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Reasoning and Aptitude

CE + ME + EE + EC

Date of Test : 05/01/2026

ANSWER KEY ➤

1.	(d)	7.	(b)	13.	(c)	19.	(d)	25.	(b)
2.	(b)	8.	(d)	14.	(a)	20.	(b)	26.	(a)
3.	(b)	9.	(c)	15.	(b)	21.	(a)	27.	(d)
4.	(a)	10.	(b)	16.	(c)	22.	(d)	28.	(a)
5.	(d)	11.	(c)	17.	(d)	23.	(d)	29.	(b)
6.	(d)	12.	(a)	18.	(c)	24.	(a)	30.	(c)

DETAILED EXPLANATIONS

1. **(d)**

$$\text{Change in consumption} \ = \ \frac{\text{Percentage change in rate} \times 100}{100 + \text{Percentage change in rate}}$$

$$= \ \frac{20 \times 100}{100 + 20} = \frac{2000}{120} = 16\frac{2}{3}\%$$

2. **(b)**

Let the cost prices are x, $2x$, $4x$

Let the quantities are $2y$, $5y$, $2y$

$$\text{Total cost price} \ = \ 2\,xy + 10\,xy + 8\,xy = 20\,xy$$

$$\text{Total profit} \ = \ \frac{10}{100} \times 2xy + \frac{20}{100} \times 10xy + \frac{25}{100} \times 8xy$$

$$= \ 0.2\,xy + 2\,xy + 2\,xy = 4.2\,xy$$

$$\text{Profit percentage} \ = \ \frac{4.2xy}{20xy} \times 100 = 21\%$$

3. **(b)**

Let the distance between start point and end point be D km

∴ According to statement of question,

$$\frac{x}{10} - \frac{x}{15} \ = \ 2$$

$$x \ = \ 60 \text{ km}$$

By travelling at 10 km/h he reaches at 1 pm so, it takes 6 hour to cover 60 km and hence he started at 7 am; therefore, in order to cover the distance by 12 noon. i.e. in 5 hours he should travel at 12 kmph.

4. **(a)**

According to given data,

$$20 \times t + 12(10 - t) \ = \ 150$$

$$8t + 120 \ = \ 150$$

$$t \ = \ \frac{30}{8} = \frac{15}{4}$$

The ratio of distance,

$$20 \times \frac{15}{4} \ : \ 12 \times \left(10 - \frac{15}{4}\right)$$

$$75 \ : \ 75$$

$$1 \ : \ 1$$

5. **(d)**

By checking through options

For $x = 4$

$$\sqrt{4 \times 4 - 9} + \sqrt{4^2 + 3^2} = \sqrt{7} + 5$$

$\Rightarrow \qquad\qquad x = 4$ is correct option

6. **(d)**

Let the two consecutive even integers be $2n$ and $(2n + 2)$.

$$(2n + 2)^2 - 2n^2 = (2n + 2 + 2n)(2n + 2 - 2n)$$
$$= 2(4n + 2)$$
$$= 4(2n + 1)$$

$4(2n + 1)$ is divisible by 4.

The answer is (d).

7. **(b)**

$$\text{Number of balls} = 6 + 8 = 14$$
$$\text{Number of white balls} = 8$$
$$P(\text{drawing a white ball}) = \frac{8}{14} = \frac{4}{7} = 0.57$$

8. **(d)**

Each of the numbers except 80 is a prime number.

Hence, 80 is the odd one out.

9. **(c)**

Suppose first tap alone takes x hours to empty the tank. Then, second and third taps will take $(x - 5)$ and $(x - 9)$ hours respectively to empty the tank.

$$\therefore \qquad \frac{1}{x} + \frac{1}{(x - 5)} = \frac{1}{(x - 9)}$$

$$\Rightarrow \qquad \frac{x - 5 + x}{x(x - 5)} = \frac{1}{(x - 9)}$$

$$\Rightarrow \qquad (2x - 5)(x - 9) = x(x - 5)$$

$$\Rightarrow \qquad x^2 - 18x + 45 = 0$$

$$\Rightarrow \qquad (x - 15)(x - 3) = 0$$

$$\Rightarrow \qquad x = 15, 3$$

For $x = 3$, $(x - 5)$ and $(x - 9)$ will be negative.

