

Area of a triangle = $\frac{1}{2} \times \text{base} \times \text{height}$

$$\Rightarrow 192 = \frac{1}{2} \times 16 \times \text{height}$$

$$\Rightarrow \text{Height} = 192 \times 2/16$$

$$\Rightarrow \text{Height} = 24 \text{ m}$$

But sides of the triangle are not known, hence, cost of fencing cannot be find out and required ratio cannot be find out.

2. Answer: b)

We know that

Area of a circle = πr^2

$$\Rightarrow \text{Area of field B} = 22/7 \times 21 \times 21 = 1386 \text{ m}^2$$

$$\text{Cost of flooring/m}^2 \text{ of field B} = 34650/1386 = \text{Rs.}25$$

We know that

Area of trapezium = $\frac{1}{2} \times (\text{sum of the bases}) \times \text{height}$

$$\Rightarrow \text{Area of field E} = \frac{1}{2} \times (18 + 24) \times 30$$

$$= \frac{1}{2} \times 42 \times 30$$

$$= 630 \text{ m}^2$$

$$\text{Cost of flooring/m}^2 \text{ of field E} = 12600/630 = \text{Rs.}20$$

$$\text{Required percentage} = 25/20 \times 100 = 125\%$$

3. Answer: d)

$$\text{Area of field F} = 15000/25 = \text{Rs.}600$$

We know that

Area of parallelogram = base x height

$$\Rightarrow 600 = \text{base} \times 20$$

$$\Rightarrow \text{Base} = 600/20$$

$$\Rightarrow \text{Base} = 30 \text{ m}$$

Perimeter of field F = $2 \times (30 + 24)$

$$= 2 \times 54$$

$$= 108 \text{ m}$$

Cost of fencing of field F = $108 \times 10 = \text{Rs.}1080$

We know that

Perimeter of a square = $4 \times \text{side}$

$$= 4 \times 24$$

$$= 96 \text{ m}$$

Cost of fencing of field C = $96 \times 12 = \text{Rs.}1152$

Required average = $(1080 + 1152)/2$

$$= 2232/2$$

$$= \text{Rs.}1116$$

e) Quantity I = Quantity II or no relation can be established.

4. Answer: b)

Quantity I:

Perimeter of field A = $920/10 = 92 \text{ m}$

We know that

Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$

$$\Rightarrow 92 = 2 \times (28 + \text{breadth})$$

$$\Rightarrow 28 + \text{breadth} = 92/2$$

$$\Rightarrow \text{Breadth} = 46 - 28$$

$$\Rightarrow \text{Breadth} = 18 \text{ m}$$

We know that

Area of rectangle = $\text{length} \times \text{breadth}$

$$= 28 \times 18$$

$$= 504 \text{ m}^2$$

Total cost of flooring of field A = $504 \times 25 = \text{Rs.}12600$

Quantity II:

Radius of field G = $21 + 7 = 28 \text{ m}$

We know that

$$\text{Area of circle} = \pi r^2$$

$$\Rightarrow \text{Area of field G} = \frac{22}{7} \times 28 \times 28 = 2464 \text{ m}^2$$

Total cost of flooring of field G = $2464 \times 8 = \text{Rs.}19712$

Hence, Quantity I < Quantity II

5. Answer: d)**From I:**

Field H is rectangular in shape. Total cost of fencing of field H is Rs.960.

From II:

Length of field H is 4 m more than its breadth. Cost of flooring/ m^2 of field H is Rs.22.

From I and II:

Let, breadth of field H = $b \text{ m}$

$$\Rightarrow \text{Length} = (b + 4) \text{ m}$$

$$\text{Perimeter of field H} = 960/15 = 64 \text{ m}$$

We know that

$$\text{Perimeter of a rectangle} = 2 \times (\text{length} + \text{breadth})$$

$$\Rightarrow 64 = 2 \times (b + 4 + b)$$

$$\Rightarrow 2b + 4 = 64/2$$

$$\Rightarrow 2b = 32 - 4$$

$$\Rightarrow b = 28/2$$

$$\Rightarrow b = 14$$

Hence, breadth = 14 m

Length = 14 + 4 = 18 m

We know that

Area of rectangle = length x breadth

=> Area of field H = 18 x 14 = 252 m²

Total cost of flooring of field H = 252 x 22 = Rs.5544

(6 – 10): Common Explanation:

Volume of hollow spherical toy = 33,957 cm³

Let Outer radius of hollow spherical toy = R

Inner radius of hollow spherical toy = $\frac{R}{2}$

ATQ,

$$\frac{4}{3}\pi\left(R^3 - \left(\frac{R}{2}\right)^3\right) = 33,957$$

$$\Rightarrow R^3 = 9261$$

$$\Rightarrow R = 21$$

Outer radius of hollow spherical toy = 21 cm

Inner radius of hollow spherical toy = 10.5 cm

$$\text{Volume of conical toy} = \frac{33957}{5.25} = 6468 = \pi(\text{radius of cone})^2 \times \frac{14}{3}$$

$$\Rightarrow \text{Radius of cone} = 21 \text{ cm}$$

$$\text{Volume of solid cylindrical toy} = \frac{6468}{3} = 2156 = \pi(\text{radius of cylinder})^2 \times (\text{height of cylinder})$$

$$\Rightarrow \text{Radius of Cylinder} = 7 \text{ cm}$$

$$\text{Radius of Solid Spherical toy} = \frac{21}{2} = 10.5 \text{ cm}$$

Outer Radius of hollow cylindrical toy = 10.5 cm

Inner radius of hollow cylindrical toy = 7 x 2 – 10.5 = 3.5 cm

Toy	Radius	Height	Volume
Conical	21cm	14cm	6468
Solid Cylindrical	7cm	14cm	2156
Solid Spherical	10.5 cm		
Hollow Cylindrical	Inner = 3.5cm, Outer = 10.5cm	14cm	
Hollow Spherical	Inner =10.5cm, Outer =21cm		

Let total number of toys = $100x$

ATQ,

Number of solid spherical toys = $20x$

Number of hollow cylindrical toys = $40x$

ATQ,

$$40x - 20x = 20 \Rightarrow x = 1$$

Let Number pf conical toys = $2y$

Number of hollow spherical toys = $5y$

Number of solid cylindrical toys = $3y$

ATQ,

$$2y + 5y + 3y = 100 - 40 - 20 = 40 \Rightarrow y = 4$$

Toy	Number of toys
Conical	8
Solid Cylindrical	12
Solid Spherical	20
Hollow Cylindrical	40
Hollow Spherical	20

6. Answer: A)

Space taken by one solid spherical toy = Volume of one solid spherical toy

$$= \frac{4}{3}\pi(10.5)^3 = 4851\text{cm}^3$$

Total space taken by solid spherical toys = $20 \times 4851 = 97020\text{cm}^3$

7. Answer: E)

Number of conical toys Neeraj have = 8

8. Answer: B)

Curved surface area of one hollow cylindrical toy = $2\pi \times (3.5 + 10.5) \times 14 = 1232 \text{ cm}^2$

9. Answer: C)

Required Ratio = $21/7 = 3/1$

10. Answer: D)

Volume of one hollow cylindrical toy = $\pi \times 14 \times (10.5^2 - 3.5^2) = 4312$

Required difference = $4312 - 2156 = 2156 \text{ cm}^3$

11. Answer: E)

Let the radius of hemispherical toy be $R \text{ cm}$.

Radius of the spherical toy = 10.5 cm

ATQ

$$4\pi(10.5)^2 - 2\pi R^2 = 49\pi$$

$$R = 14$$

$$\text{Required difference} = 3\pi(14)^2 - 4\pi(10.5)^2 = 147\pi \text{ cm}^2$$

12. Answer: C)

Volume of the given cubical toy = 9261 cm^3

$$\text{Wasted volume} = \frac{100}{49} \times \frac{1}{100} \times 9261 = 189 \text{ cm}^3$$

Volume left to make new cubical toy = $4752 + 9261 - 189 = 13824 \text{ cm}^3$

Side of the new cubical toy = 24 cm

Total surface area of the new cubical toy = 3456 cm^2

13. Answer: D)

Let the radius of cylindrical toy be $8x \text{ cm}$

Then height of cylindrical toy = $7x \text{ cm}$

Volume of cylindrical toy = $\pi r^2 h = 4752 \text{ cm}^3$

$$x = 1.5$$

Radius of cylindrical toy = 12 cm and height of cylindrical toy = 10.5 cm

Volume of hemispherical toy = $\frac{2}{3}\pi r^3 = 2425.5 \text{ cm}^3$

CSA of cubical toys = $4a^2 = 1764$

$$a = 21 \text{ cm}$$

Volume of cubical toy = 9261 cm^3

Required difference = 6835.5 cm^3

14. Answer: B)

Let the radius and height of the conical toy be $4x$ cm and $3x$ cm respectively.

Then slant height = $5x$ cm

ATQ

CSA of conical toy = $\pi r l$

Now, $\frac{22}{7} \times 4x \times 5x = 3080$

$x = 7$

Radius and height of the conical toy are 28 cm and 21 cm respectively

Volume of conical toy = 17248 cm^3

Total molten volume = 22000 cm^3

Total volume of 8 small hemispherical toys = $8 \times \frac{2}{3} \times \pi \times 10.5 \times 10.5 \times 10.5 = 19404 \text{ cm}^3$

Required value of $x = 22000 - 19404 = 2596 \text{ cm}^3$

15. Answer: D)

CSA of spherical toy = 5544 cm^2

Radius of spherical toy = 21 cm

Radius of a new spherical toy = 10.5 cm

Volume of the new spherical toy = 4851 cm^3

CSA of the cubical toy = $4(\text{side})^2 = 1764 \text{ cm}^2$

Side of the cubical toy = 21 cm

Volume of the cubical toy = 9261 cm^3

Required difference in volume = 4410 cm^3

(16 – 17): Common Explanation:

Let radius of the sphere is 'r' cm

Volume of sphere = $(4/3) \times \pi \times r^3$

$(4/3) \times \pi \times r^3 = 16384$

$r^3 = 4096$

$r = 16 \text{ cm}$

So, radius of cone = $1.5 \times 16 = 24 \text{ cm}$

Curved surface area of cone = 1800 cm^2

Let slant height and height of the cone is 'l' and 'h' cm respectively.

$\pi \times r \times l = 1800$

$$3 \times 24 \times 1 = 1800$$

$$l = 1800/72 = 25 \text{ cm}$$

$$\text{So, height of cone} = \sqrt{l^2 - r^2}$$

$$h = \sqrt{(25^2 - 24^2)} = \sqrt{(625 - 576)} = \sqrt{49} = 7 \text{ cm}$$

$$\text{Now, height of cylinder} = 2 \times 7 = 14 \text{ cm}$$

Let radius of the hemisphere be 'R' cm

$$\text{So, } 3 \times \pi \times R^2 = 4356$$

$$R^2 = 4356/9 = 484$$

$$R = 22 \text{ cm}$$

$$\text{So, radius of cylinder} = 22/1.1 = 20 \text{ cm.}$$

16. Answer: A)

Surface to be wrapped = curved surface area of cylinder + curved surface area of cone + curved surface area of the hemisphere + $\pi \times (24^2 - 20^2) + \pi \times (22^2 - 20^2)$

$$= 2 \times \pi \times 20 \times 14 + 1800 + 2 \times \pi \times 22 \times 22 + \pi \times 176 + \pi \times 84$$

$$= 1680 + 1800 + 2904 + 780$$

$$= 7164 \text{ cm}^2$$

$$\text{Desired cost} = 6 \times 7164 = \text{Rs. } 42984$$

17. Answer: D)

$$\text{Total volume of the structure thus formed} = \frac{1}{3} \times \pi \times 24 \times 24 \times 7 + \pi \times 20 \times 20 \times 14 + \frac{2}{3} \times \pi \times 22 \times 22 \times 22$$

$$= 4032 + 16800 + 21296$$

$$= 42128 \text{ cm}^3$$

18. Answer: A)

Let the lengths of the rectangular fields 'P' and 'Q' be 2x m and 3x m respectively.

$$\text{Therefore, breadth of both the fields} = 3x/3 = x \text{ m}$$

$$\text{Area of the rectangular field 'P'} = 2x \times x = 2x^2 \text{ m}^2$$

Base of both the triangular field = x metres

Height of the triangular field at field 'P' = $2x/2 = x$ m

Area enclosed by triangular cultivated field in rectangular field 'P' = $(x \times x)/2 = x^2/2 \text{ m}^2$

Therefore, remaining area in the rectangular field 'P' = $2x^2 - x^2/2 = 3x^2/2 \text{ m}^2$

Height of the triangular field at field 'Q' = $3x/2$ m

Area enclosed by triangular cultivated field in rectangular field 'Q' = $(3x \times x)/(2 \times 2) = 3x^2/4 \text{ m}^2$

Area of the rectangular field 'Q' = $3x \times x = 3x^2 \text{ m}^2$

Therefore, remaining area in the rectangular field 'Q' = $3x^2 - 3x^2/4 = 9x^2/4 \text{ m}^2$

According to the question,

$$9x^2/4 - 3x^2/2 = 1200$$

$$\text{Or, } x^2 = 1600$$

$$\text{Or, } x = 40 \text{ metres}$$

Therefore, length of the rectangular field 'P' = $2x = 80$ metres

Length of the rectangular field 'Q' = $3x = 120$ metres

Breadth of both the rectangular fields = $x = 40$ metres

Perimeter of the squared field = $80 + 120 = 200$ metres

Therefore, side of the squared field = $200/4 = 50$ metres

Area of the squared field = $(50 \text{ m})^2 = 2500 \text{ m}^2$

Therefore, total cost of cultivation of the squared field = $2500 \times (18.2/20) = \text{Rs. } 2275$

19. Answer: C)

Let the lengths of the rectangular fields 'P' and 'Q' be $2x$ m and $3x$ m respectively.

