

Name

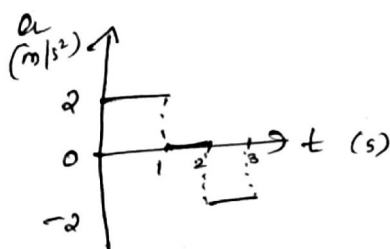
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BRILLIANT SCIENCE OLYMPIAD

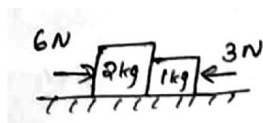
Batch..... Roll No.

PHYSICS+CHEMISTRY+BIOLOGY+MATHS**Class IX****PHYSICS**

- Two cars A and B are moving in same direction with velocities 30 m/s and 20 m/s. When car A is at a distance d behind the car B, the driver of the car A applied brakes producing uniform retardation of 2 m/s². There will be no collision when
 A) $d < 2.5$ m B) $d > 125$ m C) $d > 25$ m D) $d < 125$ m
- A particle moving along x-axis has acceleration f at time t , given by $f = f_0 \left(1 - \frac{t}{T}\right)$ where f_0 and T are constants. The particle at $t = 0$ has zero velocity. At the instant when $f = 0$, the particles velocity is
 A) $\frac{1}{2} f_0 T$ B) $f_0 T$ C) $\frac{1}{2} f_0 T^2$ D) $f_0 T_0$
- Acceleration time graph for a particle is given in figure. If it starts motion at $t = 0$, distance travelled in 3s will be



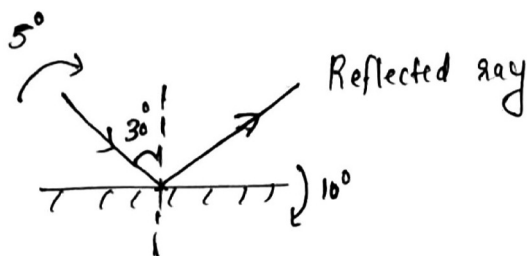
- A) 4 m B) 2 m C) 0 m D) 6 m
- Two forces of 6N and 3N are acting on the two blocks of 2kg and 1kg kept on frictionless floor. What is the force exerted on 2kg block by 1kg block?



- A) 1N B) 2N C) 4N D) 5N
- If a ladder weighing 250 N is placed against a smooth vertical wall having coefficient of friction between it and floor is 0.3, then what is the maximum force of friction available at the point of contact between the ladder and the floor.
 A) 75 N B) 50 N C) 25 N D) 20 N
- The escape velocity from earth is V_e . A body is projected with velocity $2V_e$ with what constant velocity will it move in the interplanetary space.
 A) V_e B) $\sqrt{2} V_e$ C) $\sqrt{3} V_e$ D) $\sqrt{5} V_e$
- Four particles each of mass M are placed at the vertices of a square of side ℓ . The potential at the centre of square is

- A) $-2 \frac{Gm}{\ell}$ B) $-3\sqrt{2} \frac{Gm}{\ell}$ C) $-2\sqrt{2} \frac{Gm}{\ell}$ D) $-4\sqrt{2} \frac{Gm}{\ell}$

8. A box is lying on an inclined plane. What is the coefficient of static friction if the box starts sliding when an angle of inclination is 60°
- A) 1.173 B) 1.732 C) 2.732 D) 1.677
9. The temperature at which the speed of sound in air becomes double of its value at 27°C is
- A) 54°C B) 327°C C) 927°C D) -123°C
10. Masses of 3 wires of same metal are in the ratio 1:2:3 and their lengths are in the ratio 3:2:1. The electrical resistance are in the ratio
- A) 1:1:1 B) 1:2:3 C) 9:4:1 D) 27:6:1
11. A ray of light incident at 50° on one of the two plane mirrors arranged at an angle of 60° between them. The ray then touches the second mirror, get reflected back to the first mirror makes an angle of incidence θ . The value of θ is
- A) 50° B) 60° C) 70° D) 80°
12. Figure shows a plane mirror on which a light ray is incident. If the incident ray is turned by 50° and the mirror by 10° as shown, the angle turned by the reflected ray is



- A) 15° anticlockwise B) 15° clockwise C) 20° clockwise D) 25° clockwise
13. Two wires of same length are shaped into a square and a circle. If they carry same current, ratio of the magnetic moment is
- A) $2:\pi$ B) $\pi:2$ C) $4:\pi$ D) $\pi:4$
14. An electron and a proton have equal kinetic energies. They enter in a magnetic field perpendicularly. Then
- A) Both will follow a circular path with same radius
- B) Both will follow a helical path
- C) Both will follow a parabolic path
- D) None of the above
15. A charged particle moves with velocity $\vec{v}$ in a uniform magnetic field $\vec{B}$ is the magnetic force experienced by the particle is
- A) Always zero B) Never zero
- C) Zero, if $\vec{B}$ and $\vec{v}$ are perpendicular D) Zero, if $\vec{B}$ and $\vec{v}$ are parallel

CHEMISTRY

16. The total no of electrons and protons present in N^{3-} ion is (atomic number of N = 7)
- A) 3 B) 7 C) 17 D) 14
17. In the periodic table if the group number of f-block elements is x and the period from which d-block elements start is y. Then $x+2y$ is equal to
- A) 11 B) 7 C) 14 D) 10

