# NEW STANDARD ACADEMY

**SEMRI KOTHI SUPER MARKET, RAEBARELI**
CLASS 10 (PHYSICS) DPP (Academy) 02/12/2024

1. A cylindrical rod is reformed to twice its length with no change in its volume. If the resistance of the rod was R, the new resistance will be:

2. A wire carries a steady current of 1.0 A over a period of 20s. What total charge passes through the wire in this time interval?

3. The length of a wire is doubled and the radius is doubled. By what factor does the resistance change?

4. A 24 V potential difference is applied across a parallel combination of four 6 ohm resistor. The current in each resistor is:

5. Three resistances of 2, 3 and 5 Ω are connected in parallel to a 10 V battery of negligible internal resistance. The potential difference across the 3 Ω resistance will be:

6. You are given n identical wires, each of resistance R. When these are connected in parallel, the equivalent resistance is X. When these will be connected in series, then the equivalent resistance will be

7. Charge on an electron is 1.6×10^{-19} coulomb. Number of electrons passing through the wire per second on flowing of 1 ampere current through the wire will be

8. Three resistors of 4.0Ω, 6.0 Ω and 10.0 Ω are connected in series. What is their equivalent resistance :

9. Ampere-second stands for the unit of:

10. Three resistors are connected to form the sides of a triangle ABC as shown below. The resistance of side AB is 40 ohms, of side BC 60 ohms
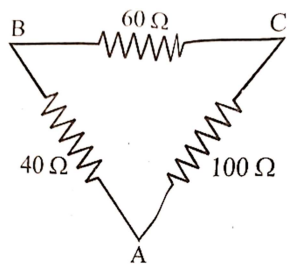

and of side CA 100 ohms. The effective resistance between A and B will be

11. If one micro-amp. current is flowing in a wire, the number of electrons which pass from one end of the wire to the Which other end in one second is:

12. If the temperature of a conductor is increased, its resistance will:

13. There are two wires of the same length and of the same material and radius r and 2r. The ratio of their specific resistance is:

14. The resistance 4 R, 16 R, 64 R,….. ∞ are connected in series, their resultant will be:

15. Resistance R, 2 R, 4R, 8 R.. are connected in parallel. Their resultant resistance will be:

16. The equivalent resistance between points X & Y
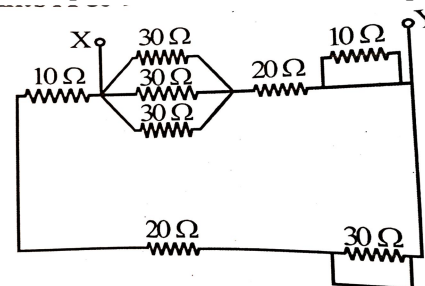
17. The equivalent resistance between points X & Y
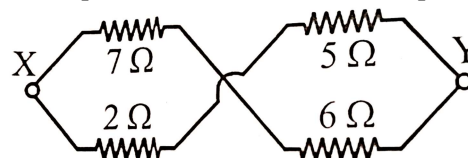
18. A certain wire has a resistance R. The resistance of another wire identical with the first except having twice its diameter is:

19. Masses of 3 wires of same metal are in the ratio 1:2:3 and their lengths are in the 3:2:1. The electrical resistances are in ratio:

20. A solenoid is at potential difference 60 V and current flows through it is 15 ampere, then the resistance of coil will be

