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Section A MCQ – 1 Mark Each

- Q.1 A river 4 cm deep and 36 m wide is flowing at the rate of 3.5 km per hour. The amount of water that runs into the sea per minute is
- (a) 31500 (b) 3150 (c) 3150000 (d) 6300
- Q.2 A metal sheet 125cm long, 8 cm broad and 1 cm thick is melted into a cube. The difference between surface areas of two solids is
- (a) 284 cm^2 (b) 1666 cm^2 (c) 286 cm^2 (d) None of these
- Q.3 The radii of two cylinders are in the ratio 1 : 3 and their heights are in the ratio 5 : 3 . The ratio of their volumes is
- (a) 13: 14 (b) 5 : 3 (c) 27 : 20 (d) 5 : 27
- Q.4 A right circular cylindrical vessel is full of water. How many right cones having the same radius and height as those of the right cylinder will be required to store that water?
- (a) 2 (b) 3 (c) 4 (d) 5
- Q.5 A right circular cylinder of radius r cm and height h cm just encloses a sphere of diameter
- (a) r cm (b) $2r$ cm (c) h cm (d) $2h$ cm

Section B – 2 Mark Each

- Q.6 In the figure, a right circular cylinder just encloses a sphere of radius r . Find curved surface area of the cylinder.



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- Q.7 A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm. The total height of the toy is 31 cm. Find the total surface area of the toy.
- Q.8 If h , c and V respectively are the height, the curved surface area and volume of a cone, prove that $3\pi Vh^3 - c^2h^2 + 9V^2 = 0$.

Section B – 3 Mark Each

- Q.9 A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm. Find the volume of wood in the entire stand.
- Q.10 A hollow cone is cut by a plane parallel to the base and the upper portion is removed. If the curved surface of the remainder is $\frac{8}{9}$ th of the curved surface of the whole cone, find the ratio of the line segments into which the cone's altitude is divided by the plane.

Section B – 4 Mark Each

- Q.11 A lead pencil consists of a cylinder of wood with solid cylinder of graphite filled into it. The diameter of the pencil is 7 mm; the diameter of the graphite is 1 mm and the length of the pencil is 10 cm. Calculate the weight of the whole pencil if the specific gravity of the wood is 0.7 g/cm^3 and that of the graphite is 2.1 g/cm^3 .
- Q.12 A right triangle, whose sides are 3 cm and 4 cm is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed.

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