30. The block of periodic table including metals, non -metals and metalloids is ?
A) s B) p C) d D) f

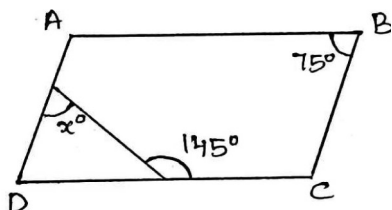
BIOLOGY

31. Find out the incorrect statement
A) Both prokaryotic and eukaryotic cells have a plasma membrane which are structurally similar
B) Cell wall of a plant cell is freely permeable and allow entry of molecules of different sizes
C) Amyloplast, Elaioplast, and Aleuroplast are different types of plastids in plant cells
D) Rough endoplasmic reticulum is involved in the synthesis of lipids
32. Chlorenchyma is a
A) Living meristematic tissue
B) Living permanent tissue
C) Non living meristematic tissue
D) Non living permanent tissue
33. Which of the following is a homopolysaccharide?
A) Raffinose
B) Peptidoglycan
C) Cellulose
D) Stachyose
34. Hopanoids are present in
A) Cell membrane
B) Cell wall
C) Mitochondria
D) Flagella
35. is commonly known as EMP pathway
A) Link reaction
B) Krebs cycle
C) Glycolysis
D) Electron transport chain
36. Which of the following plant have monothealous anther in its flower?
A) Hibiscus
B) Tomato
C) Brinjal
D) Mustard
37. Which part of alimentary canal receives bile juice from liver?
A) Stomach
B) Duodenum
C) Jejunum
D) ileum
38. Which enzyme help in the transport of CO_2 in blood?
A) Carbonic anhydrase
B) Amylase
C) Lipase
D) Carboxy catalase
39. Which of the following animals exhibit bilateral symmetry?
A) Sycon
B) Earthworm
C) Cockroach
D) All except A
40. Which of the following hormones is responsible for the development of secondary sexual character in females?
A) Estrogen
B) Adrenaline
C) Cortisol
D) Testosterone
41. 'Lub' sound is associated with
A) Closure of AV valves
B) Closure of semilunar valves
C) Opening of AV valves
D) Opening of semilunar valves
42. Peritubular capillary that runs parallel to Henle's loop is
A) afferent arteriole
B) efferent arteriole
C) Vasa recta
D) JGA
43. Type of movement exhibited by monocytes and macrophages
A) Amoeboid movement
B) Flagellar movement
C) Ciliary movement
D) Muscular movement

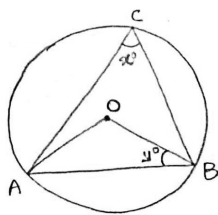
44. In humans, the embryo gets nourishment from mother through
 A) Ovary B) Umbilical cord C) Fallopian tube D) Placenta
45. Practice of growing two or more crops together in the same field at the same time is called
 A) Crop rotation B) Mixed cropping C) Monoculture D) Weeding

MATHEMATICS

46. Let $x = \sqrt{5} + \sqrt{3}$ and consider $x^2 - 2\sqrt{15}$. What type of number is it?
 A) Integer B) Rational but not integer
 C) Irrational D) Cannot be determined
47. The difference between the circumference of two concentric circles is 22cm. If the radius of the smaller circle is 7cm. Find the radius of the larger circle.
 A) 10.5 cm B) 14 cm C) 12 cm D) 13.5 cm
48. In the parallelogram ABCD find the value of 'x'



- A) 75° B) 35° C) 70° D) 85°
49. The remainder when $2x^3 + 3x^2 - x + 5$ is divided by $x-1$ is
 A) 8 B) 9 C) 10 D) 11
50. In the following figure O is the centre of circle and $\angle ACB = x^\circ$, $\angle OBA = y^\circ$, then the value of $x^0 + y^0$ is



- A) 90° B) 120° C) 150° D) 180°
51. In a triangle, one angle is thrice the smallest angle and it is also greater than third angle by 23° , then greatest angle of triangle is
 A) 81° B) 92° C) 87° D) 66°
52. The radius and height of a cone are in the ratio 4:3. The area of the base is 154cm^2 . Find the area of the curved surface
 A) 190.5 cm^2 B) 192.5 cm^2 C) 195 cm^2 D) 185.5 cm^2
53. If $\frac{2x}{a} + \frac{y}{b} = 2$, $\frac{x}{a} - \frac{y}{b} = 4$, then value of x and y
 A) $\frac{2}{a}, \frac{2}{b}$ B) $2a-2b$ C) $-2a, 2b$ D) $\frac{a}{2}, \frac{b}{2}$

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Class IX

PHYSICS

1. C
2. A
3. A
4. C
5. A
6. C
7. D
8. B
9. C
10. D
11. C
12. B
13. D
14. D
15. D

CHEMISTRY

16. C
17. A
18. D
19. D
20. B
21. D
22. D
23. A
24. D
25. C
26. C
27. D
28. B
29. C
30. B

BIOLOGY

31. D
32. B
33. C
34. A
35. C
36. A
37. B
38. A
39. D
40. A
41. A
42. C
43. A
44. D
45. B

MATHEMATICS

46. A
47. A
48. C
49. B
50. A
51. C
52. B
53. B
54. B
55. D
56. C
57. A
58. A
59. D
60. A