1. Name the product other then water formed on burning ethanol in air.
2. Name the organic compound that can be produced by fermentation of sugar.
3. Write (i) the name and (ii) formula of the functional group present in the following compounds :
   (a) CH_3CH_2OH (B) C_2H_5Br (C) CH_3COOH
4. Which gas will be evolved if sodium carbonate is added to a solution of tartaric acid ?
5. Which of the following are carboxylic acids ?
   $$C_2H_6O, CH_4O, C_2H_4O_2, C_3H_6O_2$$
6. Draw the electron dot structures of:
   $$CO_2, N_2, C_2H_2, C_2H_4, C_2H_6, CH_4$$
7. Mention the percentage of carbon in earth's crust.
8. Carbon does not form ionic compounds. Why?
9. Why are covalent compounds generally poor conductors of electricity?
10. Draw the structure of $C_4H_9 CHO$
11. How is ethanoic acid obtained from ethanol?
12. Name the gas evolved when (a) Ethanol reacts with sodium, (b) Ethanoic acid reacts with sodium carbonate or sodium hydrogen carbonate.
13. What happens when ethanol (a) is heated with conc. H_2SO_4 at 443 K (b) is warmed with ethanoic acid and conc. H_2SO_4 ?
14. What is the difference between hydrolysis of an ester and saponification?
15. Explain the terms. (a) rectified spirit, (b) absolute alcohol, (c) denatured alcohol.
16. How do you test an alcohol ?
17. What substance is used to convert ethanol to ethene?
18. Which substance should be oxidised to obtain ethanoic acid ?
19. What is glacial acetic acid.
20. While cooking, if bottom is getting blackened on the outside, what does it indicate?

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1. Two cubes each of volume 27 cm³ are joined end to end. Find the surface area of the resulting cuboid.

2. The adjoining figure shows a medicine capsule, which is in the shape of a cylinder with two hemispheres stuck to each of its ends. If the length of the capsule is 14 mm and the diameter of the capsule is 5 mm, find its surface area.
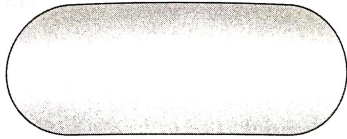

3. In the adjoining figure, a tent is in the shape of a cylinder surmounted by a conical top. The cylindrical part is 2.1 m high and the conical part has slant height 2.8 m. Both the parts have same radius 2 m. Find the area of the canvas used in making the tent. (use $\pi = \frac{22}{7}$).
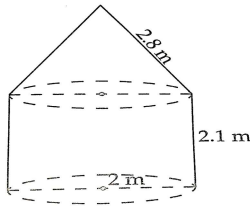

4. In the adjoining figure, a sphere is inscribed in a cylinder, prove that the surface of the sphere is equal to the inner curved surface of the cylinder.
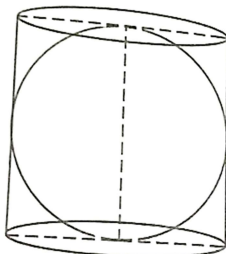
5. A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy. If a right circular cylinder circumscribes the toy (shown in the adjoining figure), find the difference of the volumes of the cylinder and the toy. (Take $\pi = 3.14$)
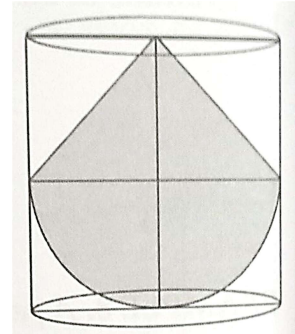

6. If the volume and the (curved) surface area of a hemisphere are numerically equal, then what is the length of diameter of hemisphere?

7. Two right circular cones have their heights in the ratio 1 : 3 and radii in the ratio 3:1, what is the ratio of their volumes?

8. The curved surface area of a right circular cylinder is 176 cm² and its volume is 1232 cm³ What is the height of cylinder?

9. From solid cube of side 7 cm, a conical cavity of height 7 cm and radius 3 cm is hollowed out. Find the volume of the remaining solid.

10. 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 depression is 0.5 cm and the depth is 1.4 cm. Find the volume of the wood in the entire stand.

11. The wheels of a car are of diameter 80 cm each. How many complete revolutions does each wheel make in 10 minutes when the
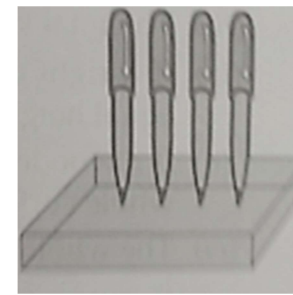
car is is travelling at a speed of 66 km/h?

12. Two circles touch externally. The sum of their areas is 58π/cm² and the distance between their centres is 10 cm. Find the radii of the two circles.

