Aakash National Talent Hunt Exam 2021
Sample Paper

(Class VIII Studying Moving to Class IX)

ANSWERS

1. (2)
2. (1)
3. (3)
4. (4)
5. (3, 4)
6. (2)
7. A(Q), B(P), C(R), D(S)
8. (1)
9. (4)
10. (4)
11. (2)
12. (1, 2, 3)
13. (1)
14. A(Q), B(S), C(P), D(R, S)
15. (4)
16. (1)
17. (3)
18. (3)
19. (1, 4)
20. (3)
21. A(P, R), B(P), C(S), D(Q)
22. (2)
23. (4)
24. (2)
25. (1)
26. (1, 2, 4)
27. (1)
28. A(Q), B(S), C(Q, R), D(P, Q)
29. (4)
30. (4)
31. (4)
32. (3)
33. (4)
34. (1, 2)
35. (1, 3, 4)

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HINTS & SOLUTIONS

PHYSICS

1. Answer (2)

$I \propto A^2$

$\dfrac{I_1}{I_2} = \dfrac{A_1^2}{A_2^2}$

$= \dfrac{(9)^2}{(49)^2}$

$= \dfrac{81}{2401}$

2. Answer (1)

3. Answer (3)

$T = \dfrac{1}{f}$

$= \dfrac{1}{10}$

$= 0.1\ s$

Minimum time taken by the bob to reach its mean position from any extreme position is $\dfrac{0.1}{4}\ s = 0.025\ s$

4. Answer (4)

5. Answer (3, 4)

Maximum static friction = 60 N

Sliding friction = 40 N

6. Answer (2)

A force can change the state of rest or state of motion of an object.

7. Answer A(Q), B(P), C(R), D(S)
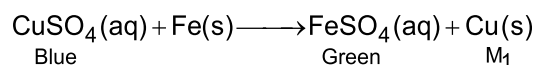
CHEMISTRY

8. Answer (1)
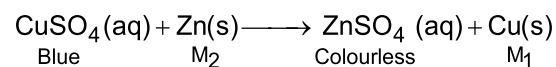
PVC is a thermoplastic.

9. Answer (4)

Rayon is a synthetic fibre which looks like silk and is obtained by chemical treatment of wood pulp.

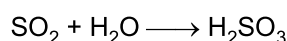10. Answer (4)

Reaction takes place in beaker A:

$$\underset{\text{Blue}}{CuSO_4(aq)} + Fe(s) \longrightarrow \underset{\text{Green}}{FeSO_4(aq)} + \underset{M_1}{Cu(s)}$$

Reaction takes place in beaker B:

$$\underset{\text{Blue}}{CuSO_4(aq)} + \underset{M_2}{Zn(s)} \longrightarrow \underset{\text{Colourless}}{ZnSO_4(aq)} + \underset{M_1}{Cu(s)}$$

11. Answer (2)

Sulphur dioxide dissolves in water to form sulphurous acid which is acidic in nature.

$$SO_2 + H_2O \longrightarrow H_2SO_3$$

12. Answer (1, 2, 3)

Natural fabrics soak more water than the synthetic fabrics.

13. Answer (1)

Sodium is stored in kerosene because it reacts vigorously with oxygen and water.

14. Answer A(Q), B(S), C(P), D(R, S)

(A) Jute   – (Q) Natural fibre

(B) PVC   – (S) Plastic

(C) Polycot   – (P) Mixed fibre

(D) Melamine   – (R) Flame resistant

(S) Plastic

BIOLOGY

15. Answer (4)

Amoeba and *Paramecium* belongs to group Protozoa.

16. Answer (1)

Seed drill is used to remove weeds and also used for sowing seeds.

17. Answer (3)

Sal is the flora of Pachmarhi Biosphere Reserve.

18. Answer (3)

Lactobacillus is a bacteria which is a prokaryotic cell.

19. Answer (1, 4)

The given organism is *Amoeba* which contains Pseudopodia that helps in locomotion and capturing food.

20. Answer (3)

Plant cell has chloroplast and cell wall. These are absent in animal cell.

21. Answer A(P, R), B(P), C(S), D(Q)

(A) Drip system $\rightarrow$ (P) It is used to irrigate crop fields.

(R) It is a modern method of irrigation.

(B) Rahat $\rightarrow$ (P) It is used to irrigate crop fields.

(C) Combine $\rightarrow$ (S) It is a harvester and thresher.

(D) Cultivator $\rightarrow$ (Q) It is used to plough fields.

MATHEMATICS

22. Answer (2)

Let Ayaan's age be 'x', his mother's age be 'y' and Arun's age be 'z', then

$$x = \frac{y}{6} \qquad \text{...(i)}$$

And $(y + 10) = 2(z + 10)$ ...(ii)

And $z = 9 + 1 = 10$ years

$\Rightarrow$ $y = 30$ years

$\therefore$ $x = 5$ years

Option (2) is correct

23. Answer (4)

We know that,

$(a + b)^2 = (a + b) (a + b)$

$= a \times a + a \times b + a \times b + b \times b$

$= a^2 + 2ab + b^2$

Here,

If $(15.86 \times 15.86 + 15.86x + 0.13 \times 0.13)$ is a perfect square.

