Physics

1. A body is dropped from a height of 20 m. How long will it take to reach the ground?

a) 1 s

b) 2 s

c) 3 s

d) 4 s

Answer: b) 2 s

2. What is the unit of electric field?

a) Volt

b) Volt/meter

c) Coulomb

d) Ampere

Answer: b) Volt/meter

3. Which of the following has the maximum wavelength?

a) Gamma rays

b) UV rays

c) Infrared rays

d) Radio waves

Answer: d) Radio waves

4. Which law is used to find the direction of force on a current-carrying conductor in a magnetic field?

a) Ampere's law

b) Lenz's law

c) Fleming's left-hand rule

d) Right-hand thumb rule

Answer: c) Fleming's left-hand rule

5. A concave mirror forms an image at the same point as the object. The object is at:

a) Focus

b) Center of curvature

c) Between F and C

d) Beyond C

Answer: b) Center of curvature

6. Which of the following quantities is a vector?

a) Speed

b) Mass

- c) Work
- d) Acceleration

Answer: d) Acceleration

7. A 100 W bulb is used for 10 hours. How much energy is consumed?
a) 1 kWh
b) 10 kWh
c) 100 kWh
d) 0.1 kWh
Answer: a) 1 kWh

8. The resistance of a wire is doubled when:

- a) Length is doubled
- b) Area is doubled
- c) Length is halved
- d) Area is halved
- Answer: a) Length is doubled

9. Which device converts electrical energy into mechanical energy?

- a) Generator
- b) Transformer
- c) Electric motor
- d) Battery
- Answer: c) Electric motor
- 10. Which of the following is not a unit of pressure?
- a) N/m²
- b) Pascal
- c) Bar
- d) Newton
- Answer: d) Newton
 - 11. Which of the following is a scalar quantity?
 - a) Velocity
 - b) Force
 - c) Work
 - d) Acceleration
 - Answer: c) Work
 - 12. What is the SI unit of power?
 - a) Watt
 - b) Joule
 - c) Newton
 - d) Volt
 - Answer: a) Watt

13. Which phenomenon explains the formation of a rainbow?

a) Reflectionb) Refractionc) Diffractiond) DispersionAnswer: d) Dispersion

14. The time period of a pendulum depends on:

a) Massb) Lengthc) Amplituded) VelocityAnswer: b) Length

15. 1 kWh equals:

- a) 3600 J b) 1000 J c) 3.6 × 10⁶ J d) 360 J Answer: c) 3.6 × 10⁶ J
- 16. In a vacuum, light travels at a speed of:
 - a) 3 × 10⁸ m/s b) 3 × 10⁶ m/s
 - c) 3 × 10⁵ km/s
 - d) Both a and c

Answer: d) Both a and c

- 17. Ohm's law is given by:
 - a) V = IR b) P = VI c) V = I/R d) R = V + I Answer: a) V = IR

18. Heat is a form of:

- a) Mass
- b) Work
- c) Energy
- d) Force
- Answer: c) Energy
- 19. Which mirror is used in vehicle side mirrors?
 - a) Concave

- b) Convexc) Planed) NoneAnswer: b) Convex
- 20. Frequency is measured in:
 - a) Hertz
 - b) Watt
 - c) Volt
 - d) Joule

Answer: a) Hertz

Chemistry

- 1. Which of the following is a noble gas?
 - a) Nitrogen
 - b) Chlorine
 - c) Argon
 - d) Oxygen

Answer: c) Argon

- 2. pH of a neutral solution at 25°C is:
 - a) 0 b) 7 c) 14 d) 1 Answer: b) 7
- 3. Which of the following is an example of an exothermic reaction?
 - a) Photosynthesisb) Evaporationc) Combustiond) Melting of iceAnswer: c) Combustion
- 4. Atomic number of oxygen is:
 - a) 6
 - b) 7
 - c) 8 d) 9
 - Answer: c) 8
- 5. The formula of calcium phosphate is:
 - a) Ca₃(PO₄)₂
 - b) CaPO₄

c) Ca₂(PO₄)₃ d) Ca(PO₄)₂ Answer: a) Ca₃(PO₄)₂

6. Which metal is stored under kerosene?

- a) Sodium
- b) Calcium
- c) Iron
- d) Zinc

Answer: a) Sodium

7. The number of electrons in an oxygen atom is:

a) 6

b) 7

c) 8

d) 9

Answer: c) 8

8. Which compound is used in bleaching?

- a) CaO
- b) NaCl
- c) CaOCl₂
- d) HCI
- Answer: c) CaOCl₂

9. Which of the following is an alkali?a) HCIb) NaOH

- c) CH₃COOH
- d) H₂SO₄
- Answer: b) NaOH
- 10. The formula of ammonium nitrate is:
- a) NH₄NO₃
- b) NH₄OH
- c) NO₂NH₄
- d) NH₃NO₃
- Answer: a) NH₄NO₃
 - 11. Which gas turns lime water milky?
 - a) CO2
 - b) O2
 - **c)** H₂
 - d) N₂