Therefore, breadth of both the fields = $3x/3 = x$ m

Area of the rectangular field 'P' = $2x \times x = 2x^2 \text{ m}^2$

Base of both the triangular field = x metres

Height of the triangular field at field 'P' = $2x/2 = x$ m

Area enclosed by triangular cultivated field in rectangular field 'P' = $(x \times x)/2 = x^2/2 \text{ m}^2$

Therefore, remaining area in the rectangular field 'P' = $2x^2 - x^2/2 = 3x^2/2 \text{ m}^2$

Height of the triangular field at field 'Q' = $3x/2 \text{ m}$

Area enclosed by triangular cultivated field in rectangular field 'Q' = $(3x \times x)/(2 \times 2) = 3x^2/4 \text{ m}^2$

Area of the rectangular field 'Q' = $3x \times x = 3x^2 \text{ m}^2$

Therefore, remaining area in the rectangular field 'Q' = $3x^2 - 3x^2/4 = 9x^2/4 \text{ m}^2$

According to the question,

$$9x^2/4 - 3x^2/2 = 1200$$

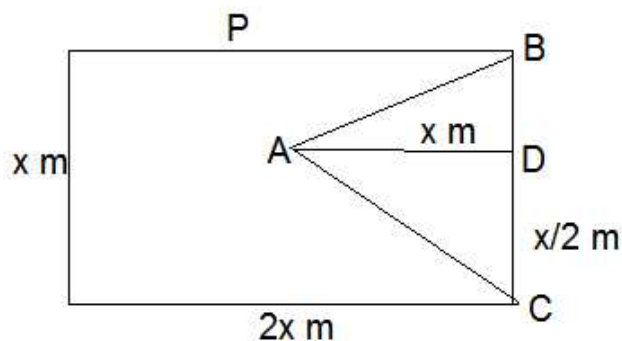
$$\text{Or, } x^2 = 1600$$

$$\text{Or, } x = 40 \text{ metres}$$

Therefore, length of the rectangular field 'P' = $2x = 80 \text{ metres}$

Length of the rectangular field 'Q' = $3x = 120 \text{ metres}$

Breadth of both the rectangular fields = $x = 40 \text{ metres}$



$$AB^2 = x^2 + (x/2)^2 = 5x^2/4$$

$$AB = \sqrt{5}x/2$$

Therefore, perimeter of the wall = $2 \times \sqrt{5}x/2 + x = 40\sqrt{5} + 40 = 40(\sqrt{5} + 1) \text{ metres}$

20. Answer: D)

Let the lengths of the rectangular fields 'P' and 'Q' be $2x \text{ m}$ and $3x \text{ m}$ respectively.

Therefore, breadth of both the fields = $3x/3 = x$ m

Area of the rectangular field 'P' = $2x \times x = 2x^2$ m²

Base of both the triangular field = x metres

Height of the triangular field at field 'P' = $2x/2 = x$ m

Area enclosed by triangular cultivated field in rectangular field 'P' = $(x \times x)/2 = x^2/2$ m²

Therefore, remaining area in the rectangular field 'P' = $2x^2 - x^2/2 = 3x^2/2$ m²

Height of the triangular field at field 'Q' = $3x/2$ m

Area enclosed by triangular cultivated field in rectangular field 'Q' = $(3x \times x)/(2 \times 2) = 3x^2/4$ m²

Area of the rectangular field 'Q' = $3x \times x = 3x^2$ m²

Therefore, remaining area in the rectangular field 'Q' = $3x^2 - 3x^2/4 = 9x^2/4$ m²

According to the question,

$$9x^2/4 - 3x^2/2 = 1200$$

$$\text{Or, } x^2 = 1600$$

$$\text{Or, } x = 40 \text{ metres}$$

Therefore, length of the rectangular field 'P' = $2x = 80$ metres

Length of the rectangular field 'Q' = $3x = 120$ metres

Breadth of both the rectangular fields = $x = 40$ metres

Area of the rectangular field 'R' = $0.55 \times (120 \times 40) = 2640$ m²

Breadth of the rectangular field 'R' = $2640/240 = 11$ metres

Therefore, perimeter of the rectangular field 'R' = $2 \times (11 + 240) = 502$ metres

(21 – 25): Common Explanation:

Length of one side of rectangle A = $120 * (36/360) = 12$ cm

Length of another side of rectangle A = $41(2/3)\%$ of $12 = 5$ cm

Length of one side of rectangle B = $120 * (120/360) = 40$ cm

Length of another side of rectangle B = 22.5% of $40 = 9$ cm

Length of one side of rectangle C = $120 * (72/360) = 24$ cm

Length of another side of rectangle C = $41(2/3)\%$ of 24 = 10 cm

Length of one side of rectangle D = $120 * (24/360) = 8$ cm

Length of another side of rectangle D = 75% of 8 = 6 cm

Length of one side of rectangle E = $120 * (72/360) = 24$ cm

Length of another side of rectangle E = $29(1/6)\%$ of 24 = 7 cm

Length of one side of rectangle F = $120 * (36/360) = 12$ cm

Length of another side of rectangle F = $291(2/3)\%$ of 12 = 35 cm

Rectangles	Length of one side (cm)	Length of another side (cm)
A	12	5
B	40	9
C	24	10
D	8	6
E	24	7
F	12	35

21. Answer: b)

Area of field C = $24 * 10 = 240\text{ cm}^2$

Base area of cylindrical pit = $(22/7) * 7^2 = 154\text{ cm}^2$

Remaining area of the filed = $240 - 154 = 86\text{ cm}^2$

Volume of the soil coming out after digging the pit = $(22/7) * 7^2 * 8.6 = 1324.4\text{ cm}^3$

Increment in the level of the filed = $1324.4/86 = 15.4\text{ cm}$

22. Answer: a)

Area of field A = $12 * 5 = 60\text{ cm}^2$

Cost of flooring the rectangular field A = $15 * 60 = \text{Rs.}900$

Perimeter of field D = $2 * (8 + 6) = 28 \text{ cm}$

Cost of fencing the rectangular field D = $28 * 25 = \text{Rs.}700$

Required ratio = $900: 700 = 9: 7$

23. Answer: c)

Base area of pool B = $40 * 9 = 360 \text{ cm}^2$

Volume of the water in tank after 12 minutes = $360 * 5 = 1800 \text{ cm}^3 = 1.8 \text{ litres}$

Let the rate at which tap is filling the pool = 'x' litres/hour

According to the question:

$$x * (12/60) = 1.8$$

$$x = (1.8 * 60)/12$$

$$x = 9 \text{ litres/hour}$$

24. Answer: d)

Total volume of water in the pool F when it is filled up to height of 22 cm = $(12 * 35 * 22) \text{ cm}^3$

Volume of 1 such bucket = $(22/7) * 3.5^2 * 12 = (22 * 21) \text{ cm}^3$

Let number of such buckets needed = 'N'

According to the question:

$$(22 * 21) * N = (12 * 35 * 22)$$

$$N = (12 * 35 * 22)/(22 * 21)$$

$$N = 20$$

25. Answer: a)

Let the height of water in pool D and F is 'x' and 'y' respectively.

Total volume of water in pool D = Total volume of water in pools A and C

$$= (12 * 5 * 3) + (24 * 10 * 2.75)$$

$$(8 * 6 * x) = 180 + 660$$

$$48x = 840$$

$$x = 17.5 \text{ cm}$$

$$\text{Total volume of water in pool F} = \text{Total volume of water in pools E and B} = (24 * 7 * 5) + (40 * 9 * 12.25)$$

$$(12 * 35 * y) = 840 + 4410$$

$$420y = 5250$$

$$y = 12.5 \text{ cm}$$

$$\text{Required ratio} = x : y = 17.5 : 12.5 = 7 : 5$$

26. Answer: B)

$$\text{Total surface area of frustum} = \pi l (R + r) + \pi R^2 + \pi r^2$$

Radius of cylinder:

$$\text{Surface area of cylinder/volume of cylinder} = 2\pi r(r + h) / \pi r^2 h$$

$$2\pi r(r + h) / \pi r^2 h \Rightarrow 2(r + h) / r * h$$

$$2(r + 14) / (r * 14) = 924 / 2156$$

$$(r + 14) / (r * 14) = 462 / 2156$$

$$r + 14 / r = 462 / 154$$

$$154r + 154 * 14 = 462r$$

$$154 * 14 = 462r - 154r$$

$$308r = 2156$$

$$\Rightarrow r = 7 \text{ cm}$$

Radius of hemisphere:

$$\text{Volume of hemisphere} = 19404 \text{ cm}^3$$

$$2\pi R^3 / 3 = 19404$$

$$R = 21 \text{ cm}$$

Height of cone:

$$\text{Volume of cone} = (1/3) * \pi r^2 h$$

$$(1/3) * (22/7) * 21 * 21 * h = 12936$$

$$\Rightarrow h = 28 \text{ cm}$$

Slant height of frustum:

$$L^2 = h^2 + (R-r)^2$$

$$L^2 = 28^2 + (21-7)^2 = 784 + 196 = 980$$

$$L = 31 \text{ cm (round off 31.30)}$$

$$\text{S.A of frustum} = (22/7) * 31 * (21 + 7) + (22/7) * 441 + (22/7) * 49$$

$$= 2728 + 1386 + 154$$

$$= 4268 \text{ cm}^2$$

$$\text{Cost of paint} = 4268 * 5$$

$$= \text{Rs.} 21340$$

27. Answer: D)

Cube:

$$\text{Surface area of cube} = 6a^2 = 726 \text{ cm}^2$$

$$\text{Cost of paint} = 726 * 8 = 5808$$

$$\text{Labour charges} = 15 * 85 = \text{Rs.} 1275$$

$$\text{Total expenses} = 1275 + 5808 = \text{Rs.} 7083$$

Cylinder

$$\text{Cost of paint} = \text{Surface area of cylinder} * \text{cost of paint per cm}^2$$

$$924 * 12 = 11088$$

$$\text{Cost of labour} = \text{time taken to paint the surface} * \text{wage per day}$$

$$25 * 120 = \text{Rs.} 3000$$

$$\text{Total expenses} = \text{Cost of paint} + \text{cost of labour}$$

$$11088 + 3000 = \text{Rs.} 14088$$

$$\% \text{ increase} = 7005 / 14088 * 100$$

$$= 7005 / 14088 * 100$$

$$= 49.7\%$$

28. Answer: A)

CSA of Cone

$$\text{Volume of cone} = (1/3) * \pi r^2 h$$

$$(1/3) * (22/7) * 21 * 21 * h = 12936$$

$$\Rightarrow h = 28$$

$$\text{Slant height of cone} \Rightarrow L^2 = r^2 + h^2$$

$$L^2 = 28^2 + 21^2$$

$$L = 35$$

$$\text{CSA of cone} = \pi r l \Rightarrow (22/7) * 21 * 35 \Rightarrow 2310 \text{ cm}^2$$