$\Rightarrow$ $15.86^2 + 2 \times 15.86 \times 0.13 + 0.13^2 = (15.86 + 0.13)^2$

$\therefore$ $x = 2 \times 0.13$

$= 0.26$

$\Rightarrow$ $100x = 26$

$\therefore$ $(100x)^2 = 26^2 = 676$

Option (4) is correct.

24. Answer (2)

$$SI = \frac{P \times 5 \times 5}{100}$$

and $CI = 3000\left(1 + \frac{10}{100}\right)^2 - 3000$

$$\frac{P}{4} = \left[3000\left(\frac{11}{10}\right)^2 - 3000\right] \times \frac{1}{2}$$

$$\Rightarrow P = \frac{4 \times 3000}{2}\left[\frac{121}{100} - 1\right]$$

$$= 6000\left(\frac{21}{100}\right)$$

∴ P = ₹1260, option (2) is correct

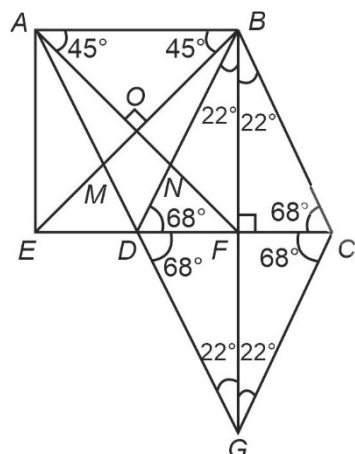25. **Answer (1)**

Two digit perfect square numbers are

16, 25, 36, 49, 64 and 81

Now,

Out of 6, 5, 6, 9, 4 and 1, only 1 is a perfect cube.

Option (1) is correct.

26. **Answer (1, 2, 4)**

ABFE is a rhombus and ∠BFE = 90°

[∵ BCGD is a rhombus]

∴ ABFE is a square.

∠BFC = 90°

∴ ∠CBF = 90° − 68° = 22°

⇒ ∠DBF = ∠CBF = ∠DGF = ∠CGF = 22°

and ∠BDF = ∠GDF = ∠GCF = ∠BCF = 68°

⇒ ∠ADB = 180° − 68° − 68° = 44° = ∠DGC

∠EBD = 45° − 22° = 23°

[∵ BE is diagonal of square ABFE]

∠EAD = ∠FGD = 22°

[Alternate interior angles]

and ∠AEM = 45°

∴ ∠AMO = 45° + 22° = 67°

[Exterior angle property of ΔAME]

and ∠DNF = ∠ANB = 90° − 23° = 67°

Options (1), (2), (4) are correct.

27. **Answer (1)**

Both Assertion and Reason are correct and Reason is correct explanation of Assertion.

∵ Addition is associative for rational numbers.

i.e., For any three rational numbers, a, b and c

a + (b + c) = (a + b) + c

∴ Option (1) is correct.

28. **Answer A(Q), B(S), C(Q, R), D(P, Q)**

(A) Favourable outcomes are 6, 12, 18, 25 and 30 and Number of Total outcomes = 30

∴ Required Probability $= \frac{5}{30} = \frac{1}{6} = \frac{m}{n}$

⇒ m = 1 and n = 6

∴ mn = 6

(B) Highest number in the data is 90°.

If range is a prime number, then it can be 89, 87........

∴ Lowest possible value of x is 1, for which the range is 89.

(C) The width of the class-interval 10–22 is 22 − 10 = 12

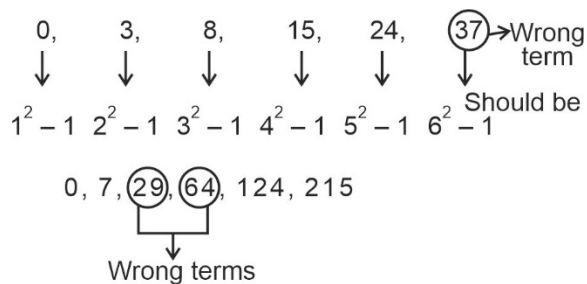(D) The measure of total angle at the centre in a pie-chart is 360°.

∴ Answer is A(Q), B(S), C(Q, R), D(P, Q)

[∵ 360 and 12 are multiples of 6 and multiplicative identity of 13 is 1]

MENTAL ABILITY

29. Answer (4)

Circle is not a part of quadrilateral.

30. Answer (4)

D is not present in given word.

31. Answer (4)

By observation.

32. Answer (3)

33. Answer (4)

Point A is in northeast of point P.

34. Answer (1, 2)

35. Answer (1, 3, 4)

By observation.

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