Answer: a) CO₂

- 12. The atomic number is equal to the number of:
 - a) Neutrons
 - b) Electrons
 - c) Protons
 - d) Both b and c
 - Answer: d) Both b and c
- 13. Which acid is present in lemon?
 - a) Acetic acid
 - b) Citric acid
 - c) Oxalic acid
 - d) Sulfuric acid

Answer: b) Citric acid

14. What is the pH of pure water?

- a) 6 b) 7
- c) 8
- d) 5

Answer: b) 7

- 15. Which element is a metalloid?
 - a) Silicon
 - b) Sodium
 - c) Iron
 - d) Gold

Answer: a) Silicon

- 16. Which of the following is a physical change?
 - a) Rusting of iron
 b) Burning of paper
 c) Melting of ice
 d) Cooking of food
 Answer: c) Melting of ice
- 17. Which chemical is used in the manufacture of glass?
 - a) CaCO₃
 - b) NaCl
 - c) KNO₃
 - d) HNO₃
 - Answer: a) CaCO₃

18. Who is considered the father of modern chemistry? a) Newton b) Lavoisier c) Dalton d) Mendeleev Answer: b) Lavoisier 19. The bond in H₂O is: a) Ionic b) Covalent c) Metallic d) Hydrogen Answer: b) Covalent 20. Which is the lightest gas? a) Hydrogen b) Helium c) Oxygen d) Nitrogen Answer: a) Hydrogen **Mathematics** 1. The derivative of sin(x) is: a) cos(x)b) $-\cos(x)$ c) -sin(x)d) tan(x) Answer: a) cos(x) 2. The solution to the equation $x^2-5x+6=0x^2-5x+6=0x^2-5x+6=0$ is: a) x = 1, 6 b) x = 2, 3 c) x = -2, -3 d) x = 5, 6Answer: b) x = 2, 3

- 3. If $\theta = 45^{\circ}$ theta = 45° , then tan $\theta = \tan \theta = \tan \theta$
 - a) 0 b) 1 c) √3 d) ½ Answer: b) 1

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4. Area of a circle with radius r is:
         a) πr<sup>2</sup>
         b) 2πr
         c) πd<sup>2</sup>
         d) 2r
         Answer: a) πr<sup>2</sup>
    5. The value of \int x dx \ln x dx \int x dx is:
         a) x
         b) x<sup>2</sup>
         c) x<sup>2</sup>/2 + C
         d) 1/x
         Answer: c) x^2/2 + C
6. The value of cos60°\cos 60^\circcos60° is:
a) 1
b) 0
c) 1/2
d) √3/2
Answer: c) 1/2
7. If A = \{1, 2, 3\}, B = \{a, b\}, then the number of elements in A × B is:
a) 2
b) 3
c) 5
d) 6
Answer: d) 6
8. Slope of the line passing through points (1, 2) and (3, 6) is:
a) 1
b) 2
c) 3
d) 4
Answer: c) 2
9. If x=3x = 3x=3 is a solution of ax+b=0ax + b = 0ax+b=0, and a=2a = 2a=2, what is bbb?
a) 5
b) -6
c) 6
d) -5
Answer: b) -6
10. If \sin^2\theta + \cos^2\theta = ?
a) 0
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b) 1 c) θ d) 2 Answer: b) 1 11. If $A = \{1, 2, 3\}$, how many subsets does A have? a) 3 b) 6 c) 8 d) 9 Answer: c) 8 12. $(a + b)^2$ equals: a) $a^{2} + b^{2}$ b) a² + 2ab + b² c) $a^2 - 2ab + b^2$ d) a² – b² Answer: b) $a^2 + 2ab + b^2$ 13. A number divisible by 9 must have: a) Last digit 0 b) All digits even c) Sum of digits divisible by 9 d) Units digit 9 Answer: c) Sum of digits divisible by 9 14. Which of the following is a quadratic equation? a) $x^2 + 2x + 1 = 0$ b) x + 2 = 0c) $x^3 + 1 = 0$ d) 2x = 4

