubes that can be cut from it?
(b) What is the volume of the block of wood left? **[IMO-2016]**




(A) (a) 20; (b) 200 $cm^3$ (B) (a) 140; (b) 200 $cm^3$
(C) (a) 154; (b) 100 $cm^3$ (D) (a) 159; (b) 200 $cm^3$

Q.47 In the figure, ABCD is a square of sides 30 cm. Find the area of the shaded region if the radius of the circle is 18 cm. (Take $\pi = 3.14$) **[IMO-2016]**




(A) 112.36 $cm^2$ (B) 117.36 $cm^2$ (C) 119.36 $cm^2$ (D) 121.26 $cm^2$

Q.48 The two adjacent sides of a rectangle are $5x^2 - 3y^2$ and $x^2 + 2xy$. Find the perimeter. **[IMO-2016]**
(A) $12x^2 + 5xy + 9y^2$ (B) $12x^2 - 6y^2 + 4xy$ (C) $7x^2 - 3y^2 + 4xy$ (D) $8x^2 - 8y^2 + 3xy$

Q.49 The outer dimensions of a closed box are 10 cm by 8 cm by 7 cm. Thickness of the wood is 1 cm. Find the total cost of wood required to make box, if 1 $cm^3$ of wood costs ₹2.00 **[IMO-2016]**
(A) ₹320 (B) ₹1240 (C) ₹640 (D) ₹240

Q.50 A rectangular garden 200 m long and 150 m wide has a path all around it, on the inner side, having a width of 3 m. In the centre of this plot, there is a circular pond of radius 7 m. What area of the land is left for the lawn and the flower beds? **[IMO-2016]**

(A) 27,936 sq.m (B) 27,782 sq.m (C) 27,682 sq.m (D) 28,582 sq.m

Q.51 Find P + Q – R. **[IMO-2016]**

(i) If a rectangle of length 44 cm is rolled along its length to form a cylinder, the radius of cylinder is _____(P)_____ cm.

(ii) The cost of plastering the walls of a cuboidal room of dimensions 12 m × 10 m × 4 m at the rate of ₹25 per sq.m is ₹_____(Q)_____.

(iii) The volume of a cuboid of dimensions 14 m × 7 m × 12m is _____(R)_____ $m^3$.

(A) 11776 (B) 7362 (C) 16162 (D) 3231

Q.52 If the height of a cylinder is 4 times its circumference, the volume of the cylinder in terms of its circumference c, is **[IOM-2016]**

(A) $4\pi c^3$ (B) $2\pi c^3$ (C) $\frac{2c^3}{\pi}$ (D) $\frac{c^3}{\pi}$

Q.53 A piece of wire when bent to form a circle will have a radius of 84 cm. If the wire is bent to form a square, the length of the side of the square is **[IOM-2016]**

(A) 132 cm (B) 225 cm (C) 152 cm (D) 168 cm

Q.54 The radii of two solid iron spheres are 1 cm and 6 cm respectively. A hollow sphere is made by melting the two spheres. If the external radius of the hollow sphere is 9 cm, then its thickness (in cm) is **[IOM-2016]**

(A) 2 (B) 0.5 (C) 1 (D) 1.5

Q.55 The area of an isosceles trapezium is 176 $cm^2$ and the height is $\frac{2}{11}$th of the sum of its parallel sides. If the ratio of the length of the parallel sides is 4 : 7, then the length of the diagonal (in cm) is **[IOM-2016]**

(A) 28 (B) $2\sqrt{137}$ (C) 24 (D) $\sqrt{137}$

Q.56 The numerical values of the volume and the area of the lateral surface of a right circular cone are equal. If the height of the cone be h and radius be r, the value of $\frac{1}{h^2}+\frac{1}{r^2}$ will be **[IOM-2016]**

(A) $\frac{3}{1}$ (B) $\frac{9}{1}$ (C) $\frac{1}{9}$ (D) $\frac{1}{3}$

## SECTION - D

- **MATCH THE COLUMN**

Q.1

| | **Column-I** | | **Column-II** |
|---|---|---|---|
| (A) | Area of equilateral triangle is | (P) | $\frac{1}{2}$ (Product of sides containing right angles) |
| (B) | Height of an equilateral triangle is | (Q) | $\frac{1}{2}\times$ (Product of diagonals) |
| (C) | Area of rhombus is | (R) | $\frac{1}{2}$ (Sum of parallel sides) $\times$ height |
| (D) | Area of trapezium is | (S) | $\frac{\sqrt{3}}{4}(\text{side})^2$ |
| (E) | Area of right angled triangle is | (T) | $\frac{\sqrt{3}}{2}(\text{side})$ |

Q.2

| | **Column-I** | | **Column-II** |
|---|---|---|---|
| (A) | Volume of a cylinder is | (P) | $\frac{1}{3}\pi r^2h$ |
| (B) | Volume of a Cone is | (Q) | $\frac{4}{3}\pi r^3$ |
| (C) | Volume of a Sphere is | (R) | $\sqrt{h^2+r^2}$ |
| (D) | Slant height of a Cone is | (S) | $\pi r^2h$ |

Q.3

| | **Column-I** | | **Column-II** |
|---|---|---|---|
| (A) | Surface area of a Cylinder is | (P) | $\pi r\sqrt{h^2+r^2}+\pi r^2$ |
| (B) | Surface area of a Cone is | (Q) | $2\pi rh + 2\pi r^2$ |
| (C) | Total surface area of Cone is | (R) | $4\pi r^2$ |
| (D) | Total surface area of the Cylinder is | (S) | $2\pi rh$ |
| (E) | Surface area of a Sphere is | (T) | $\pi r\sqrt{h^2+r^2}$ |

Q.4 Let R and r be the radii of the outer and the inner hemispheres then

| | **Column-I** | | **Column-II** |
|---|---|---|---|
| (A) | Thickness of shell is | (P) | $2\pi R^2$ |
| (B) | Area of base is | (Q) | $2\pi r^2$ |
| (C) | External curved surface area is | (R) | $\pi(3R^2 + r^2)$ |
| (D) | Internal curved surface area is | (S) | $\frac{2}{3}\pi(R^3 - r^3)$ |
| (E) | Total surface area is | (T) | $(R - r)$ |
| (F) | Volume of material is | (U) | $\pi(R^2 - r^2)$ |