CSA of Cylinder

$$\text{Surface area of cylinder/volume of cylinder} = 2\pi r^2 + 2\pi r h / \pi r^2 h$$

$$2\pi r^2 + 2\pi r h / \pi r^2 h = 924/2156$$

$$2(r+14)/(r*14) = 924/2156$$

$$2(r+14)/(r*14) = 924/2156$$

$$(r+14)/(r*14) = 462/2156$$

$$r+14/r = 462/154$$

$$154r + 154*14 = 462r$$

$$154*14 = 462r - 154r$$

$$308r = 2156$$

$$\Rightarrow r = 7 \text{ cm}$$

$$\text{CSA of cylinder} = 2\pi r h \Rightarrow 2 * (22/7) * 7 * 14$$

$$= 616 \text{ cm}^2$$

CSA of Hemisphere

$$\text{TSA} = 3 \pi r^2 \Rightarrow 4158$$

$$\text{CSA} = 2 \pi r^2$$

$$\text{CSA of hemisphere} = (4158/3 \pi r^2) * 2 \pi r^2 \Rightarrow 2772 \text{ cm}^2$$

Paint cost

For cone = $2310 \times 6 \Rightarrow \text{Rs.} 13860$

For cylinder = $616 \times 12 \Rightarrow \text{Rs.} 7392$

For hemisphere = $2772 \times 5 \Rightarrow \text{Rs.} 13860$

Total paint cost = $13860 + 7392 + 13860 \Rightarrow \text{Rs.} 35112$

Labour cost

For Cone = $7 \times 50 \times 0.8 \Rightarrow \text{Rs.} 280$

For Cylinder = $25 \times 120 \times 0.8 \Rightarrow \text{Rs.} 2400$

For Hemisphere = $4 \times 180 \times 0.8 \Rightarrow \text{Rs.} 576$

Total labour cost = $280 + 2400 + 576 \Rightarrow \text{Rs.} 3256$

Total cost = paint cost + labour cost

= $\text{Rs.} 3256 + \text{Rs.} 35112 \Rightarrow \text{Rs.} 38368$

29. Answer: C)

Volume of sphere

Volume of sphere = $(4/3) \pi r^3$

= $4/3 \times 22/7 \times 12 \times 12 \times 12 \Rightarrow 7241 \text{ cm}^3$ (approx)

Volume of cube

Surface area of cube = $6a^2$

$6a^2 = 726 \text{ cm}^2$

$a^2 = 121 \Rightarrow a = 11$

Volume of cube = $a^3 = 11^3 \Rightarrow 1331 \text{ cm}^3$

Total volume = volume of sphere + volume of cube + volume of cylinder

= $7241 + 1331 + 2156 \Rightarrow 10728 \text{ cm}^3$

Radius of new sphere

Volume of new sphere = $n \times (\text{volume of new sphere})$

$10728 = n \times (4/3) \times (22/7) \times r^3$

$$10728 = 8 \times \left(\frac{4}{3}\right) \times \left(\frac{22}{7}\right) \times r^3$$

$$r^3 = 320$$

$$r = 7 \text{ cm (approx)}$$

$$\text{Radius of small identical sphere / radius of cylindrical jar} = 1/3$$

$$7 / \text{radius of cylindrical jar} = 1/3$$

$$\text{Radius of cylindrical jar} = 21 \text{ cm}$$

$$\text{Height of cylindrical jar / radius of cylindrical jar} = 2/3$$

$$\text{Height of cylindrical jar} / 21 = 2/3$$

$$\text{Height of cylindrical jar} = 14 \text{ cm}$$

Volume of cylindrical jar

$$\begin{aligned} \text{Volume of cylindrical jar} &= \pi r^2 h \Rightarrow \frac{22}{7} \times 21 \times 21 \times 14 \\ &= 19404 \text{ cm}^3 \end{aligned}$$

30. Answer: B)

$$\text{Height of cylinder} = 14 \text{ cm (given)}$$

$$\text{Radius of cone} = 21 \text{ cm (given)}$$

$$\text{Radius of sphere} = 12 \text{ cm (given)}$$

$$\text{Length of cuboid / height of cylinder} = 6/7$$

$$\text{Length of cuboid} / 14 = 6/7$$

$$\text{Length of cuboid} = 12 \text{ cm}$$

$$\text{Radius of cone / breadth of cuboid} = 3/1$$

$$21 / \text{breadth of cuboid} = 3/1$$

$$\text{Breadth of cuboid} = 7 \text{ cm}$$

$$\text{Radius of sphere / height of cuboid} = 3/2$$

$$12 / \text{height of cuboid} = 3/2$$

$$\text{Height of cuboid} = 8 \text{ cm}$$

$$\text{Volume of the cuboid} = l \times b \times h = 12 \times 7 \times 8 = 672 \text{ cm}^3$$

(31 – 35): Common Explanation:

Let Radius of sphere and cylinder = r

So,

Height of cuboid = $\frac{2r}{2} = r$ = radius of cone

ATQ—

$\frac{\text{Volume of cylinder}}{\text{Volume of sphere}} \times 100 = 75\%$

$$\frac{\pi r^2 h}{\frac{4}{3} \pi r^3} \times 100 = 75$$

$h = r$ = height of cylinder

Let edge of cube and height of cone = a

So, ATQ

$\frac{\text{Volume of cube}}{\text{Volume of cone}} \times 100 = 95 \frac{5}{11} \%$

$$\frac{a^3}{\frac{1}{3} \times \frac{22}{7} \times r^2 \times a} \times 100 = \frac{1050}{11} \%$$

$$a^2 = \frac{1050}{1100} \times \frac{22}{7} \times \frac{1}{3} \times r^2$$

$a = r$

Ratio of volume of cube and cuboid.

$$\frac{a^3}{r \times 110} = \frac{441}{110}$$

$$\frac{r^3}{r} = 441$$

$$r = 21\text{cm}$$

31. Answer: B)

Surface area of sphere = $4\pi r^2$

$$= 4 \times \frac{22}{7} \times 21 \times 21$$

$$= 5544 \text{ cm}^2$$

32. Answer: E)

$$\text{Required \%} = \frac{6a^2}{2\pi rh + 2\pi r^2}$$

$$\text{Required \%} = \frac{6 \times 21 \times 21}{2 \times \frac{22}{7} \times 21 \times 21 + 2 \times \frac{22}{7} \times 21 \times 21} \times 100$$

$$= 47 \frac{8}{11} \%$$

33. Answer: A)

Required ratio

$$\frac{4}{3}\pi r^3 : \frac{1}{3}\pi r^2 \times r : \pi r^2 \times r$$

$$4 : 1 : 3$$

34. Answer: C)

$$\text{Volume of cone} = \frac{1}{3} \times \frac{22}{7} \times 21 \times 21 \times 21 = 9702 \text{ cm}^3$$

$$\text{Volume of cuboid} = 21 \times 110 = 2310$$

$$\text{Required sum} = 12012 \text{ cm}^3$$

35. Answer: E)

$$\text{C. S. A. of cone} = \frac{22}{7} \times 21 \sqrt{21^2 + 21^2}$$

$$= \frac{22}{7} \times 21 \times 21 \times \sqrt{2}$$

$$= 1386\sqrt{2} \text{ cm}^2$$

36. Answer: B)

Total quantity of mixture in cylindrical container =

$$336 \times \frac{21}{8} = 882 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

Total quantity of mixture in hemispherical container =

$$307.2 \times 2 = 614.4 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{Total quantity of mixture in conical container} = 324 \times \frac{9}{4} = 729 \text{ m}^3$$

$$\text{Total capacity of conical container} = \frac{729}{0.75} = 972 \text{ m}^3$$

Total quantity of mixture in cuboidal container =

$$2700 \times \frac{8}{5} = 4320 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

Total quantity of mixture in cubical container =

$$399.3 \times \frac{5}{3} = 665.5 \text{ m}^3$$

$$\text{Total capacity of cubical container} = \frac{665.5}{0.5} = 1331 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

$$\text{So, } \pi r^2 h = 2205$$

$$3 \times 49 \times h = 2205$$

$$h = \frac{2205}{3 \times 49} = 15 \text{ m}$$

37. Answer: B)

Total quantity of mixture in cylindrical container =

$$336 \times \frac{21}{8} = 882 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

Total quantity of mixture in hemispherical container =

$$307.2 \times 2 = 614.4 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{Total quantity of mixture in conical container} = 324 \times \frac{9}{4} = 729 \text{ m}^3$$

$$\text{Total capacity of conical container} = \frac{729}{0.75} = 972 \text{ m}^3$$

Total quantity of mixture in cuboidal container =

$$2700 \times \frac{8}{5} = 4320 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

Total quantity of mixture in cubical container =

$$399.3 \times \frac{5}{3} = 665.5 \text{ m}^3$$

$$\text{Total capacity of cubical container} = \frac{665.5}{0.5} = 1331 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{So, } \frac{2}{3} \pi r^3 = 1024$$

$$r^3 = 512$$

$$r = 8 \text{ m}$$

38. Answer: D)

Total quantity of mixture in cylindrical container =

$$336 \times \frac{21}{8} = 882 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

Total quantity of mixture in hemispherical container =

$$307.2 \times 2 = 614.4 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{Total quantity of mixture in conical container} = 324 \times \frac{9}{4} = 729 \text{ m}^3$$

$$\text{Total capacity of conical container} = \frac{729}{0.75} = 972 \text{ m}^3$$

Total quantity of mixture in cuboidal container =

$$2700 \times \frac{8}{5} = 4320 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

Total quantity of mixture in cubical container =

$$399.3 \times \frac{5}{3} = 665.5 \text{ m}^3$$

$$\text{Total capacity of cubical container} = \frac{665.5}{0.5} = 1331 \text{ m}^3$$

$$\text{Therefore, required difference} = 1024 - 972 = 52 \text{ m}^3$$

39. Answer: A)

Total quantity of mixture in cylindrical container =

$$336 \times \frac{21}{8} = 882 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

Total quantity of mixture in hemispherical container =

$$307.2 \times 2 = 614.4 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{Total quantity of mixture in conical container} = 324 \times \frac{9}{4} = 729 \text{ m}^3$$

$$\text{Total capacity of conical container} = \frac{729}{0.75} = 972 \text{ m}^3$$

Total quantity of mixture in cuboidal container =

$$2700 \times \frac{8}{5} = 4320 \text{ m}^3$$

$$\text{Total capacity of cubical container} = \frac{665.5}{0.5} = 1331 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

Total quantity of mixture in cubical container =

$$399.3 \times \frac{5}{3} = 665.5 \text{ m}^3$$

$$\text{So, } 15 \times 18 \times h = 5400$$

$$h = 20 \text{ m}$$

40. Answer: C)

Total quantity of mixture in cylindrical container =

$$336 \times \frac{21}{8} = 882 \text{ m}^3$$

$$\text{Total capacity of cylindrical container} = \frac{882}{0.4} = 2205 \text{ m}^3$$

Total quantity of mixture in hemispherical container =

$$307.2 \times 2 = 614.4 \text{ m}^3$$

$$\text{Total capacity of hemispherical container} = \frac{614.4}{0.6} = 1024 \text{ m}^3$$

$$\text{Total quantity of mixture in conical container} = 324 \times \frac{9}{4} = 729 \text{ m}^3$$

$$\text{Total capacity of conical container} = \frac{729}{0.75} = 972 \text{ m}^3$$

Total quantity of mixture in cuboidal container =

$$2700 \times \frac{8}{5} = 4320 \text{ m}^3$$

$$\text{Total capacity of cuboidal container} = \frac{4320}{0.8} = 5400 \text{ m}^3$$

Total quantity of mixture in cubical container =

$$399.3 \times \frac{5}{3} = 665.5 \text{ m}^3$$

$$\text{Total capacity of cubical container} = \frac{665.5}{0.5} = 1331 \text{ m}^3$$

$$\text{Side of cuboidal container} = (1331)^{\frac{1}{3}} = 11 \text{ m}$$

$$\text{Required area} = 5 \times (\text{side})^2 = 5 \times 11^2 = 605 \text{ m}^2$$

