

Sample-Paper

11th Maths

1. If 'n' is a natural number, then $9^{2n} - 4^{2n}$ is always divisible by
(a) 6 (b) 13 (c) 18 (d) 20
(b)
2. Determine the number nearest to 10,000 but greater than 9000 which is exactly divisible by each of 8, 15, and 21.
(a) 9140 (b) 9240 (c) 9004 (d) 9230
(b)
3. If 'α' and 'β' are the zeroes of quadratic polynomial $f(x) = x^2 - x + 3$, then find a quadratic polynomial whose zeroes are $3\alpha + 1, 3\beta + 1$.
(a) $x^2 - 5x + 31$ (b) $x^2 + 5x - 31$ (c) $x^2 + 4x + 27$ (d) $x^2 - 4x + 27$
(a)
4. If 'α' and 'β' are the zeroes of quadratic polynomial $f(x) = x^2 - x + 1$, then value of $\alpha^2/\beta^2 + \beta^2/\alpha^2$ is
(a) 1 (b) -1 (c) 2 (d) -2
(b)
5. If $f(x) = (x - 2)(x^2 - x - a)$, $g(x) = (x + 2)(x^2 + x - b)$ and their HCF is $x^2 - 4$, then find the value of $(a - b)$
(a) 2 (b) 3 (c) -4 (d) 0
(d)
6. For what value of K, will the following system of equations have infinitely many solutions?
$$2x + 3y = 4$$
$$(k + 2)x + 6y = 3k + 2$$

(a) 1 (b) 2 (c) 3 (d) 4
(b)
7. Solve for x: $-9(a + b)x + (5ab + 2a^2 + 2b^2) + 9x^2 = 0$
(a) a, b (b) $\frac{2a+b}{3}, \frac{a+2b}{3}$ (c) a/2, b/3 (d) a, 2b
(b)
8. If the sum of squares of two natural number is 89, and one number is greater than other by 3, then find both numbers
(a) 8, 11 (b) 6, 9 (c) 5, 8 (d) 11, 14
(c)
9. Divide 42 into four parts which are in A.P. such that the ratio of product of extremes to the product of means is 27:52

- (a) 2,6,10,14 (b) 8,10,12,14 (c) 3,8,13,18 (d) 4,8,12,16
- (c)
- 10.** In what ratio does the Y-axis divide the line segment joining the points P(-4,5) and Q(3,-7)?
- (a) 8:3 (b) 4:3 (c) 1:2 (d) 1:5
- (b)
- 11.** ABCD is a quadrilateral such that $\angle D = 90^\circ$. A circle with centre O, and radius r, touches the sides AB, BC, CD, and DA at P, Q, R, and S respectively. If BC = 35, CD = 26, and BP = 25, Find r.
- (a) 14 (b) 15 (c) 16 (d) 17
- (c)
- 12.** The radii of two concentric circles are 13cm, and 8cm. AB is a diameter of a bigger circle. BD is a tangent to the smaller circle touching it at D. Find AD.
- (a) 17 (b) 19 (c) 21 (d) 23
- (b)
- 13.** If $\tan(x) + \cot(x) = 2$, find the value of $\tan^5(x) + \cot^5(x) + 2$
- (a) 2 (b) 3 (c) 4 (d) 5
- (c)
- 14.** $\cos^4(a) - \sin^4(a)$ is equal to
- (a) $2\cos^2(a) + 1$ (b) $2\cos^2(a) - 1$ (c) $2\sin^2(a) - 1$ (d) $2\sin^2(a) + 1$
- (b)
- 15.** A person standing on the bank of a river, observes that the angle subtended by a tree on the opposite bank is 60° . When he retreats 20m from the bank, he finds the angle to be 30° . Find the height of the tree and the breadth of the river.
- (a) 10, $10\sqrt{3}$ (b) 20, 40 (c) 5, $5\sqrt{3}$ (d) 15, 30
- (a)
- 16.** The angle of elevation of a cloud from a point 60m, above a lake is 30° and the angle of depression of the reflection of cloud in the lake is 60° . Find the height of the cloud.
- (A) 60m (b) 120m (c) 180m (d) 240m
- (b)
- 17.** The diameter of the driving wheel of a bus is 140cm. How many revolutions per minute must the wheel make in order to keep up a speed of 66km per hour?
- (a) 100 (b) 200 (c) 250 (d) 300
- (c)
- 18.** A hollow sphere of internal and external diameters 4cm and 8cm respectively is melted into a cone of base diameter 8cm. The height of cone is
- (a) 12cm (b) 14cm (c) 15cm (d) 18cm
- (b)
- 19.** The mean of 'n' observations is X. If the first item is increased by 1, second by 2 and so on, then new mean is -
- (a) $X + n$ (b) $X + n/2$ (c) $X + (n + 1)/2$ (d) $X + (n + 1)/4$
- (c)