13. Find the circumference of the circle whose area is 16 times the area of the circle with diameter 7 cm.

14. The area of a circular ring enclosed between two concentric circles is 286cm². Find the radii of the two circles, given that their difference is 7 cm.

15. Find the area of the sector of a circle with radius 4 cm and of angle 30°. Also, find the area of the corresponding major sector (use π = 3.14).

16. A piece of wire 20 cm long is bent into the form of an arc of a circle subtending an angle of 60° at its centre. Find the radius of the circle
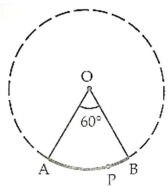
17. An umbrella has 8 ribs which are equally spaced (shown in the adjoining figure). Assuming the umbrella to be a flat circle of radius 45 cm, find the area between its two consecutives ribs.
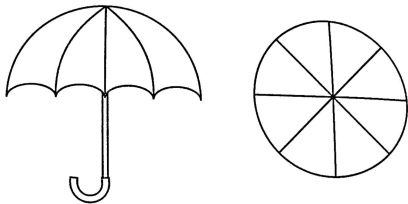

18. A piece of wire 22 cm long is bent into the form of an arc of a circle subtending an angle of 60° at its centre. Find an radius of the circle. Use π = 22/7

19. In the figure (i) given below, two concentric circles with centre O are shown. Radii of the circles are 2 cm and 5 cm. Find the area of the shaded region.
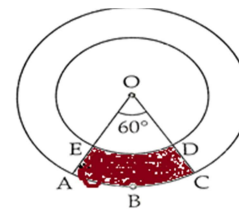
(i)

20. Find the area of the shaded region in the adjoining figure, where radii of the two concentric circles with centre O are 7 cm and 14 cm respectively and ∠AOB = 40°.
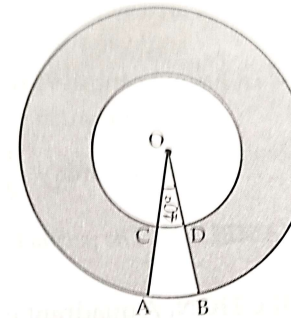
NEW STANDARD ACADEMY

SEMRI KOTHI SUPER MARKET, RAEBARELI
CLASS 10 (BIOLOGY) DPP (Academy) 02/12/2024

1. What do you mean by molecular movement? How is it necessary for living organisms?
2. Mention different modes of nutrition in various organisms.
3. What do you mean by double circulation of blood in human heart?
4. State function of (a) Hydrochloric acid (b) Pancreatic secretion in human digestive system.
5. What are the components of xylem?
6. Write one function of the following organs in human digestive system?
   (a) Tongue

   (b) Oesopnagus

   (c) Gall bladder

   (d) Pancreas
7. What is the difference between hormones and enzymes?
8. Explain viruses are connecting link between living and non-living being
9. "The herbivores have longer small intestine than the carnivores" justify the statement.
10. What do you mean by 'lubb' and 'dubb'?
11. List two different functions performed by pancreas in our body.
12. In the experimental set-up to show that "CO_2 is given out during respiration", name the substance taken in the smallest test tube kept in the conical flask, State its function and the consequences of its use
13. Define the terms 'nutrition' and 'nutrients' List two differences between 'holozoic nutrition' and 'saprophytic nutrition'. Give two examples of each of these two types of nutrition.
14. Give reasons for the following:
    (i) The glottis is guarded by epiglottis.

    (ii) The lung alveoli are covered with blood capillaries.

    (iii) The wall of trachea is supported by cartilage rings.
15. Write the function of the following in the digestive process:
    (i) Bile

    (ii) Bicarbonate ions secreted by the duodenal wall.

    (iii) Pancreatic amylase.
16. Mention the sequential pathway of main organs of the digestive system in human.
17. How are stomata and lenticels different structurally but physiologically same?
18. Transpiration is a necessary evil'. Justify.
19. Describe the comparative account of artery, vein and capillary.
20. What is the function of pulmonary vein and pulmonary artery?
21. Describe the two pathways of oxidation of glucose in organisms