VIDYA BHARATI SCHOOL

OLYMPIAD WORKSHEET: December - 2017

GRADE: X

SUBJECT: MATHEMATICS

Q1. The diameter of a sphere is 6 cm. it is melted and drawn into a wire of diameter 2 mm. The length of the wire is.

(a) 12 m (b) 18 m (c) 36 m (d) 66 m

Q2. A metallic sphere a radius 10.5 cm is melted and then recast into small cones, each of radius 3.5 cma nd height 3 cm. The number of such cones is

(a) 43 (b) 126 (c) 21 (d) 130

Q3. A solid is hemispherical at the bottom and conical above. If the surface areas of the two parts are equal, then the ratio of its radius and the height of its conical part is

(a) 1 : 3 (b) $1 : \sqrt{3}$ (c) 1: 1 (d) $\sqrt{3} : 1$

Q4. A solid sphere of radius r is melted and cast into the shape of a solid cone of height r, the radius of the base of the cone is

(a) $2r$ (b) $3r$ (c) r (d) $4r$

Q5. The material of a cone is converted into the shape of a cylinder of equal radius. if height of the cylinder is 5 cm, then height of the cone is

(a) 10 cm (b) 15 cm (c) 18 cm (d) 24 cm

Q6. A circus tent is cylindrical to a height of 4 m and conical above it. If its diameter is 105 m and its slant height is 40 m, the total area of the canvas required in m^2 is

(a) 1760 (b) 2640 (c) 3960 (d) 7920

Q7. The number of solid spheres, each of diameter 6 cm that could be moulded to form a solid metal cylinder of height 45 cm and diameter 4 cm, is

(a) 3 (b) 4 (c) 5 (d) 6

Q8. A sphere of a radius 6 cm is dropped into a cylindrical vessel partly filled with water. The radius of the vessel is 8 cm. If the sphere is submerged completely, then the surface of the water rises by

(a) 4.5 cm (b) 3 cm (c) 4 cm (d) 2 cm

Q9. If the radii of the circular ends of a bucket of height 40 cm are of lengths 3cm and 14cm, then the volume of the bucket in cubic centimeters, is

(a) 60060 (b) 80080 (c) 70040 (d) 80160

Q10. If a cone is cut into two parts by a horizontal plane passing through the mid-point of its axis, the ratio of the volumes of the upper part and the cone is

(a) 1 : 2 (b) 1 : 4 (c) 1 : 6 (d) 1 : 8

Q12. A solid consists of a circular cylinder with an exact fitting right circular cone placed at the top. The height of the cone is h. If the total volume of the solid is 3 times the volume of the cone, then the height of the circular cylinder is

(a) $2h$ (b) $\frac{2h}{3}$ (c) $\frac{3h}{2}$ (d) $4h$

Q13. A reservoir is in the shape of a frustum of a right circular cone. It is 8 m across at the top and 4 m across at the bottom. If it is 6 m deep, then its capacity is

(a) 176 m^3 (b) 196 m^3 (c) 200 m^3 (d) 110 m^3

Q14. Water flows at the rate of 10 metre per minute from a cylindrical pipe 5 mm in diameter. How long will it take to fill up a conical vessel whose diameter at the base is 40 cm and depth 24 cm?

(a) 48 minutes 15 sec (b) 51 minutes 12 sec

(c) 52 minutes 1 sec (d) 55 minutes

Q15. A cylindrical vessel 32 cm high and 18 cm as the radius of the base, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm the radius of its base is

(a) 12 cm (b) 24 cm (c) 36 cm (d) 48 cm

Q16. The curved surface area of a right circular cone of height 15 cma dn base diameter 16 cm is

(a) 6π cm^2 (b) 68π *cm*^{2} (c) 120π cm^2 (d) 136π cm

Q17. A right triangle with side 3 cm, 4 cm and 5 cm is rotated about the side of 3 cm to form a cone. The volume of the cone so formed is

(a) 12π cm^3 (b) 15π cm^3

(c) 16π cm^3 (d) 20π cm^3

Q18. The curved surface area of a cylinder is 264 m^2 and its volume is 924 m^3. The ratio its diameter to its height is

(a) 3 : 7 (b) 7 : 3 (c) 6 : 7 (d) 7 : 6

Q19. A cylinder with base radius of 8 cm and height of 2 cm is melted to form a cone of height 6 cm. The radius of the cone is

(a) 4 cm (b) 5 cm (c) 6 cm (d) 8 cm

Q20. The volumes of two sphere are in the ratio 64 : 27. The ratio of their surface areas is

(a) 12 cm (b) 2 : 3 (c) 9 : 16 (d) 16 : 9