(41 – 45): Common Explanation:

For Cone A:

$$\text{Slant Height} = \frac{405}{9 \times 3} = 15 \text{ cm}$$

$$\text{Height} = \sqrt{15^2 - 9^2} = 12 \text{ cm}$$

$$\text{Volume} = \frac{1}{3} \times 3 \times 9 \times 9 \times 12 = 972 \text{ cm}^3$$

For Cone B:

$$\text{Height} = \sqrt{34^2 - 30^2} = 16 \text{ cm}$$

$$\text{Curved surface area} = 3 \times 30 \times 34 = 3060 \text{ cm}^2$$

$$\text{Volume} = \frac{1}{3} \times 3 \times 30 \times 30 \times 16 = 14400 \text{ cm}^3$$

For Cone C:

$$\text{Radius} = \sqrt{\frac{2400 \times 3}{24 \times 3}} = 10 \text{ cm}$$

$$\text{Slant height} = \sqrt{24^2 + 10^2} = 26 \text{ cm}$$

$$\text{Curved surface area} = 3 \times 10 \times 26 = 780 \text{ cm}^2$$

For Cone D:

$$\text{Slant Height} = \sqrt{7^2 + 24^2} = 25 \text{ cm}$$

$$\text{Curved surface area} = 3 \times 24 \times 25 = 1800 \text{ cm}^2$$

$$\text{Volume} = \frac{1}{3} \times 3 \times 24 \times 24 \times 7 = 4032 \text{ cm}^3$$

For Cone E:

$$\text{Radius} = \frac{1740}{29 \times 3} = 20 \text{ cm}$$

$$\text{Height} = \sqrt{29^2 - 20^2} = 21 \text{ cm}$$

Volume = $\frac{1}{3} \times 3 \times 20 \times 20 \times 21 = 8400 \text{ cm}^3$

	Height	Curved surface area	Radius	Volume	Slant height
Cone A	12 cm	405 cm ²	9 cm	972 cm ³	15 cm
Cone B	16 cm	3060 cm ²	30 cm	14400 cm ³	34 cm
Cone C	24 cm	780 cm ²	10 cm	2400 cm ³	26 cm
Cone D	7 cm	1800 cm ²	24 cm	4032 cm ³	25 cm
Cone E	21 cm	1740 cm ²	20 cm	8400 cm ³	29 cm

41. Answer: D)

Sum of capacity of cone A and cone B = $972 + 14400 = 15372 \text{ cm}^3$

42. Answer: C)

Required ratio = 10: 20 = 1: 2

43. Answer: B)

Total surface area of cone C = $3 \times 10 \times (10 + 26) = 648 \text{ cm}^2$

Total surface area of cone A = $3 \times 9 \times (9 + 15) = 1080 \text{ cm}^2$

Required percentage = $\frac{648}{1080} \times 100 = 60\%$

44. Answer: D)

Required time taken = $\frac{8400}{35} = 240$ seconds

45. Answer: E)

Required difference = $3060 \times 12.5 - 1800 \times 15 = 38250 - 27000 = \text{Rs.}11250$

46. Answer: D)

Let the height of water in vessel D be h cm.

Volume of vessel E = Volume of water in vessel D

$$\Rightarrow \frac{2}{3} \times \pi \times 21^3 = \pi \times 28^2 \times h$$

$$\Rightarrow h = \frac{63}{8} = 7\frac{7}{8} \text{ cm}$$

47. Answer: B)

Capacity of vessel A = (length)³ = $35^3 = 42875 \text{ cm}^2$

Capacity of vessel B = Area of bottom \times height = $1260 \times 25 = 31500 \text{ cm}^2$

Required Percentage = $\frac{42875 - 31500}{31500} \times 100$

$$= 36\frac{1}{9} \%$$

48. Answer: A)

$$\frac{\text{Radius of vessel C}}{\text{Height of vessel C}} = \frac{3}{4}$$

$$\Rightarrow \frac{\text{Radius}}{28} = \frac{3}{4}$$

Radius of vessel C = 21 cm

Slant height of vessel C = $\sqrt{\text{Radius}^2 + \text{Height}^2}$

$$= \sqrt{21^2 + 28^2}$$

$$= 35 \text{ cm}$$

Ratio of lateral surface areas of vessel C and vessel E:

Lateral Surface Area of vessel C

Lateral Surface Area of vessel E

$$= \frac{\pi \times \text{Radius} \times \text{Slant Height}}{2 \times \pi \times \text{Radius}^2}$$

$$= \frac{\pi \times 21 \times 35}{2 \times \pi \times 21^2}$$

$$= \frac{5}{6}$$

$$= \frac{5}{6}$$

$$= 5 : 6$$

49. Answer: C)Let the radius of vessel F be r cm

Capacity of cylindrical vessel F = 10% more than capacity of vessel A

$$\frac{22}{7} \times r^2 \times 49 = 1.1 \times 35 \times 35 \times 35$$

$$\Rightarrow r = 17.5 \text{ cm}$$

$$\text{Required Percentage} = \frac{21 - 17.5}{21} \times 100$$

$$= 16\frac{2}{3}\%$$

50. Answer: D)

Total Area to be painted

= Lateral Surface Area of vessel D + (Lateral Surface Area + Area of the bottom) of vessel A

$$= 2 \times \frac{22}{7} \times 28 \times 20 + 5 \times 35 \times 35$$

$$= 3520 + 6125$$

$$= 9645 \text{ cm}^2$$

$$\text{Total Expenditure} = 0.2 \times 9645$$

$$= \text{Rs.}1929$$

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Expected DI and Caselet based on Time Speed Distance Questions for Upcoming Bank Mains Exam

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Time Speed Distance DI and Caselet Questions

Directions (1 – 3): Answer the questions based on the information given below.

Amravati express after travelling 125 km meet with an accident due to which it proceeds at 75% of its original speed and arrived at its destination 35 minutes late but had the accident had taken place 30 km further then the train would have arrived at its destination 25 minutes late. Amravati express crosses a pole with its original speed in 45 seconds and crosses Samjhauta express which is 20% longer than Amravati express and is coming from the opposite direction in 0.9 minutes.

1. What is the time taken by Amravati express to cover a distance of 270 km with its original speed?

- a) 5.5 hours
- b) 4.5 hours
- c) 3.5 hours
- d) 4 hours
- e) None of these

2. Find the time taken by Samjhauta express to cover the total distance travelled by Amravati express?

- a) 4.2 hours
- b) 5.4 hours
- c) 4.6 hours

- d) 4.8 hours
- e) None of these

3. Time taken by Samjhauta express to cross a platform is 1.584 minutes. Find the length of the platform.

- a) 380 metres
- b) 450 metres
- c) 480 metres
- d) 420 metres
- e) None of these

Directions (4 – 6): Answer the questions based on the information given below.

Ankita, Ankit, Lavanya, Sushil and Loki are five friends who are participating in a Race of 96 km long along with many people who are also participating in the Race. After the Race starts, Ankit and Lavanya run at an average speed in the ratio of 5:7, respectively for the whole race. Ankita is 6.9 km behind the end point when Loki completed the Race. Loki covers one – fourth of the total distance at an average speed of 15 km/hr and the remaining distance is covered in two equal parts at an average speed of 3 km/hr and 5 km/hr more than his previous speed. Ankit covers $\frac{3}{4}$ th of the total distance at a constant speed in 4.5 hours. Among the five friends,

none of them secured the first position in the Race. The person who secured the first position completes the Race at an average speed of 40 km/hr in 48 minutes less than the time taken by Sushil to complete the Race.

4. If the race is conducted among the friends then who will get second position and by how much approximate time will he miss the first position?

- 1) Sushil, 1.1 hours
- 2) Lavanya, 1.1 hours
- 3) Ankit, 2.8 hours
- 4) Loki, 0.42 hours
- 5) None of these

5. If speed of Lavanya is increased by 25% then find the time taken by her to complete the 70% of the race.

- 1) 2.4 hours
- 2) 2.6 hours
- 3) 2 hours
- 4) 2.2 hours
- 5) None of these

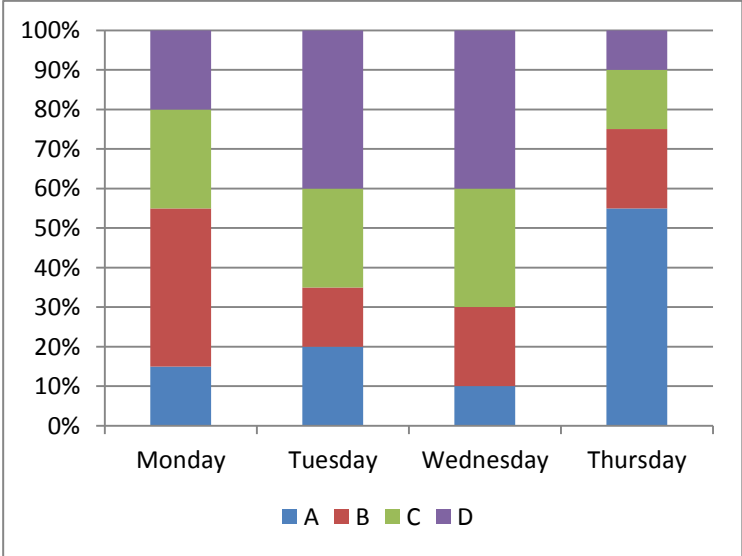
6. Among the five friends, if the friend who secured fifth position run with his average speed for the time taken by the friend who secured fourth position to complete the race while the friend who secured fourth position run with his average speed for the time taken by the friend who secured fifth position to complete the race, then find the difference between the distances covered by both of them.

- a) 4.68 km

- b) 7.48 km
- c) 5.88 km
- d) 6.48 km
- e) 8.66 km

Directions (7 – 9): Answer the questions based on the information given below.

The following bar graph shows the percentage distribution of the distance (in km) covered by 4 people; A, B, C and D on 4 days of the week. Every day each person travels for some distance by bus and some distance by train. Total distance travelled by all of them together on Monday, Tuesday, Wednesday and Thursday is 120 km, 80 km, 60 km and 100 km respectively.



7. The length of Train A is 30% of the difference between distance travelled by person A on Monday and Tuesday and length of Train B is 5% of the average of the distance travelled by person B on Wednesday and Thursday. If a train of length 400 m and speed 56 m/s can cross a platform in 25 seconds, the ratio of the speeds of Train A and Train B is 4:5 and Train B can cross that platform in 4 seconds less

time than Train A, what is the average of the speeds of Trains A and B?

- a) 40 m/s
- b) 45 m/s
- c) 36 m/s
- d) 54 m/s
- e) 60 m/s

8. Person B on Monday travelled 8 km by bus and remaining by train. On Monday he travelled for 30 minutes in train and the speed of the bus is 25% of the speed of the train. If, his average speed on Tuesday was $(\frac{3}{8})$ th of average speed on Monday, and the time travelled by him in bus and train is in the ratio 1:2, what is the distance travelled by him in bus on Tuesday if the speed of the train is 25 km/hr?

- a) 1.2 km
- b) 1.5 km
- c) 1.8 km
- d) 2 km
- e) 1 km

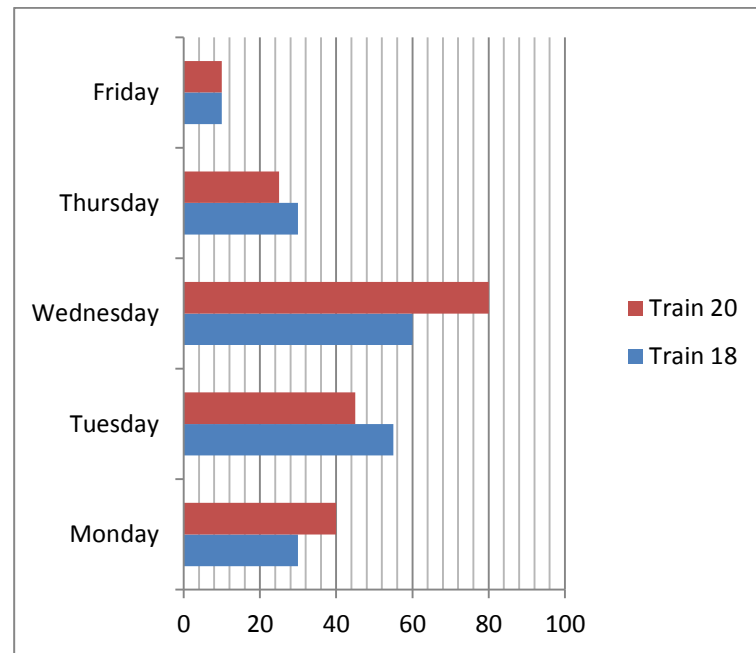
9. Person C travels 75% of the distance he travels on Monday by train and 60% of the distance he travels on Wednesday by train. The length of a platform is 14 km less than the sum of the distance travelled by person C by bus on Monday and Wednesday. The speed of a train of length 500 m is 20% more than Person C's average speed on Tuesday and person C travelled for $(\frac{1}{3})$ hour on Tuesday. In how much time can the train cross the platform?