$\therefore$ Answer is 15 hours.

10. **(b)**

The word WORKSPACE contains 9 different letters.

When the vowels (OAE) are always together. They can be supposed to form one letter.

Then, we have to arrange the letters WRKSPC (OAE).

Now, 7 letters can be arranged in $7! = 5040$ ways.

The vowels (OAE) can be arranged among themselves in $3! = 6$ ways.

$\therefore$ Required number of ways $= (5040 \times 6) = 30240$

11. (c)

$$C = \frac{A+D}{2}, D > B > C$$

$$B = \frac{A+E}{2}$$

$$A + D = 2C$$

$$A + E = 2B$$

Since $B > C \Rightarrow E > D$

$$C < B < D < E$$

Since C is average of A and D, so $A < C$

$\Rightarrow$ The correct sequence is $A < C < B < D < E$

The middle number is B.

12. (a)

Let the weights are x_1, x_2, x_3 and x_4
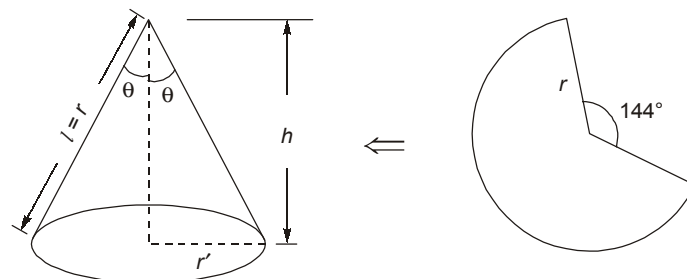
Possible pairs,

$x_1 - x_2$, $x_1 - x_3$, $x_1 - x_4$,

$x_2 - x_3$, $x_2 - x_4$,

$x_3 - x_4$,

$$\therefore \qquad \text{Average weight} = \frac{63 + 61 + 62 + 63 + 64 + 66}{6} = 62.5\,\text{gm}$$

But each envelope is added twice so, average weight = $\dfrac{62.5}{2}$ = 31.25 gm

13. (c)

Height of cone formed be h

Slant height of cone so formed= radius of given circle

$$\Rightarrow \qquad\qquad l = r$$

Now circumference of base of cone = Circumference of given sector of circle

$$\Rightarrow \qquad\qquad 2\pi r' = 2\pi r \times \frac{360° - 144°}{360°}$$

$$\Rightarrow \qquad\qquad r' = \frac{3}{5}r$$

$$\text{Now vertex angle} = 2\theta = 2\sin^{-1}\left[\frac{r'}{l}\right] = 2\sin^{-1}\left[\frac{3}{5}\right]$$

14. **(a)**

$$\text{Ratio of profit} = 26000 \times 12 : 16000 \times 9 : 25000 \times C$$
$$= 312 : 144 : 25C$$

$$C's \text{ share} = \frac{25C}{312 + 144 + 25C} = \frac{3825}{15453}$$

From here, $\quad C = 6$

$\Rightarrow$ C joined 3 months later than B joined.

15. **(b)**

A 4 O'clock, the hands of the watch are 20 minute spaces apart.

To be in opposite directions, they must be 30 min spaces apart.

$\therefore$ Minute hand will have to gain 50 minute spaces

55 minute spaces are gained in 60 min

50 minute space are gained in $\left(\dfrac{60}{55} \times 50 \right)$ min or $54\dfrac{6}{11}$ min

$\therefore \quad$ Required time $= 54\dfrac{6}{11}$ min past 4

The answer is (b).