20. If a number x is chosen from the number 1, 2, 3 and a number y , is selected from the numbers 1, 4, 9. Then $P(xy < 9)$ is
- (a) $7/9$ (b) $5/9$ (c) $2/3$ (d) $1/9$
- (b)

11th Chemistry

1. In the reaction $Mg + Cl_2 \rightarrow MgCl_2$ Chlorine may be regarded as–
- (a) an oxidising agent (b) a reducing agent
(c) a catalyst (d) providing an inert medium
- Ans : A
2. The decomposition of $KClO_3$ to KCl and O_2 on heating is an example of
- (a) Intermolecular redox change
(b) Intramolecular redox change
(c) Disproportionation or auto redox change
(d) None of the above
- Ans : B
3. Electrolyte liquid may include.
- (a) Solutions (b) Molten solid
(c) Gases (d) Both A & B
- Ans : D
4. Common name of H_2SO_4 is–
- (a) Oil of vitriol (b) Muriatic acid (c) Blue vitriol (d) Green vitriol
- Ans : A
5. The strength of the acid depends on the–
- (a) number of hydrogen atoms present in the molecule.
(b) Nitrogen content.
(c) density.
(d) concentration of hydrogen ions furnished by ionisation.
- Ans : D
6. Dobereiner's triad arranged the element with similar properties into:
- (a) Periods (b) Groups
(c) Both period and groups (d) None of these
- Ans : B
7. Elements in the same vertical column of the periodic table have same–

- (a) number of electrons (b) atomic number
 (c) number of valence electrons (d) electronic configurations

Ans : C

8. Which of the following represents the electronic configuration of d-block elements?

- (a) $(n-1)s^2 nd^{1-10}$ (b) $(n-1)d^{1-10} ns^{0-2}$
 (c) $(n-1)d^{1-10} ns^2 p^4$ (d) $(n-1)p^4 ns^2$

Ans : B

9. A solution has pH 9. On dilution the pH value.

- (a) decreases (b) increases (c) remain same (d) none of these

Ans : A

10. By product obtained in Solvay process is—

- (a) Na_2CO_3 (b) $CaCO_3$ (c) $Ca(OH)_2$ (d) $CaCl_2$

Ans : D

11. Non metallic oxides react with water to form.

- (a) alkaline solution (b) acidic solution
 (c) neutral solution (d) None of these

Ans : B

12. The metal with highest melting point is—

- (a) Fe (b) W (c) Ga (d) Al

Ans : B

13. Graphite is used in making electrodes because:

- (a) It has high melting point (b) It is soft and slippery
 (c) It is a good conductor of electricity (d) None of these

Ans : C

14. Write down the general formula of homologous series whose third homologue is C_4H_6 ?

- (a) $C_n H_{2n-2}$ (b) $C_n H_{2n+2}$ (c) $C_{n+1} H_{2n-2}$ (d) $C_n H_{2n+1}$

Ans : A

15. Power alcohol contains—

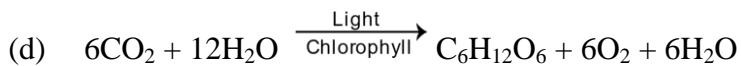
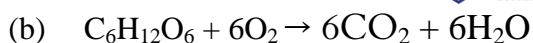
- (a) 50% petrol and 50% ethanol (b) 80% petrol and 20% ethanol
 (c) 25% petrol and 75% ethanol (d) 70% petrol and 30% ethanol

Ans : B

11th Biology

1. Which of the following equations most accurately sums up the photosynthesis?

- (a) $CO_2 + H_2O \xrightarrow{\text{Light}} CH_2O + O_2$



(d)

2. The internal (cellular) energy reserve in autotrophs

(a) glycogen

(b) protein

(c) starch

(d) fatty acid

(c)

3. Which of the following organisms have parasitic mode of nutrition?

(a) Penicillium

(b) Plasmodium

(c) Paramecium

(d) Agaricus

(b)

4. Which of the following is an abiotic component of an ecosystem?

(a) Bacteria

(b) Plants

(c) Fungi

(d) Humus

(d)

5. Which of the following belongs to the category of primary consumers?

(a) Eagle and snake

(b) Grasshopper and cattle

(c) Snake and frog

(d) Water beetle and fish

(b)