- a) 45 seconds

- b) 1 minute
- c) 1.5 minutes
- d) 2 minutes
- e) 30 seconds

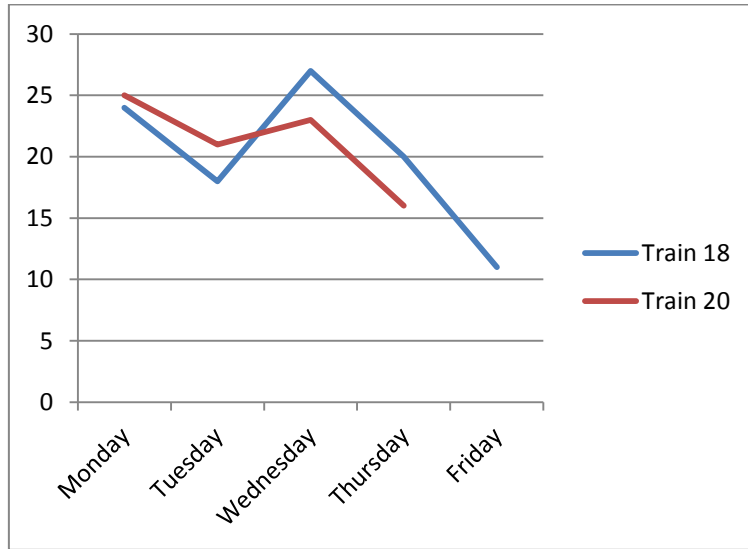
Directions (10 – 14): Study the given information carefully and answer the following question accordingly: -

The given bar graph shows the speed (in km/h) of two trains namely Train18 and Train20 while travelling on different days.



The following line chart shows the percentage of distance traveled by both the trains i.e., Train18 and Train20 on different days.

Expected DI and Caselet based on Time Speed Distance Questions for Upcoming Bank Mains Exam



10. If Train20 completes the journey on Tuesday in 4 hours, then what is the total distance travelled by Train20 in whole journey on all days (approx.)?

- a) 1006 km
- b) 1012 km
- c) 1024 km
- d) 1048 km
- e) None of these

11. If Train18 travels 432 km on Wednesday, then what is the total time taken by Train18 to travel on Tuesday and Thursday together?

- a) 20.4 hours
- b) 19.2 hours
- c) 18 hours
- d) 18.5 hours
- e) None of these

12. What is the total time taken by Train18 (approximately) during whole journey if it completes its journey on Friday in 5.5 hours?

- a) 18 hours
- b) 16.2 hours
- c) 20.5 hours
- d) 12 hours
- e) None of these

13. If Train18 travelled 242 km on Friday and Train20 travelled 625 km on Monday. Then what will be the difference between time taken to complete their journey on Tuesday?

- a) 2.7 hours
- b) 1.7 hours
- c) 0.7 hours
- d) 3.7 hours
- e) None of these

14. If Train20 completed its journey on Wednesday in 5.75 hours, then what is average of the distance travelled by it on Monday, Tuesday and Thursday?

- a) 310 km
- b) 278 km
- c) 340 km
- d) 370 km
- e) None of these

Directions (15-19): Given below in the table showing data of a train travelling from Thane to Panvel via Airoli, Ghansoli, Nerul, Kharghar.

Stations	Speed (m/min)	Dist. between stations (km)	Time taken (min)
Thane to Airoli	1200	3.6	-
Airoli to Ghansoli	2000	-	-
Ghansoli to Nerul	-	6.5	5
Nerul to Kharghar	1500	4.25	-
Kharghar to Panvel	1000	-	-

15. What is the average of the speed of the train from Thane to Panvel?

- a) 54 km/hr
- b) 84 km/hr
- c) 72 km/hr
- d) 63 km/hr
- e) None of these

16. From Airoli to Ghansoli, if the train takes twice the time it takes to travel from Thane to Airoli, then what is the distance between Airoli to Ghansoli?

- a) 8 km
- b) 12 km
- c) 10 km
- d) 18 km
- e) None of these

17. If the total distance from Thane to Panvel is 42.85 km. Find the time taken to travel from Kharghar to Panvel? To solve this question you can use data from your previously solved questions of this comprehension.

- a) 16.5 min
- b) 12.45 min
- c) 14 min
- d) 16 min
- e) None of these

18. By what percent time taken from station Ghansoli to Nerul is more/ less than the time taken from Nerul to Kharghar?

- a) 54.23%
- b) 67.48%
- c) 70.57%
- d) 76.68%
- e) None of these

19. If due to some track problem, the train takes 3.5 more minutes to reach Panvel from Kharghar, then by approximately what percent the average speed of entire journey has changed?

- a) 7.5%
- b) 2.5%
- c) 5.5%
- d) 8.5%
- e) None of these

Directions (20 – 24): Study the data given in the table carefully and answer the following questions: -

Table shows the starting time of five different trains in between two stations A and B. Considering all trains start at their correct time.

From A to B		From B to A	
Train	Starting Time	Train	Starting Time
ASR	7:00 AM	ASR	6 : 00 PM
PSB	8:00 AM	PSB	9 : 00 PM
AKL	11:00 AM	AKL	5 : 00 PM
PDV	2:00 PM	PDV	8:00 AM
GMT	5 : 00 PM	GMT	9:00 AM

20. If Speed of ASR is 40 km/hr and speed of PSB is 45 km/hr on a particular day travelling from A to B, Then PSB catches ASR, after travelling for _____ km distance?

- a) 200 km
- b) 360 km
- c) 480 km
- d) 300 km
- e) None of these

21. If PSB starts from A with a speed of 70 km/hr and PDV starts from B with a speed of 80 km/hr. At the time of their meeting PDV has covered 200 km more than PSB. Find the distance between A and B.

- a) 300 km
- b) 1500 km
- c) 2000 km
- d) 1800 km
- e) 3000 km

22. GMT travelling from B to A and AKL travelling from A to B. Time taken by GMT and AKL to reach their respective distance is 20 hours and 15 hours respectively. Find at what time they have crossed

each other.(Value of distance between A and B should be taken from previous question)

- a) 6:50PM
- b) 7:00AM
- c) 8:00PM
- d) 5:30PM
- e) None of these

23. While travelling from B to A, ASR travels with speed of 150 km/hr and PSB travels with a speed of 200 km/hr. How much distance PSB has travelled before their meeting?

- a) 2100km
- b) 1500km
- c) 1800 Km
- d) 2500KM
- e) None of these

24. GMT starts from A and AKL starts from B. Their speeds are 200 km/hr and 250 km/hr respectively and distance between A and B is 3000km. At what time both trains cross each other?

- a) 12:40 AM
- b) 11:40 PM
- c) 1:20 AM
- d) 10:40 PM
- e) None of these

Directions (25 – 26): A person starts from his home to his office at certain speed but after 2 hours he meet A

and after 1 hour he resumes his journey and becomes 1 hour 40 mins late due to reducing his speed to $\frac{3}{4}$. If he would have met A after 70 km then he will be late by 1 hour 15mins.

25. Find the actual speed of a person.

- a) 50 km/h
- b) 56 km/h
- c) 60 km/h
- d) 66 km/h
- e) 70 km/h

26. Find total distance from his home to office.

- a) 258 km
- b) 224 km
- c) 200 km
- d) 220 km
- e) 250 km

Directions (27 – 29): Two places P and Q are 1200 km apart. Arun starts from point P with his car towards Q and covers the first $\frac{1}{3}^{\text{rd}}$ of the distance at 50 km/hr, the second $\frac{1}{3}^{\text{rd}}$ of the distance at 80 km/hr and last $\frac{1}{3}^{\text{rd}}$ of the distance with 64 km/hr. At the same time, Kishor starts from point Q with his car towards P and covers the first $\frac{1}{4}^{\text{th}}$ of the distance at 60 km/hr, the second $\frac{1}{4}^{\text{th}}$ of the distance at 40 km/hr, the third $\frac{1}{4}^{\text{th}}$ of the distance at 50 km/hr and last $\frac{1}{4}^{\text{th}}$ of the distance with 75 km/hr.

27. If Arun and Kishor meet at point O and Arun takes t_1 time to reach point Q after meeting and Kishor takes t_2 time to reach point P after meeting, then find the ratio of t_1 and t_2 .

- a) 77 : 90
- b) 97 : 136
- c) 67 : 80
- d) 93 : 127
- e) None of these

28. If both Arun and Kishor started their journey at 8:00 AM then at what time they will meet between P and Q?

- a) 7:00 PM
- b) 6:50 PM
- c) 7:10 PM
- d) 6:40 PM
- e) None of these

29. If the average speeds of Arun and Kishor for the whole journey are S_1 and S_2 then find the approximate difference of time taken by Arun and Kishor in covering a distance of 500 km with their average speeds.

- a) 75 minutes
- b) 72.5 minutes
- c) 86.5 minutes
- d) 82.5 minutes
- e) 80 minutes

Directions (30 – 32): A train 'X' travels for four days in a week from Monday to Thursday and the distance covered by it in these four days are 245 km, 180 km, 280 km and 400 km respectively. The time taken by the train to cover these distances are 3.5 hours, 2.5 hours, 5 hours

and 4.5 hours respectively. Read the questions carefully and answer.

30. If the average speed of the train X and another train Y is 75 km/hr on Monday, while the time of travelling of both the trains is same on that day. Then find the distance covered by train Y on Monday.

- a) 280 km
- b) 270 km
- c) 260 km
- d) 300 km
- e) 320 km

31. In a week of the month, the speed of train X on Monday is increased by 20% and speed of train X on Tuesday is decreased by 25%. The speed of train X on Tuesday will be what approximate percent of the speed of train X on Monday for that week?

- a) 68%
- b) 64%
- c) 70%
- d) 72%
- e) 60%

32. The distance to be covered by train X on Wednesday is increased by 25% and that on Thursday is decreased by 10% but the time taken remains same as before on both the days. Find the difference of speeds of train X on both the days.

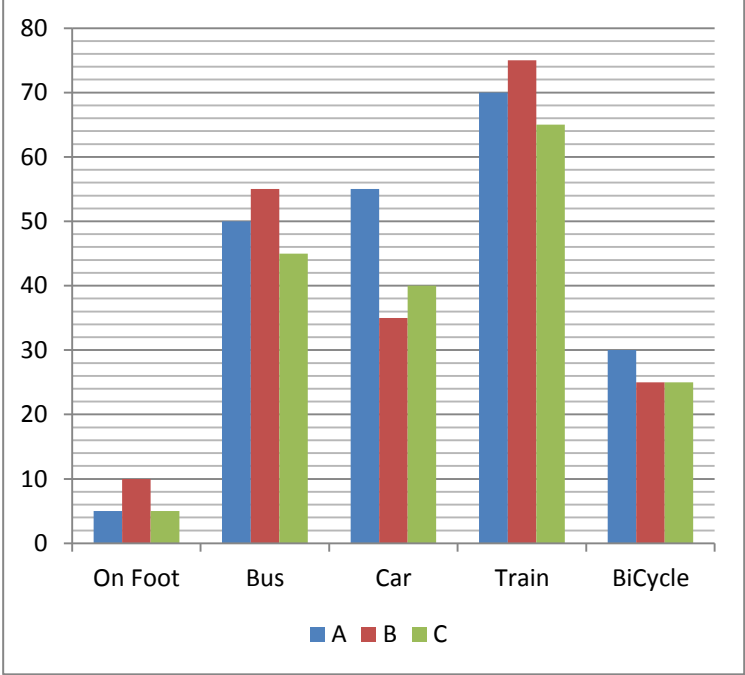
- a) 15 km/hr
- b) 12 km/hr
- c) 10 km/hr

- d) 8 km/hr
- e) 20 km/hr

Directions (33 – 37): Study the following information carefully and answer the related questions.

