

NEW STANDARD ACADEMY

SEMRI KOTHI SUPER MARKET, RAEBARELI
CLASS 10 (PHYSICS) DPP (Academy) 25 /11/2024

1. A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object placed from the lens? Draw the ray diagram.
2. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position and nature of the image.
3. The magnification produced by a plane mirror is +1. What does this mean?
4. An object 5.0 cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30 cm. Find position of the image, its nature and size.
5. An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed so that a sharp focussed image can be obtained? Find the size and the nature of the image.
6. Find the focal length of lens of a lens of power -2.0 D. What type of lens is this?
7. A doctor has prescribed a corrective lens of power =1.5 D. Find the focal length of the lens. Is the prescribed lens diverging or converging?
8. Define the principal focus of a concave mirror.
9. The radius of curvature of a spherical mirror is 20 cm. What is focal length?
10. Name a mirror that can give an erect and magnified image of an object.
11. Why do we prefer a convex mirror as a rear-view mirror in vehicles?
12. Find the focal length of a convex mirror whose radius of curvature is 32 cm.
13. A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located?
14. A ray of light travelling in air enters obliquely into water. Does the light ray bend towards the normal or away from the normal? Why?
15. Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass? The speed of light in vacuum is $3 \times 10^8 \text{ ms}^{-1}$
16. You are given kerosene, turpentine and water. In which of these does the light travel faster?
17. The refractive index of diamond is 2.72. What is the meaning of this statement?
18. Define 1 dioptre of power of a lens.
19. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object? Also find the power of the lens.
20. Find the power of a concave lens of focal length.

NEW STANDARD ACADEMY

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CLASS 10 (Chemistry) DPP (Academy) 25 /11 /2024

1. Explain the nature of covalent bond using the bond formation in CH_3Cl .
2. Draw the electron dot structure for (a) ethanoic acid (b) H_2S (c) propanone (d) F_2 .
3. What is a homologous series? Explain with example.
4. How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties?
5. Which of the following hydrocarbons undergo addition reaction?
 C_2H_6 , C_3H_8 , C_3H_6 , C_2H_2 and CH_4
6. Name the product other than water formed on burning ethanol in air.
7. Name the organic compound that can be produced by fermentation of sugar.
8. Write (i) the name and (ii) formula of the functional group present in the following compounds:
(a) $\text{CH}_3\text{CH}_2\text{OH}$ (B) $\text{C}_2\text{H}_5\text{Br}$ (C) CH_3COOH
9. Which gas will be evolved if sodium carbonate is added to a solution of tartaric acid?
10. Which of the following are carboxylic acids?
 $\text{C}_2\text{H}_6\text{O}$, CH_4O , $\text{C}_2\text{H}_4\text{O}_2$, $\text{C}_3\text{H}_6\text{O}_2$
11. Draw the electron dot structures of:
 CO_2 , N_2 , C_2H_2 , C_2H_4 , C_2H_6 , CH_4
12. Mention the percentage of carbon in earth's crust.
13. Carbon does not form ionic compounds. Why?
14. Why are covalent compounds generally poor conductors of electricity?
15. Draw the structure of $\text{C}_4\text{H}_9\text{CHO}$
16. Out of the compounds-ethane and ethene, which is more reactive? Give reason for your answer.
17. How does boiling point and melting point of hydrocarbons change with increase in molecule mass?
18. Name the fourth member of alkene and alkyne.
19. Why do the bottoms of cooking vessels get blackened?
20. Name the gas which is major component of bio gas.

