ACE OF PACE OBJECTIVE SECTION
(SOLUTION)

1. **(B)**

$$\sqrt{13}-\sqrt{9}=\frac{\left(\sqrt{13}-\sqrt{9}\right)\left(\sqrt{13}+\sqrt{9}\right)}{\sqrt{13}+\sqrt{9}}=\frac{4}{\sqrt{13}+\sqrt{9}}$$

$$\sqrt{11}-\sqrt{7}=\frac{4}{\sqrt{11}+\sqrt{7}}$$

$$\sqrt{13}>\sqrt{11}$$

$$\sqrt{9}>\sqrt{7}$$

$$\therefore\quad \sqrt{13}+\sqrt{9}>\sqrt{11}+\sqrt{7}$$

$$\frac{1}{\sqrt{11}+\sqrt{7}}>\frac{1}{\sqrt{13}+\sqrt{9}}$$

$$\therefore\quad \sqrt{11}-\sqrt{7}>\sqrt{13}-\sqrt{9}$$

2. **(C)**

LCM × HCF = product of two numbers

$22338 \times 9 = 306 \times x$

$$x=\frac{22338\times 9}{306}=657$$

3. **(B)**

$$(2)^3-2k(4)+6-1=0 \Rightarrow 13-8x=0$$

$$k=\frac{13}{8}$$

4. **(B)**

$$\frac{\alpha}{\beta}+\frac{\beta}{\alpha}=\frac{\alpha^2+\beta^2}{\alpha\beta}=\frac{(\alpha+\beta)^2-2\alpha\beta}{\alpha\beta}$$

$$\alpha+\beta=\frac{2}{3}\ \alpha\beta=\frac{5}{3}$$

$$\therefore\quad \frac{\left(\frac{2}{3}\right)^2-2\frac{5}{3}}{\frac{5}{3}}=\frac{\frac{4}{9}-\frac{10}{3}}{\frac{5}{3}}$$

$$=\frac{4-30}{9}\times\frac{5}{3}$$

$$=\frac{-26}{9}\times\frac{3}{5}=\frac{-26}{15}$$

5. **(D)**

x, $25-x$ are their alc

$(x-3)(22-x)=84$

$22x-x^2-66+3x=84$

$x^2-25x+150=0$

$x=10$

$\Rightarrow$ ages $10, 15$

Difference = 5

6. (C)

$$\text{Area}=\left(\frac{1}{2}\times(19+13)\times 8\right)+\left(\frac{1}{2}\times(22+13)\times 10\right)\text{cm}^2$$

$$=(32\times 4)+(35\times 5)$$

$$=128+175$$

$$=303\text{cm}^2$$

7. (B)

$$\text{Curved surface area }=2\times\frac{22}{7}\times\frac{14}{100}\times 4$$

$$\text{Cost }=25\times 4\times 2\times\frac{22}{7}\times\frac{14}{100}\times 4$$

$$=44\times 8=352\text{ Rs.}$$

8. (A)

$a^3=729$

$a=9$

Length of diagonal $=a\sqrt{3}=9\sqrt{3}$

9. (C)

$A=6a^2$

$A^1=6(1.2a)^2$

$$\frac{\Delta A}{A}=\frac{A^{-1}-A}{A}=44\%$$

10. (D)

11. (C)

$(6+2)\times 2+1=17$

$(1+4)\times 2+1=11$

$3+7\times 2+1=21$

12. (A)

$$\text{Pens sold at no profit or loss}=\frac{300}{4}=75$$

Shopkeeper sold three pens at 20% profit,

Whose cost is 225 Rs.
Let CP of one pen = Rs. 1
C. P of 225 pens = Rs. 225

SP of 225 pens $= \frac{100+20}{100} \times 225 = 270$ Rs.

Profit $= \frac{345-300}{300} \times 100 = 15\%$

13. (B)

Rate of interest = 12%. Per annum
Simple interest = 6000

Amount $\Rightarrow$ S.I. $= \frac{P \times r \times t}{100} \Rightarrow P = \frac{6000 \times 100}{12}$

P = 50,0000

14. (B)

By 1 hour both trains meet, so the distance travel by fly in 1 hr is 240 km.