16. **(c)**

$$\angle ABC = 90°$$
$$\therefore \quad AB^2 + BC^2 = AC^2$$
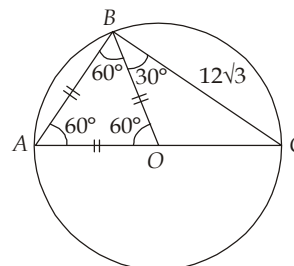
$$\Rightarrow \quad r^2 + \left(12\sqrt{3}\right)^2 = (2r)^2$$

$$\Rightarrow \quad 432 = 3r^2$$
$$\Rightarrow \quad r = 12$$

Now, area of equilateral triangle $= \dfrac{\sqrt{3}}{4}(\text{side})^2$

$$\text{Area} = \frac{\sqrt{3}}{4}(12)^2 = \frac{\sqrt{3}}{4}(144) = 36\sqrt{3} \text{ unit}^2$$

17. **(d)**

$$\text{Volume of the large cube} = (6^3 + 8^3 + 10^3)$$
$$= 216 + 512 + 1000 = 1728 \text{ cm}^3$$

Let the edge of the large cube be x

So, $\quad x^3 = 1728$

$\Rightarrow \quad x = 12$ cm

$$\therefore \quad \text{Required ratio} = \left(\frac{6 \times 12^2}{6 \times \left(6^2 + 8^2 + 10^2\right)} \right) = \frac{12^2}{36 + 64 + 100} = \frac{144}{200} = 18 : 25$$

The answer is (d).

18. **(c)**

Weight of new member = 80 + 10 × 1 = 90 kg

19. **(d)**

304, 314 .... 394 (except 344) = 9 numbers
340, 341 .... 349 (except 344) = 9 numbers
400, 401 .... 409 (except 404) = 9 numbers
410, 411 .... 419 (except 414) = 9 numbers
420, 421 .... 429 (except 424) = 9 numbers
430, 431 .... 439 (except 434) = 9 members
440, 441 .... 449 (all excepted) = 0 numbers
450, 451 .... 459 (except 454) = 9 numbers
460, 461 .... 469 (except 464) = 9 numbers
470, 471 .... 479 (except 474) = 9 numbers
480, 481 .... 489 (except 484) = 9 numbers
490, 491 .... 499 (except 494) = 9 numbers
504, 514 .... 594 (except 544) = 9 numbers
540, 541 .... 549 (except 544) = 9 numbers
Total = 117 numbers

20. **(b)**

Let radii of the circles be $2r$ and r.

$$\text{Then ratio of surface area} = \frac{4\pi(2r)^2}{4\pi r^2} = 4:1$$

21. **(a)**

$$\frac{d}{50} - \frac{d}{60} = \frac{1}{2}$$
$$\frac{d}{300} = \frac{1}{2}$$
$$\Rightarrow \qquad d = 150$$
$$t = \frac{150}{50} = 3 \text{ hours}$$

Hence, the car will overtake the bike at 8:00 AM.

22. **(d)**

Wine in 1 litre mixture of P = $\frac{8}{13}l$

Wine in 1 litre mixture of Q = $\frac{5}{7}l$

Wine in 1 litre mixture of P and Q = $\frac{9}{13}l$

Let x litres of P and $(1 - x)$ litres of Q are mixed.

$$\frac{8}{13}x + \frac{5}{7}(1 - x) = \frac{9}{13}$$

$\Rightarrow \qquad \dfrac{56x + 65 - 65x}{91} = \dfrac{63}{91}$

$\Rightarrow \qquad\qquad\qquad 2 = 9x$

$\Rightarrow \qquad\qquad\qquad x = \dfrac{2}{9}$

$$(1 - x) = 1 - \dfrac{2}{9} = \dfrac{7}{9}$$

$$\text{Required ratio} = \dfrac{x}{1 - x} = 2 : 7$$

23. **(d)**

QR : PR = 2 : 5 i.e. PQ : PR = 3 : 5

or we can simply say PQ = 3 and PR = 5

Then, $\qquad\qquad\qquad$ QS = PQ = 3

The diameter of the larger semicircle PR = 5

The sum of the diameters of two smaller semicircles PQ + QS = 3 + 3 = 6

$\qquad$ Ratio of diameters = 5 : 6

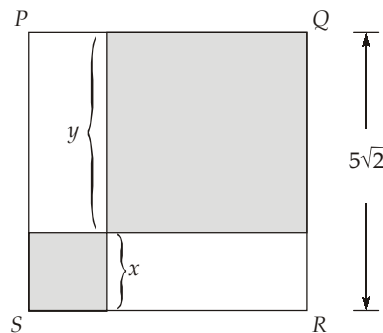This will be the same as the ratio of circumferences i.e. 5 : 6.