6. The depletion of ozone shield is due to

(a) chlorofluorocarbons

(b) oxides of nitrogen

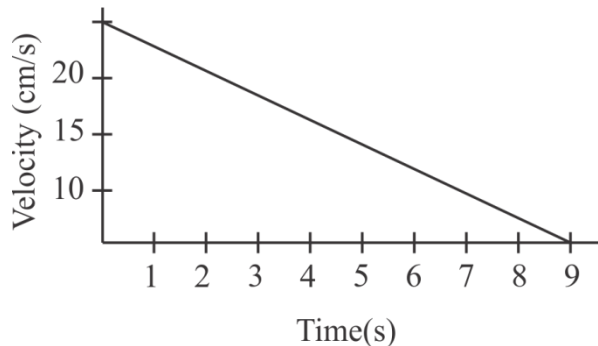
- (c) methane
(d) all of these
(d)
7. IUCD is for
(a) vegetative propagation
(b) contraception
(c) increasing fertility
(d) avoiding miscarriage
(b)
8. _____ contains the digestive enzymes that help in dissolving the outer coating of the female gamete.
(a) Acrosome (b) Tail
(c) Middle piece (d) Prostate gland
(a)
9. Which of the following is a contraceptive device?
(a) Copper-T
(b) Condom
(c) Diaphragm
(d) All of these
(d)
10. Which of the following rivers is contaminated in the towns of U.P., Bihar and West Bengal?
(a) Godavari (b) Krishna
(c) Ganga (d) Penna
(c)
11. Which of the following communities of Rajasthan has been a religious tenet of conservation of forest and wildlife?
(a) Jain (b) Jaiswal
(c) Agarwal (d) Bishnoi
(d)
12. A feature of reproduction that is common to Amoeba, yeast and spirogyra is
(a) They reproduce asexually (b) They all are unicellular
(c) They reproduce only sexually (d) They all are multicellular
(a)
13. An organism with two unlike genes for a trait is called

- (a) homozygous (b) heterozygous
(c) wild variety (d) dominant variety
(b)
14. Mendel conducted his famous breeding experiments by working on
(a) Drosophila
(b) Pisum sativum
(c) Escherichia coli
(d) all of these
(b)
15. If a plant is heterozygous for tallness, the F_2 generation has both tall and dwarf plants. This proves the principle of
(a) dominance
(b) segregation
(c) independent assortment
(d) none of these.
(b)
16. The directional movement or orientation of a plant part in response to light is termed as
(a) chemotropism
(b) phototropism
(c) thigmotaxis
(d) photoperiodism.
(b)
17. Name of the plant hormone which acts as plant growth inhibitor.
(a) Auxin
(b) Gibberellin
(c) Abscisic acid
(d) Cytokinin
(c)
18. Seismonastic movements are shown by which plant?
(a) Indian telegraph plant
(b) 'Touch-me-not' plant
(c) Cucumber plant

- (d) Rose plant
- (b)
19. A segment of DNA providing information for a protein is called
- (a) nucleus (b) chromosomes
- (c) trait (d) gene
- (d)
20. Which of the following is a reflex action?
- (a) Coughing
- (b) Blinking of eyes
- (c) Knee-jerk
- (d) All of these
- (d)

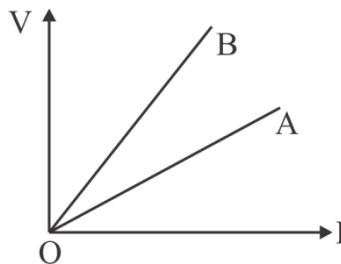
11th Physics

1. A person has a hearing range from 20Hz to 20KHz. The typical wavelengths of sound waves in air corresponding to these two frequencies are (speed of sound in air = 344m/s)-
- (a) 1.72 m, 1.72mm (b) 17.2m, 17.2mm
- (c) 17.2m, 1.72mm (d) None of these
- (d)
2. The velocity time graph of a ball of mass 20gm moving along a straight line on a long table is given in figure. The force exerted by the table on the ball to bring it to rest is-



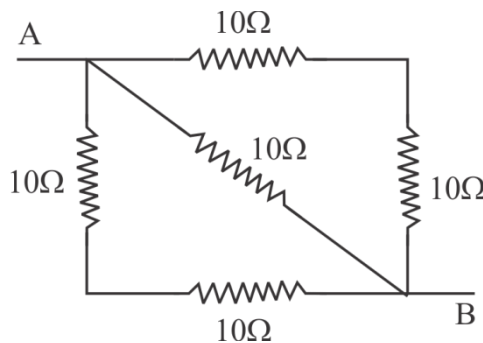
- (a) $-5.5 \times 10^{-2} \text{ N}$ (b) $8.5 \times 10^8 \text{ N}$ (c) $-2.5 \times 10^4 \text{ N}$
- (d) $6.5 \times 10^8 \text{ N}$
- (a)

3. V-I graph for parallel and series combinations for two identical resistors are as shown in figure. Which graph represents parallel combination-