Bar graph shows the speed(km/hr) of A, B and C while travelling with different vehicles.

Table shows the ratio of time taken by A, B and C to travel by different vehicles.



Vehicle	Ratio of time taken by A, B and C
On foot	2: 3: 1
Bus	6: 7: 5
Car	3: 2: 4
Train	7: 11: 9
Bicycle	2: 3: 2

33. If time taken by A to cover the distance by car is 9 hr and time taken by C to cover distance by train is 50% of time taken by him to cover the distance by car, total distance covered by A, B and C by train is

what percent more/less than distance covered by them by car when their speeds by car is increased by 20% and their speeds by train is increased by 10% respectively?

- a) 6%
- b) 8%
- c) 12%
- d) 15%
- e) 21%

34. Sum of time taken by A to cover the distance by foot, car, bus, train and bicycle is 19 hours when the distance covered by him on foot, bicycle and car is 50%, 90% and 90% respectively of distance covered by him while travelling with bus, distance covered by him while travelling with train is 40% more than the distance covered by bus. What is the distance covered by A while travelling with train?

- a) 90 km
- b) 98 km
- c) 115 km
- d) 130 km
- e) 140 km

35. Distance covered by C while travelling with car, bus and bicycle are 320 km, 450 km and 150 km. What is the difference between sum of distance covered by A and B while travelling with bus and sum of distance covered by B while travelling with car and bicycle?

- a) 856 km
- b) 963 km

- c) 1005 km
- d) 1103 km
- e) 1245 km

36. The sum of distance covered by A while travelling on foot and by car is 165 km, the sum of distance covered by him on travelling with car and bicycle is 255 km and the sum of distance covered by him while travelling with bicycle and foot is 150 km. What is the ratio of sum of time taken by B to cover the distance by car and bicycle to the sum of time taken by C to cover the distance by car and bicycle?

- a) 2: 1
- b) 1: 2
- c) 3: 5
- d) 5: 4
- e) None of these

37. If speed of car driven by A, B and C is increased by 20%, 20% and 25% respectively and new time taken by B to cover the distance by car is 10 hours, what is the sum of actual time taken by A, B and C for the same distance covered?

- a) 40 hours
- b) 42 hours
- c) 45 hours
- d) 50 hours
- e) 55 hours

Directions (38 – 42): Radar graph given below shows the distance between Mumbai to five different cities (Lucknow, Delhi, Pune, Gorkhpur & Kanpur) in

kilometer and Table given below shows the speed of five different Rajdhani express (A, B, C, D & E) trains in km/hr.



Trains	Speed (in kmph)
A	80
B	—
C	120
D	—
E	150

NOTE: - Some data is missing you have to calculate the missing data according to question.

38. Time taken by train ‘A’ to travel from Kanpur to Mumbai and then Mumbai to Delhi is equal to the time taken by train C to travel from Mumbai to Lucknow and then Lucknow to Delhi. Find the distance between city Lucknow and city Delhi .

- a) 5650 km
- b) 5750 km
- c) 5450 km
- d) 5550 km

e) 5320 km

39. Find the approximate time train E takes to reach Kanpur from Lucknow, if Lucknow and city Kanpur is in north and in east direction of Mumbai respectively. (1 Mark)

- a) 12 hours
- b) 16 hours
- c) 18 hours
- d) 10 hours
- e) 9 hours

40. Train B and train D start from Mumbai for Delhi and Pune respectively and they reached in equal time. If train B and train D starts from Delhi and Gorkhpur respectively at same time and move towards each other, then time taken by train B to cross train D is what percent of the time taken by train B to reach Delhi from Mumbai. [Distance between Delhi and Gorkhpur is 1500 km].

- a) 25%
- b) 20%
- c) 30%
- d) 40%
- e) 50%

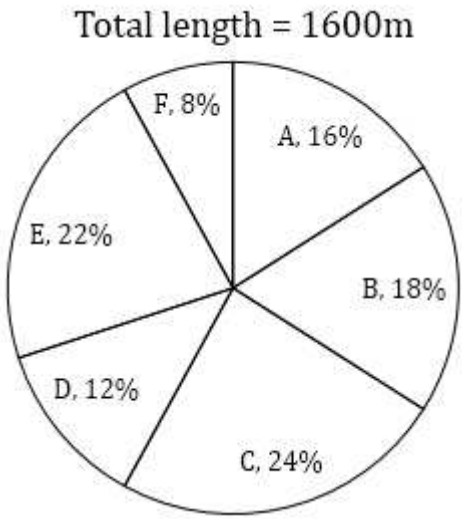
41. A thief stolen money and runs in train D from Mumbai to Kanpur and after six hours of running Mumbai police started to catch him and runs in train C. Due to this thief scare driver of train D so he increases the speed of train D by 100%. If the policeman can catch him at 3/5 th of the distance of city Kanpur from Mumbai. Find the initial speed of train D.

- a) 190/7 km/hr
- b) 349/7 km/hr
- c) 390/7 km/hr
- d) 300/7 km/hr
- e) None of the above.

42. Train A and train B start from Mumbai for Lucknow. Train B reaches first at Lucknow and meets train A in between the way, which is 200 km from Lucknow. Find after how much time they will meet second time after first time meeting if both trains continue, their to and fro motion. (2 Mark)

- a) 14 hours
- b) 15 hours
- c) 16 hours
- d) 12 hours
- e) 10 hours

Directions (43 – 47): Pie chart given below shows length of six different trains and table given below shows ratio between speed of six trains on three different days. Study the data carefully and answer the following questions.



Train	Speed on Monday	:	Speed on Tuesday	:	Speed on Wednesday
A	2	:	3	:	2
B	3	:	4	:	5
C	4	:	6	:	5
D	4	:	4	:	7
E	6	:	9	:	5
F	4	:	5	:	3

43. On Wednesday, train ‘B’ crosses train ‘D’ coming from opposite direction in 6 seconds. If speed of train ‘B’ on Monday is 97.2 km/hour then in how much time train ‘F’ can cross train ‘D’ on Monday if train ‘D’ is coming from opposite direction and speed of train ‘F’ on Monday is 20 m/sec. (2 Mark)

- a) 6 seconds
- b) 8 seconds
- c) 10 seconds
- d) 12 seconds
- e) 14 seconds

44. Train ‘C’ start from Delhi on Monday at 7:00 p.m and reach Kanpur on next day at 3:00 pm. In return journey on Tuesday, train ‘C’ start from Kanpur at 6

: 00 pm and reach Jaipur which is 180 km ahead of Delhi at 5 : 48 pm on Wednesday. Find the time taken by train ‘C’ to cross a pole on Monday?

- a) 8 seconds
- b) 16 seconds
- c) 19.2 seconds
- d) 14.4 seconds
- e) 28.8 seconds

45. On Monday, train ‘A’ takes 2.5 hours more to cover 900 km distance than train ‘C’. If train ‘A’ can cross a platform of length 128 in 12.8 seconds on Tuesday then find in how much time (in seconds) train ‘C’ can cross two poles 66 m apart from each other on Tuesday?

- a) 12 seconds
- b) 16 seconds
- c) 20 seconds
- d) 24 seconds
- e) 30 seconds

46. Ratio between speed of train ‘E’ to train ‘F” on Monday is 3 : 2. On Tuesday train ‘E’ cross train ‘F’ running in same direction in 24 seconds then find the time in which train ‘E’ can overtakes train ‘F’ on Wednesday?

- a) 48 seconds
- b) 24 seconds
- c) 12 seconds
- d) 36 seconds

e) 60 seconds

47. Ratio between time taken by train ‘B’ to train ‘D’ to cross a pole on Monday is 1 : 1. The time taken by train ‘B’ to cross a pole on Wednesday is what percent more/less than time taken by train ‘D’ to cross a pole on Monday? (2 Mark)

- a) 30%
- b) 40%
- c) 50%
- d) 60%
- e) 70%

Directions (48 – 50): Study the table carefully and answer the given questions –

Buses	Speed (km/hr)	Distance between destinations (in kilometres)	Time Required (in hours)
P	78	1 and 2 = 702	
Q	96	2 and 3 =	3 ¼
R	126	3 and 4 =	4 5/9
S	214	4 and 5 =	5
T		5 and 6 = 360	7 1/2
U		6 and 7 = 722	3 4/5
V		7 and 8 = 440	5 ½

48. Bus W covered distance between 4 and 5 at speed of 107km/hr and distance between 5 and 6 at speed 90km/hr. What is the approximate average speed of journey ?

- a) 104km/hr
- b) 162km/hr
- c) 132 km/hr
- d) 123km/hr

e) 102km/hr

49. Bus P goes from 1 till 3 and Bus Q goes from 3 to 1 and they start at the same time . Approximately after how much time will they cross each other ?

- a) 4.6Hr
- b) 5.1 Hr
- c) 6.2 Hr
- d) 5.3 Hr

e) 5.8 Hr

50. Total distance from 1 to 8 ?

- a) 4230
- b) 4380
- c) 4320
- d) 4180
- e) 3420

ANSWER AND EXPLANATION

1. Answer: B)

Let total distance be D km.

Let original speed of Amravati express be 4x km/min

Reduced speed = 0.75 × 4x = 3x km/min

Original time taken to reach the destination = (D – 125)/4x minutes

New time taken to reach the destination = (D – 125)/3x minutes

According to question,

$(D - 125)/3x - (D - 125)/4x = 35$

$(D - 125) \times (1/3x - 1/4x) = 35$

$(D - 125) \times 1/12x = 35$

$D - 125 = 420x$

$D = 420x + 125.....(i)$

If the accident had taken place 30 km further then

$(D - 125 - 30)/3x - (D - 125 - 30)/4x = 25$

$(D - 155)/3x - (D - 150)/4x = 25$

$(D - 155) \times 1/12x = 25$

$D - 155 = 300x$

$D = 300x + 155.....(ii)$

From equation (i) and (ii)

$420x + 125 = 300x + 155$

$120x = 30$

$x = 0.25$

$D = 300 \times 0.25 + 155 = 230 \text{ km}$

Speed of Amravati Express = $0.25 \times 4 = 1 \text{ km/min} = 1 \times 60 = 60 \text{ km/h}$

Speed of Amravati express = $60 \times 5/18 = 50/3 \text{ m/s}$

Length of Amravati express = $50/3 \times 45 = 750 \text{ metres}$

Length of Samjhauta express = $1.2 \times 750 = 900 \text{ metres}$

Let speed on Samjhauta express be ‘s’ m/s

$$\text{So, } (750 + 900)/(50/3 + s) = 0.9 \times 60$$

$$1650/(50/3 + s) = 54$$

$$50/3 + s = 275/9$$

$$s = 275/9 - 50/3 = 125/9$$

$$s = 125/9 \times 18/5 = 50 \text{ km/h}$$

Speed of Samjhauta express = 50 km/h

Time taken by Amravati express to cover a distance of 270 km = $270/60 = 4.5$ hours

2. Answer: C)

Let total distance be D km.

Let original speed of Amravati express be 4x km/min

Reduced speed = $0.75 \times 4x = 3x$ km/min

Original time taken to reach the destination = $(D - 125)/4x$ minutes

New time taken to reach the destination = $(D - 125)/3x$ minutes

According to question,

$$(D - 125)/3x - (D - 125)/4x = 35$$

$$(D - 125) \times (1/3x - 1/4x) = 35$$

$$(D - 125) \times 1/12x = 35$$

$$D - 125 = 420x$$

$$D = 420x + 125 \dots \dots \dots (i)$$

If the accident had taken place 30 km further then

$$(D - 125 - 30)/3x - (D - 125 - 30)/4x = 25$$

$$(D - 155)/3x - (D - 150)/4x = 25$$

$$(D - 155) \times 1/12x = 25$$

$$D - 155 = 300x$$

$$D = 300x + 155 \dots \dots \dots (ii)$$

From equation (i) and (ii)

$$420x + 125 = 300x + 155$$

$$120x = 30$$

$$x = 0.25$$

$$D = 300 \times 0.25 + 155 = 230 \text{ km}$$

Speed of Amravati Express = $0.25 \times 4 = 1 \text{ km/min} = 1 \times 60 = 60 \text{ km/h}$

Speed of Amravati express = $60 \times 5/18 = 50/3 \text{ m/s}$

Length of Amravati express = $50/3 \times 45 = 750 \text{ metres}$

Length of Samjhauta express = $1.2 \times 750 = 900 \text{ metres}$

Let speed on Samjhauta express be 's' m/s

$$\text{So, } (750 + 900)/(50/3 + s) = 0.9 \times 60$$

$$1650/(50/3 + s) = 54$$

$$50/3 + s = 275/9$$

$$s = 275/9 - 50/3 = 125/9$$

$$s = 125/9 \times 18/5 = 50 \text{ km/h}$$

Speed of Samjhauta express = 50 km/h

Total distance travelled by Amravati express = $300 \times 0.25 + 155 = 230 \text{ km}$

Desired time = $230/50 = 4.6$ hours

3. Answer: D)

Let total distance be D km.