Answer: a) $x^2 + 2x + 1 = 0$

- 15. What is the area of a triangle with base 6 cm and height 4 cm?
 - a) 10 cm²
 b) 12 cm²
 c) 24 cm²
 d) 14 cm²
 Answer: b) 12 cm²

16. If $\sin\theta = \frac{1}{2}$, then $\theta =$

- a) 30°
- b) 45°
- c) 60°
- d) 90°

Answer: a) 30°

- 17. Which of the following is a prime number?
 - a) 9
 - b) 21
 - c) 29
 - d) 33
 - Answer: c) 29

18. LCM of 12 and 18 is:

- a) 36
- b) 6
- c) 54
- d) 24

Answer: a) 36

19. The value of $(3^2 + 4^2)$ is:

- a) 12
- b) 25
- c) 7
- d) 18 Answer: b) 25

20. Slope of x-axis is:

- a) 0
- b) 1
- c) ∞

d) Undefined Answer: a) 0

Biology

- 1. Which of the following is the basic unit of life?
 - a) Atom
 - b) Tissue
 - c) Cell
 - d) Organ

Answer: c) Cell

- 2. Which part of the plant is responsible for photosynthesis?
 - a) Root
 - b) Stem
 - c) Leaf
 - d) Flower

Answer: c) Leaf

- 3. Which gas is released during photosynthesis?
 - a) Carbon dioxide
 - b) Nitrogen
 - c) Oxygen
 - d) Hydrogen
 - Answer: c) Oxygen
- 4. Blood in humans is red due to the presence of:
 - a) White blood cells
 - b) Hemoglobin
 - c) Platelets
 - d) Plasma

Answer: b) Hemoglobin

- 5. Which of the following diseases is caused by a virus?
 - a) Malaria
 - b) Typhoid
 - c) Tuberculosis
 - d) Influenza

Answer: d) Influenza

- 6. The largest organ in the human body is:
- a) Liver
- b) Skin
- c) Heart
- d) Lungs
- Answer: b) Skin

7. Which part of the brain controls balance and coordination?

- a) Cerebrum
- b) Cerebellum
- c) Medulla
- d) Hypothalamus

Answer: b) Cerebellum

- 8. DNA is located in:
- a) Ribosome
- b) Mitochondria
- c) Nucleus
- d) Cytoplasm
- Answer: c) Nucleus

9. Which vitamin is synthesized in the skin in presence of sunlight?

- a) Vitamin A
- b) Vitamin B12
- c) Vitamin C
- d) Vitamin D

Answer: d) Vitamin D

10. The structural and functional unit of the kidney is:

- a) Nephron
- b) Neuron
- c) Alveoli
- d) Glomerulus
- Answer: a) Nephron

11. Which part of the plant conducts water?

- a) Phloem
- b) Xylem c) Chloroplast
- d) Stomata

Answer: b) Xylem

- 12. Insulin is secreted by:
 - a) Liver
 - b) Pancreas c) Kidney

d) Stomach

- Answer: b) Pancreas
- 13. Malaria is caused by:
 - a) Virus
 - b) Fungus
 - c) Bacteria
 - d) Plasmodium
 - Answer: d) Plasmodium
- 14. Plants that bear flowers are called:
 - a) Gymnosperms
 b) Bryophytes
 c) Angiosperms
 d) Algae
 Answer: c) Angiosperms
- 15. Which blood group is a universal donor? a) A

b) B c) AB d) O Answer: d) O

- 16. The green pigment in plants is:
 - a) Xanthophyllb) Anthocyaninc) Chlorophylld) CaroteneAnswer: c) Chlorophyll
- 17. Which vitamin helps in blood clotting?
 - a) A
 - b) C
 - c) K
 - d) D

Answer: c) K

- 18. The smallest bone in the human body is found in the:
 - a) Ear
 - b) Nose

c) Hand

d) Foot

Answer: a) Ear

- 19. Which of these is not a function of the liver?
 - a) Produces bile
 b) Detoxifies chemicals
 c) Filters urine
 d) Stores glycogen
 Answer: c) Filters urine
- 20. The human heart has how many chambers?
 - a) 2 b) 3 c) 4 d) 5

Answer: c) 4