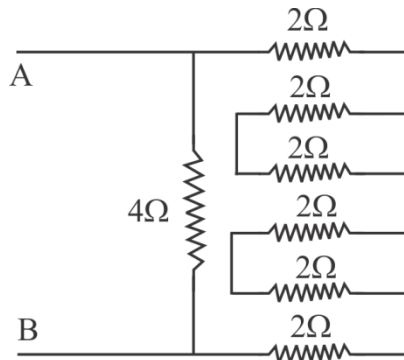
- (a) A (b) B (c) A and B both
(d) None of the above
- (a)
4. A coin kept inside water ($\mu = \frac{4}{3}$) when viewed from air in a vertical direction, appears to be raised by 2.0mm. The depth of the coin in water is-
- (a) 8.00 mm (b) 6.00 mm (c) 8.00 cm
(d) 6.00 cm

- (a)
5. The equivalent resistance of the given circuit between points A and B is



- (a) 40 Ω (b) 4 Ω (c) 5 Ω (d) 0.2 Ω
- (c)
6. Focal length of a convex lens is +40 cm. The power of this lens will be
- (a) + 4 dioptre (b) + 2.5 dioptre (c) + 40 dioptre
(d) +25 dioptre
- (b)

7. Two bulbs A and B are rated 100 W, 120V and 10W, 120V respectively. They are connected across a 120V source in series. Which bulb will consume more power-
- (a) A (b) B (c) both equally (d) Nothing can be said
8. Which of the following is correct-
- (a) $\lambda_{\text{blue}} > \lambda_{\text{yellow}} > \lambda_{\text{green}}$ (b) $\lambda_{\text{yellow}} > \lambda_{\text{green}} > \lambda_{\text{blue}}$
 (c) $\lambda_{\text{yellow}} > \lambda_{\text{blue}} > \lambda_{\text{green}}$ (d) $\lambda_{\text{green}} > \lambda_{\text{blue}} > \lambda_{\text{yellow}}$
9. The magnetic field inside a long straight current carrying solenoid-
- (a) is zero (b) *decreases as we move towards its end*
 (c) Increases as we move towards its end (d) is same at all points
10. Which defect in human eye arises due to the irregularities in spherical shape of cornea?
- (a) Cataract (b) Hypermetropia
 (c) Myopia or short sightedness (d) Astigmatism
11. What is the equivalent resistance between A and B.



- (a) 16 Ω (b) 1 Ω (c) 7 Ω (d) 3 Ω
- (d)

12. The voltage can be written as:

(a) Work done \times charge \times time

(b) $\frac{\text{Work done} \times \text{time}}{\text{Current}}$

(c) $\frac{\text{Work done}}{\text{Current} \times \text{time}}$

(d) Work done \times charge

(c)

13. Ocean thermal energy is due to:

(a) Energy stored by waves in the ocean
different levels in the ocean.

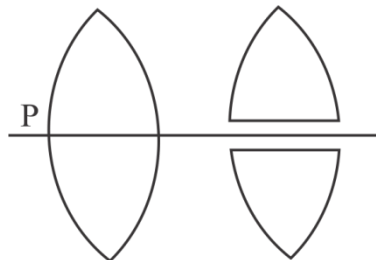
(b) Pressure difference at

(c) Tides arising out in the ocean
difference at different levels in the oceans.

(d) Temperature

(d)

14. If a symmetrical convex lens of focal length 'f' is cut into two parts along the principal axis as shows in the figure, the focal length of each part will be



(a) $f/2$

(b) $f/4$

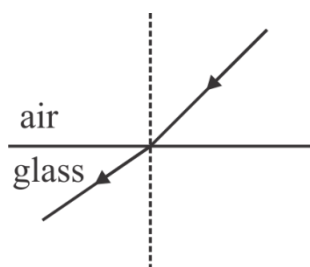
(c) f

(d)

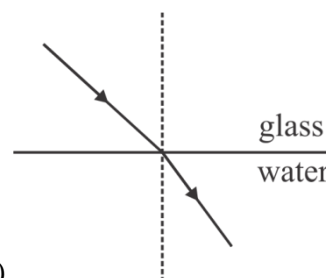
∞

(c)

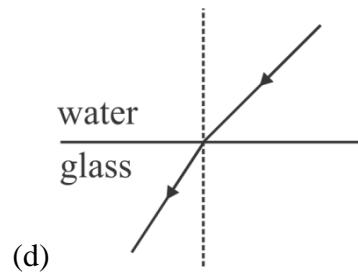
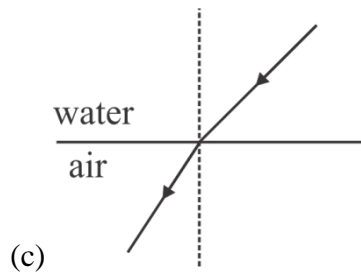
15. Which of the following ray diagrams, show the correct refraction of ray of light



(a)



(b)



(d)