24. **(a)**

$$\text{Ways to select 2 females} = {}^5C_2$$

$$\text{Ways to select 1 male} = {}^7C_1$$

$\therefore \qquad \text{Required probability} = \dfrac{{}^5C_2 \times {}^7C_1}{{}^{12}C_3} = \dfrac{7}{22}$

25. **(b)**

$$x + y = 5\sqrt{2}$$

$$9x^2 = y^2$$

$\Rightarrow \qquad\qquad\qquad 3x = y$

$$x + 3x = 5\sqrt{2}$$

$$4x = 5\sqrt{2}$$

$$x = \dfrac{5\sqrt{2}}{4} = \dfrac{5}{2\sqrt{2}} \text{ unit}$$

26. **(a)**

Let C = number of questions answered correctly

I = number of questions answered incorrectly or unanswered

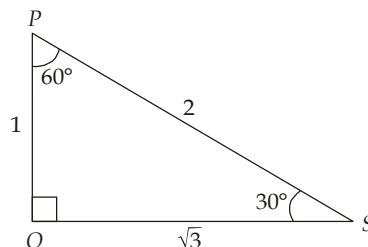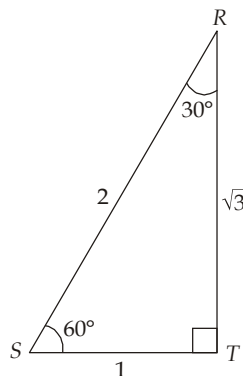$$\text{Total score} = 18C - 14I$$
$$18C - 14I = 0$$
$$18C = 14I$$
$$\Rightarrow \qquad C = \frac{7I}{9}$$

Now, C has to be an integer, this is possible only if I is divisible by 9.

If $\qquad\qquad\qquad I = 9, C = 7$ i.e. $I + C = 16$

If $\qquad\qquad\qquad I = 18, C = 14$ i.e. $I + C = 32$

It is given that the test has fewer than 30 questions

Thus, answer is 16.

27. **(d)**

In ΔPOS,

Drop a perpendicular from R on x-axis at point T.

ΔPOS and ΔRST are similar

$$OS + ST = \sqrt{3} + 1$$
$$RT = \sqrt{3}$$
$$\therefore \qquad \text{Coordinates of point } R = \left(1 + \sqrt{3}, \sqrt{3}\right)$$

28. **(a)**

At the end of year,

$$\text{Rahul's money} = 100 \times 1.12 = ₹112$$

$$\text{Sonia's money} = 100\left(1 + \frac{12}{4 \times 100}\right)^4 = 100\,(1.03)^4 = ₹112.55$$

$$\text{Difference} = ₹0.55$$

The formula we used for Sonia is :

$$V = P\left(1 + \frac{r}{100n}\right)^{nt}$$

where, V = Total value, P = Principal, r = Annual interest rate,

n = Number of times per year invested, t = Number of years

29.   (b)

In 20 litres of mixture initially there are 18 litres spirit and 2 litres water,

let's assume x litres of water is added to raise the percentage.

Then $\dfrac{18}{2+x} = \dfrac{75}{25}$

$\Rightarrow$ $\dfrac{18}{2+x} = 3$

$\Rightarrow$ $18 = 6 + 3x$

$\Rightarrow$ $3x = 12$

$\Rightarrow$ $x = 4$ litres

30.   (c)

Let both the part are x and $(1500 - x)$

Then $\dfrac{x \times 10 \times 5}{100} = \dfrac{(1500 - x) \times 12.5 \times 4}{100}$

$x = 1500 - x$

$2x = 1500$

$x = 750$

Hence, the sum lent out at 12.5% per annum is = 1500 – 750 = Rs. 750

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