15. (A)

$$a^2+b^2+c^2-ab-bc-ca = \frac{1}{2}[(a-b)^2+(b-c)^2+(c-a)^2) > 0$$

16. (C)

New area $= \left(\ell + \frac{1}{2}\right)\left(b + \frac{b}{5}\right)$

$= \frac{3\ell}{2} \times \frac{6b}{5} \Rightarrow \frac{9}{5}\ell b$

17. (C)

Use venn diagram

18. (D)

Volume = 36 × 15 × 8
Volume of cube to be $\cot = 6 \times 6 \times 6$

No. of cubes $= \frac{36 \times 15 \times 8}{6 \times 6 \times 6} = 20$

19. (A)

No. of Employees = x
No. of row's = y

In each row $= \frac{x}{y}$ employees

$$\left(\frac{x}{y}+1\right)(y-2) = x \qquad ...(1)$$

$$\left(\frac{x}{y}-1\right)(y+3)=x \qquad \ldots(2)$$

Solve $y = 12$

$x = 60$

20. (D)

Area of shaded = Area of $ABP + PDC$

$$=\frac{1}{2}\times AB\times AP+\frac{1}{2}AB\times PD=\frac{1}{2}AB\times AD$$

Area $=\frac{1}{2}\times 8\times 4=16\ \text{m}^2$

21. (B)

Increased wages = 200 + 20% = 240 Rs.

Working hrs = x

Reduced working hours $x-\frac{20x}{100}=(0.8)x$

His wase $=\frac{240}{x}\times 0.8x=192\ \text{Rs}.$

22. (D)

$R_1=5\%\qquad R_2=10\%\qquad R_3=12\%$

Sum = 3,000

$$\text{Amount}=5000\left(1+\frac{5}{100}\right)\left(1+\frac{10}{100}\right)\left(1+\frac{12}{100}\right)$$

$$=5,000\times\frac{21}{20}\times\frac{11}{10}\times\frac{28}{25}=\text{Rs}.\,6468$$

$\therefore$ 6468 – 5000 =- Rs. 1468

23. (B)

$\angle SRQ=90^\circ$ (Angle in semi circle)

$\angle QRP=\angle QSR=y^\circ$

$\angle PRS=90+y$

In ΔPRS,

$\angle SRP+\angle RSP+\angle PSR=180^\circ$

$90+y+x+y=180^\circ$

$x+2y^\circ=90^\circ$

24. (D)

$a+b+c=0$

$$\frac{a^3+b^3+c^3}{abc}=\frac{3abc}{abc}=3$$

25. (A)

A in one day $= \frac{1}{20}^{\text{th}}$ work

Total days = x

B in one day $= \frac{1}{30}^{\text{th}}$ work $\quad (x-10)\frac{1}{20}+\frac{x}{30}=1$

$\Rightarrow \quad x=18$

26. (D)

Original number = a

Divisor = d

$\therefore \quad a = dx + 24 \qquad .....(1)$

$2a = 2dx + 48$

$2a$ is divided by d again $\Rightarrow \frac{2dx+48}{d}$ leaves remainder 11

$\therefore \quad \frac{48}{d}$ leaves Remainder 11 so, $d = 37$

27. (C)

$3x + 4y = 12$

$\frac{kx}{3} + 4y = 10$

For no solution

$\therefore \quad \frac{k}{3} = 3 \Rightarrow k = 9$

28. (B)

Start height $= \sqrt{r^2+h^2} = \sqrt{7^2+24^2} = 25\,\text{cm}$

Curved surface area of a cap $= \pi r \ell$

$= \frac{22}{7} \times 7 \times 25 = 550\ \text{cm}^2$

For 10 caps = 5500 cm^2

29. (A)

30. (C)

55, 60.65, 70 …… 555

$555 = 55 + (n-1) \times 5$

$n = 101$

31. (B)

Let number of girls be n

$\frac{12 \times 30 + n \times 15}{12 + n} = 25$

$n = 6$

32. **(D)**

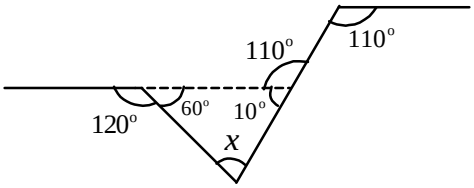
Let the price be 100

Selling price $= 100 \times 1.5 \times 0.8$

$= 120$

Profit $= \dfrac{120-100}{100} = 20\%$

33. **(A)**



$x + 60 + 70 = 180$

$x = 50^{\circ}$

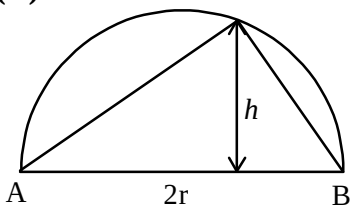
34. **(D)**

$\underset{\uparrow}{a} \quad \underset{\uparrow}{b} \quad \underset{\uparrow}{c}$

$9 \quad 9 \quad 9$

$9 \times 9 \times 8 = 648$ distinct numbers

35. **(A)**



Area $= \dfrac{1}{2}(2r) \times h$

$= r \times h$

$h \le r$

Maximum area $= r^2$