Let original speed of Amravati express be $4x$ km/min

Reduced speed = $0.75 \times 4x = 3x$ km/min

Original time taken to reach the destination = $(D - 125)/4x$ minutes

New time taken to reach the destination = $(D - 125)/3x$ minutes

According to question,

$$(D - 125)/3x - (D - 125)/4x = 35$$

$$(D - 125) \times (1/3x - 1/4x) = 35$$

$$(D - 125) \times 1/12x = 35$$

$$D - 125 = 420x$$

$$D = 420x + 125 \dots\dots\dots(i)$$

If the accident had taken place 30 km further then

$$(D - 125 - 30)/3x - (D - 125 - 30)/4x = 25$$

$$(D - 155)/3x - (D - 155)/4x = 25$$

$$(D - 155) \times 1/12x = 25$$

$$D - 155 = 300x$$

$$D = 300x + 155 \dots\dots\dots(ii)$$

From equation (i) and (ii)

$$420x + 125 = 300x + 155$$

$$120x = 30$$

$$x = 0.25$$

$$D = 300 \times 0.25 + 155 = 230 \text{ km}$$

Speed of Amravati Express = $0.25 \times 4 = 1$ km/min = $1 \times 60 = 60$ km/h

Speed of Amravati express = $60 \times 5/18 = 50/3$ m/s

Length of Amravati express = $50/3 \times 45 = 750$ metres

Length of Samjhauta express = $1.2 \times 750 = 900$ metres

Let speed on Samjhauta express be 's' m/s

$$\text{So, } (750 + 900)/(50/3 + s) = 0.9 \times 60$$

$$1650/(50/3 + s) = 54$$

$$50/3 + s = 275/9$$

$$s = 275/9 - 50/3 = 125/9$$

$$s = 125/9 \times 18/5 = 50 \text{ km/h}$$

Speed of Samjhauta express = 50 km/h

Let length of platform = P

$$\text{So, } P + 900 = 1.584 \times 60 \times 125/9$$

$$P + 900 = 1320$$

$$P = 420$$

4. Answer: B)

Length of the Race = 96 km

Ratio of the speed of Ankit to Lavanya = 5:7

Distance covered by Loki at the speed of 15 km/hr = 24 km

Time taken to cover 24 km at the speed of 15 km/hr = $24 \div 15 = 1.6$ hours

Remaining distance covered by Loki = $96 - 24 = 72$ km

Total time taken by Loki to cover the remaining 72 km = $(36 \div 18) + (36 \div 20)$

$$= 2 + 1.8 = 3.8 \text{ hour}$$

So, total time taken by Loki to complete the Race = $1.6 + 3.8 = 5.4$ hours

Since, Ankita covers 6.9 km less when Loki completed the Race.

This means Ankita completed 89.1 km in 5.4 hours.

So, speed of Ankita = $89.1 \div 5.1 = 16.5$ km/hr

Distance covered by Ankit = $\frac{3}{4} \times 96 = 72$ km

Time taken by Ankit to cover 72 km = 4.5 hours

So, speed of Ankit = $72 \div 4.5 = 16$ km/hr

Speed of Lavanya = $\frac{7}{5} \times 16 = 22.4$ km/h

Let the speed of Sushil be x km/hr.

So, $96/x - 96/40 = 48/60$

$96 \times (1/x - 1/40) = 48/60$

$2 \times (40 - x)/40x = 1/60$

$120 - 3x = x$

$4x = 120$

$x = 30$ km/h

Speed of Sushil = 30 km/hr

Time taken by Sushil to complete the Race = $96 \div 30 = 3.2$ hours

Time taken by Lavanya to complete the Race = $96 \div 22.4 = 30/7$ hours ~ 4.3 hours

Time taken by Ankit to complete the Race = $96 \div 16 = 6$ hours

Time taken by Ankita to complete the Race = $96 \div 16.5 = 64/11$ hours ~ 5.82 hours

Time taken by Loki to complete the Race = 5.4 hours

Second position will be secured by Lavanya and the desired difference of time = $4.3 - 3.2 = 1.1$ hours

5. Answer: A)

Length of the Race = 96 km

Ratio of the speed of Ankit to Lavanya = 5:7

Distance covered by Loki at the speed of 15 km/hr = 24 km

Time taken to cover 24 km at the speed of 15 km/hr = $24 \div 15 = 1.6$ hours

Remaining distance covered by Loki = $96 - 24 = 72$ km

Total time taken by Loki to cover the remaining 72 km = $(36 \div 18) + (36 \div 20)$

= $2 + 1.8 = 3.8$ hour

So, total time taken by Loki to complete the Race = $1.6 + 3.8 = 5.4$ hours

Since, Ankita covers 6.9 km less when Loki completed the Race.

This means Ankita completed 89.1 km in 5.4 hours.

So, speed of Ankita = $89.1 \div 5.1 = 16.5$ km/hr

Distance covered by Ankit = $\frac{3}{4} \times 96 = 72$ km

Time taken by Ankit to cover 72 km = 4.5 hours

So, speed of Ankit = $72 \div 4.5 = 16$ km/hr

Speed of Lavanya = $\frac{7}{5} \times 16 = 22.4$ km/h

Let the speed of Sushil be x km/hr.

So, $96/x - 96/40 = 48/60$

$$96 \times (1/x - 1/40) = 48/60$$

$$2 \times (40 - x)/40x = 1/60$$

$$120 - 3x = x$$

$$4x = 120$$

$$x = 30 \text{ km/h}$$

$$\text{Speed of Sushil} = 30 \text{ km/hr}$$

$$\text{Time taken by Sushil to complete the Race} = 96 \div 30 = 3.2 \text{ hours}$$

$$\text{Time taken by Lavanya to complete the Race} = 96 \div 22.4 = 30/7 \text{ hours} \sim 4.3 \text{ hours}$$

$$\text{Time taken by Ankit to complete the Race} = 96 \div 16 = 6 \text{ hours}$$

$$\text{Time taken by Ankita to complete the Race} = 96 \div 16.5 = 64/11 \text{ hours} \sim 5.82 \text{ hours}$$

$$\text{Time taken by Loki to complete the Race} = 5.4 \text{ hours}$$

$$\text{New speed of Lavanya} = 1.25 \times 22.4 = 28 \text{ km/h}$$

$$\text{Desired time} = (0.70 \times 96)/28 = 2.4 \text{ hours}$$

6. Answer: C)

$$\text{Length of the Race} = 96 \text{ km}$$

$$\text{Ratio of the speed of Ankit to Lavanya} = 5:7$$

$$\text{Distance covered by Loki at the speed of 15 km/hr} = 24 \text{ km}$$

$$\text{Time taken to cover 24 km at the speed of 15 km/hr} = 24 \div 15 = 1.6 \text{ hours}$$

$$\text{Remaining distance covered by Loki} = 96 - 24 = 72 \text{ km}$$

$$\text{Total time taken by Loki to cover the remaining 72 km} = (36 \div 18) + (36 \div 20)$$

$$= 2 + 1.8 = 3.8 \text{ hour}$$

$$\text{So, total time taken by Loki to complete the Race} = 1.6 + 3.8 = 5.4 \text{ hours}$$

Since, Ankita covers 6.9 km less when Loki completed the Race.

This means Ankita completed 89.1 km in 5.4 hours.

$$\text{So, speed of Ankita} = 89.1 \div 5.1 = 16.5 \text{ km/hr}$$

$$\text{Distance covered by Ankit} = 3/4 \times 96 = 72 \text{ km}$$

$$\text{Time taken by Ankit to cover 72 km} = 4.5 \text{ hours}$$

$$\text{So, speed of Ankit} = 72 \div 4.5 = 16 \text{ km/hr}$$

$$\text{Speed of Lavanya} = 7/5 \times 16 = 22.4 \text{ km/h}$$

Let the speed of Sushil be x km/hr.

$$\text{So, } 96/x - 96/40 = 48/60$$

$$96 \times (1/x - 1/40) = 48/60$$

$$2 \times (40 - x)/40x = 1/60$$

$$120 - 3x = x$$

$$4x = 120$$

$$x = 30 \text{ km/h}$$

$$\text{Speed of Sushil} = 30 \text{ km/hr}$$

$$\text{Time taken by Sushil to complete the Race} = 96 \div 30 = 3.2 \text{ hours}$$

$$\text{Time taken by Lavanya to complete the Race} = 96 \div 22.4 = 30/7 \text{ hours} \sim 4.3 \text{ hours}$$

$$\text{Time taken by Ankit to complete the Race} = 96 \div 16 = 6 \text{ hours}$$

Time taken by Ankita to complete the Race = $96 \div 16.5$
= 64/11 hours ~ 5.82 hours

Time taken by Loki to complete the Race = 5.4 hours

Time taken by Sushil to complete the Race = $96 \div 30 = 3.2$ hours (First)

Time taken by Lavanya to complete the Race = $96 \div 22.4 = 30/7$ hours ~ 4.3 hours (Second)

Time taken by Ankit to complete the Race = $96 \div 16 = 6$ hours (Fifth)

Time taken by Ankita to complete the Race = $96 \div 16.5 = 64/11$ hours ~ 5.82 hours (Fourth)

Time taken by Loki to complete the Race = 5.4 hours (Third)

Distance covered by Ankita in 6 hours = $6 \times 16.5 = 99$ km

Distance covered by Ankit in 5.82 hours = $16 \times 5.82 = 93.12$ km

Desired difference = $99 - 93.12 = 5.88$ km

(7 – 9): Common Explanation:

Pers on	Monday	Tuesday	Wednes day	Thursday	Tot al
A	(15/100) *120 = 18	(20/100) *80 = 16	(10/100) *60 = 6	(55/100) *100 = 55	95
B	(40/100) *120 = 48	(15/100) *80 = 12	(20/100) *60 = 12	(20/100) *100 = 20	92
C	(25/100) *120 = 30	(25/100) *80 = 20	(30/100) *60 = 18	(15/100) *100 = 15	83
D	(20/100) *120 = 24	(40/100) *80 = 32	(40/100) *60 = 24	(10/100) *100 = 10	90

Tota l	120	80	60	100	360
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7. Answer: B)