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CLASS 10 (MATH'S) DPP (Academy) 25/11/2024

1. Which term of the AP : 3, 15, 27, 39,.... Will be 120 more than its 21st term ?
2. The sum of three number in AP is 12 and the sum of their cubes is 288. Find the number.
3. The angles of a triangle are in AP. The greatest angle is twice the least . Find all the angle of the triangles.
4. The nth term of an AP cannot be $3n^2+5$. Justify your answer.
5. Find the value of x when $2 + 6+10+... + x = 1800$
6. A spherical canon ball, 28 cm in diameter is melted and cast into a right circular conical mould, the base of which is 35 cm in diameter. Find the height of the cone, correct to one placed of decimal.
7. A room is half as long again as it is broad. The cost of carpeting the room at – j 3.25 per m^2 is – j 175.50 and the cost of papering the walls at – j 1.40 per m^2 is – j 240.80. If 1 door and 2 windows occupy $8 m^2$, find the dimensions of the room.
8. An agricultural field is in the form of a rectangle of length 20 m and width 14 m. A pit 6 m long, 3 m wide and 2.5 m deep is dug in a corner of the field and the earth taken out of the pit is spread uniformly over the remaining area of the field. Find the extent to which the level of the field has been raised.
9. A wooden toy is in the form of a cone surmounted on a hemisphere. The diameter of the base of the cone is 6 cm and its height is 4 cm. Find the cost of painting the toy at the rate of – j 5 pr 1000 cm^2 .
10. A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm, find the volume of the wooden toy.
11. Find what length of canvas 2m in width is required to make a conical tent 20 m in diameter and 42m in slant height allowing 10% for folds and stitching. Also find the cost of canvas at the rate of – j 60 per metre.
12. From a solid cylinder whose height is 8 cm and radius is 6 cm, a conical cavity of height 8 cm and of base radius 6 cm, is hollowed out. Find the volume of the remaining solid correct to 4 significant figures. ($\pi = 3.1416$). Also find the total surface area of the remaining solid.
13. The entire surface of solid cone of base radius 3 cm and height 4 cm is equal to the entire surface of a solid right circular cylinder of diameter 4 cm. Find the ratio of (i) their curved surface; (ii) their volumes.
14. An open cylinder vessel of internal diameter 7 cm and height 8 cm stands on a horizontal table. Inside this is placed a solid metallic right circular cone, the diameter of whose base is $\frac{7}{2}$ cm and height 8 cm. Find the volume of water required to fill the vessel.
15. A right circular cone of height 20 cm and base diameter 30 cm is cast into smaller cones of equal sizes with base radius 10 cm and height 9 cm. Find how many cones are made.
16. A sphere of diameter 6 cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is completely submerged in water, by how much will the level of water rise in the cylindrical vessel ?
17. An iron pillar has some part in the form of a right circular cylindrical and the remaining in the form of a right circular cone. The radius of the base of each of the cone and cylinder is 8 cm. The cylindrical part is 240 cm high and the conical part is 36 cm high. Find the weight of the pillar if one cu cm of iron weights 7.8 grams.
18. A hemispherical bowl of internal diameter 36 cm contains a liquid. This liquid is to be filled in cylindrical bottles of radius 3 cm and height 6 cm. How many bottles are required to empty the bowl?
19. If the radius of the base of a right circular cylinder is halved, keeping the height same, find the ratio of the volume of the reduced to that of the original cylinder.
20. A toy is in the form of a cone mounted on a hemisphere of radius 3.5 cm. The total height of the toy is 15.5 cm. Find the total surface area and the volume of the toy.

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CLASS 10 (BIOLOGY) DPP (Academy) 25/11 /2024

1. What is heterotrophic nutrition?
2. How is holozoic nutrition classified based on the source of food?
3. What is nutrition?
4. What is peristalsis in the process of digestion?
5. Differentiate between herbivores and carnivores.
6. What is meant by fluid feeding?
7. What is alimentary canal?
8. What are the various organs of alimentary canal?
9. What is chyme?
10. What are teeth?
11. Differentiate between milk teeth and permanent teeth.
12. Give the dental formula for milk and permanent teeth.
13. What are the three parts of tooth?
14. What is crown in the tooth?
15. Give the functions of carbohydrates.
16. Why the food needs to be digested?
17. Differentiate between scavengers and Omnivores.
18. Write a short note on mouth in humans.
19. What are the two important modes of nutrition?
20. Why it is said that animals derive energy ultimately from the sun?