Length of Train A = $(30/100) \times (18 - 16) = 0.6$ km = 600 m

Length of Train B = $(5/100) \times (12 + 20)/2 = 0.8$ km = 800 m

Length of the platform = $56 \times 25 - 400 = 1000$ m

Let the speeds of trains A and B be 4k m/s and 5k m/s

So, $(1000 + 600)/4k - (1000 + 800)/5k = 4$

$400/k - 360/k = 4$

$40/k = 4$

$k = 10$

Average of the speeds of Trains A and B = $(4k + 5k)/2 = 45$ m/s

8. Answer: D)

Distance travelled by person B in train = $48 - 8 = 40$ km

speed of the train = $40/(1/2) = 80$ km/hr

Speed of the bus = $(25/100) \times 80 = 20$ km/hr

Time travelled in bus = $8/20 = 0.4$ hr

Average speed of person B on Monday

= Total distance travelled/Total time taken

= $48/(0.5 + 0.4)$

= 160/3 km/hr

Average speed of person B on Tuesday

$$= (160/3) \times (3/8) = 20 \text{ km/hr}$$

$$\text{Time for which person B travelled on Tuesday} = 12/20 = 0.6 \text{ hr} = 36 \text{ minutes}$$

$$\text{Time for which he travelled in train on Tuesday} = (2/3) \times 36 = 24 \text{ minutes}$$

$$\text{Distance travelled by him in train} = 25 \times 24/60 = 10 \text{ km}$$

$$\text{Distance travelled by him in bus} = 12 - 10 = 2 \text{ km}$$

9. Answer: B)

$$\text{sum of the distance travelled by person C by bus on Monday and Wednesday} = (25/100) \times 30 + (40/100) \times 18 = 14.7 \text{ km}$$

$$\text{Length of the platform} = 14.7 - 14 = 0.7 \text{ km} = 700 \text{ m}$$

$$\text{Average speed of person C on Tuesday} = 20/(1/3) = 60 \text{ km/hr}$$

$$\text{Speed of the train} = (120/100) \times 60 = 72 \text{ km/hr} = 20 \text{ m/s}$$

$$\text{Time taken by the train to cross the platform} = (500 + 700)/20$$

$$= 60 \text{ seconds}$$

$$= 1 \text{ minute}$$

10. Answer: D)

$$\text{Let the total distance travelled by Train20} = Y \text{ km}$$

$$\text{Distance travelled on Tuesday by Train20} = 55 \times 4 = 220 \text{ km}$$

$$Y \times 21/100 = 220$$

$$Y = 220 \times 100/21$$

$$\Rightarrow Y = 1048 \text{ km (approx.)}$$

11. Answer: B)

$$\text{Let total distance travelled by Train18} = x \text{ km}$$

$$\Rightarrow x \times 27/100 = 432$$

$$\Rightarrow x = 1600 \text{ km}$$

Total time taken by Train18 to travel by Tuesday and by Thursday :

$$(1600 \times 18)/(45 \times 100) + (1600 \times 2)/(25 \times 100)$$

$$\Rightarrow 6.4 + 12.8$$

$$\Rightarrow 19.2 \text{ hours}$$

12. Answer: B)

Let total distance travelled by Train18 during his whole journey = X km

$$\text{Now distance travelled by Train18 Friday} = 10 \times 5.5 = 55 \text{ km}$$

According to question –

$$X \times 11/100 = 55$$

$$\Rightarrow X = 500 \text{ km}$$

$$\text{Distance travelled by Train18 on Monday} = 500 \times 24/100 = 120 \text{ km}$$

$$\text{Time taken by Train18 to Travel on Monday} = 120/40 = 3 \text{ hours}$$

$$\text{Distance travelled by Train18 on Tuesday} = 500 \times 18/100 = 90 \text{ km}$$

$$\text{Time taken by Train18 by travelling Tuesday} = 90/45 = 2 \text{ hours}$$

$$\text{Distance travelled by Train18 by Wednesday} = 500 \times 27/100 = 135 \text{ km}$$

Time taken by Train18 by travelling Wednesday = $135/80 = 1.7$ hours

Distance travelled by Train18 on Thursday = $500 \times 20/100 = 100$ km

Time taken by Train18 to travel on Thursday = $100/25 = 4$ hours

Required time = $5.5 + 3 + 2 + 1.7 + 4 = 16.2$ hours = 16.2 hours

13. Answer: C)

Let total distance travelled by Train18 = X km

And total distance travelled by Train20 = Y km

According to question –

$$X \times 11/100 = 242$$

$$\Rightarrow X = 2200 \text{ km}$$

And,

$$Y \times 25/100 = 625$$

$$\Rightarrow Y = 2500 \text{ km}$$

Distance travelled on Tuesday by Train18

$$= 2200 \times 18/100 = 396 \text{ km}$$

Time taken by Train18 to complete journey on Tuesday

$$= 396/45 = 8.8 \text{ hours}$$

Distance travelled on Tuesday by Train20

$$= 2500 \times 21/100 = 525 \text{ km}$$

Time taken by Train20 to complete journey on Tuesday

$$= 525/55 = 9.5 \text{ hours}$$

$$\text{Required difference} = 9.5 - 8.8 = 0.7 \text{ hours}$$

14. Answer: A)

Let total distance travelled by Train20 = Y km

Now, distance travelled on Wednesday by Train20 = $60 \times 5.75 = 345$ km

According to question -

$$Y \times 23/100 = 345$$

$$\Rightarrow Y = 1500 \text{ km}$$

Distance travelled on Monday by Train20

$$= 1500 \times 25/100 = 375 \text{ km}$$

Distance travelled on Tuesday by Train20

$$= 1500 \times 21/100 = 315 \text{ km}$$

Distance travelled on Thursday by Train20

$$= 1500 \times 16/100 = 240 \text{ km}$$

$$\text{Required average} = (375 + 315 + 240)/3 = 310 \text{ km}$$

15. Answer: B)

$$\text{Average} = (1200 + 2000 + 1300 + 1500 + 1000) / 5 = 1400 \text{ m/min}$$

$$\Rightarrow 84 \text{ km/hr.}$$

16. Answer: B)

$$\text{Time taken from Thane to Airoli} = (3.60 \times 1000) / 1200 = 3 \text{ min}$$

$$\text{Time taken from Airoli to Ghansoli} = 3 \times 2 = 6 \text{ min}$$

$$\text{Distance} = 2,000 \times 6 \Rightarrow 12,000 = 12 \text{ km}$$

17. Answer: A)

$$\text{Total distance} = 3.60 + 12 + 6.5 + 4.25 + d = 42.85$$

⇒ $d = 16.5 \text{ km.}$

⇒ $\text{Time} = 16500/1000 = 16.5 \text{ min}$

18. Answer: D)

Time taken from Nerul to Kharghar =
 $4.25(\text{km})/1500(\text{m/min}) = 2.83$

Required percentage = $(5 - 2.83) / 2.83 \times 100 = 76.68\%$

19. Answer: B)

Speed from Kharghar to Panvel = $16500/(16.5 + 3.5) = 825$ (from previous question)

Average speed = $(1200 + 2000 + 1300 + 1500 + 825) / 5$
 ⇒ $6825/5 = 1365$

Required percentage = $(1400 - 1365) / 1400 \times 100 = 2.5\%$.

20. Answer: B)

Both trains are moving in same direction

ASR starts at 7:00 AM and PSB starts at 8:00 AM

Distance travelled by ASR in 1 hour = $40 \times 1 = 40 \text{ km}$

Relative speed of PSB with respect to ASR = $45 - 40 = 5 \text{ km/hr}$

Time taken to catch ASR = $40/5 = 8 \text{ hour}$

∴ Distance travelled by PSB before catching ASR = $45 \times 8 = 360 \text{ km}$

21. Answer: E)

We can that both train starts at some time but in opposite direction.

Let the time after which they meet = $x \text{ hr}$

Distance travelled by PSB in $x \text{ hr} = 70x$

Distance travelled by PDV in $x \text{ hr} = 80x$

Total distance between A and B = $70x + 80x = 150x$

According to the question PDV has covered 200 km more than PSB

$80x - 70x = 200$

$10x = 200$

$x = 20$

∴ Distance between A and B = $150 \times 20 = 3000 \text{ km}$

22. Answer: A)

Distance between A and B = 3000 km

Speed of GMT = $3000/20 = 150 \text{ km/hr}$

Speed of AKL = $3000 / 15 = 200 \text{ km/hr}$

Distance travelled by GMT in two hours = $150 \times 2 = 300 \text{ km}$

Remaining distance = $3000 - 300 = 2700 \text{ km}$

Relative speed = $150 + 200 = 350$

Meeting time = $2700/350 = 7\text{-hour } 50 \text{ min (approx.)}$

∴ They will meet at $11:00 + 7 \text{ hr } 50 \text{ min} = 6:50 \text{ PM}$

23. Answer: C)

Distance travelled by ASR in 3 hours = $3 \times 150 = 450 \text{ km}$

Relative speed = $200 - 150 = 50 \text{ km/hr}$

Meeting time = $450/50 = 9 \text{ hours}$

∴ Distance travelled by PSB before meeting = $200 \times 9 = 1800 \text{ km}$

24. Answer: B)

Relative speeds = $200 + 250 = 450 \text{ km/hr}$

Distance between A and B = 3000 km

Time taken = $3000/450 = 6 \text{ hours } 40 \text{ min}$

\therefore They will meet at = $5:00 + 6 \text{ hr } 40 \text{ min} = 11:40 \text{ PM}$

25. Answer: B)

When he met A, he was late by $1 \text{ hr } 40 \text{ mins}$. But actually he was late only for 40 mins as for 1 hr he was waiting there.

If he would have met A after 70 Km later then, actually he would be late by 15 mins only.

Let the actual speed of the person be $4s$

\Rightarrow Reduce speed = $(3/4) \times 4s = 3s$

We know that, same distance covered with different speed say s_1 and s_2 is given by,

\Rightarrow Distance = $\{(s_1 \times s_2)/(s_1 - s_2)\} \times t$, where t is time difference in hours

Here,

\Rightarrow Time difference = $40 - 15 = 25 \text{ minutes} = (25/60) \text{ hours}$

\Rightarrow Distance = $\{(4s \times 3s)/(4s - 3s)\} \times (25/60)$

$\Rightarrow 70 = \{(4s \times 3s)/s\} \times (25/60)$

$\Rightarrow s = 14 \text{ Km/h}$

\Rightarrow Actual speed = $4s = 4 \times 14 = 56 \text{ Km/h}$

26. Answer: B)

From previous question, Actual speed was 56 km/h

\Rightarrow Reduced speed = $(3/4) \times 56 = 42 \text{ km/h}$

Now, if he would have met A after 70 Km after then, he would be 15 mins late So,

\Rightarrow Distance from where he was 15 mins late = $\{(56 \times 42)/(56 - 42)\} \times (15/60) = \{(56 \times 42)/14\} \times (1/4) = 42 \text{ km}$

\Rightarrow Total distance = Distance covered in $2 \text{ hr} + 70 \text{ km} +$
Distance covered from where he was 15 mins late,

$\Rightarrow (56 \times 2) + 70 + 42 = 112 + 70 + 42 = 224 \text{ km}$

27. Answer: B)

We need to find the total time taken by both Arun and Kishor to reach their respective destinations

Time taken by Arun to reach point Q from P = $(400/50) + (400/80) + (400/64)$

$\Rightarrow 8 + 5 + 6.25$

$\Rightarrow 19.25 \text{ hours} = 77/4 \text{ hours}$

Time taken by Kishor to reach point P from Q = $(300/60) + (300/40) + (300/50) + (300/75)$

$\Rightarrow 5 + 7.5 + 6 + 4$

$\Rightarrow 22.5 \text{ hours} = 45/2 \text{ hours}$

Since Arun and Kishor meet at point O after $(67/6) \text{ hours}$

\Rightarrow Time taken by Arun to reach point Q from O = $t_1 = 77/4 - 67/6 = 97/12 \text{ hours}$

And

\Rightarrow Time taken by Kishor to reach point P from O = $t_2 = 45/2 - 67/6 = 136/12 \text{ hours}$

$\therefore t_1 : t_2 = 97 : 136$

28. Answer: C)

Arun covers the first $\frac{1}{3}^{\text{rd}}$ of the distance i.e. 400 km from P to R at 50 km/hr

$$\Rightarrow \text{Time taken} = 400/50 = 8 \text{ hours}$$

Kishor covers the first $\frac{1}{4}^{\text{th}}$ of the distance i.e. 300 km from Q to S at 60 km/hr and next 300 km from S to T at 40 km/hr.

$$\Rightarrow \text{Total distance covered in 8 hours} = 60 \times 5 + 40 \times 3 = 420 \text{ km}$$

Now after 8 hours, the distance between them remained = $(1200 - 400 - 420) = 380 \text{ km}$

This distance of 380 km from R to T would be covered by Arun at 80 km/hr and by Kishor at 40 km/hr.

$$\Rightarrow \text{Time after which they will meet between R and T} = 380/(40 + 80) = 19/6 \text{ hours}$$

$$\Rightarrow \text{Total time from starting after which they will meet} = 8 + 19/6 = 67/6 \text{ hours} = 11 \text{ hours } 10 \text{ minutes}$$

Since they started their journey at 8:00 AM

$$\therefore \text{Time at which they will meet} = 7:10 \text{ PM}$$

29. Answer: D)

We need not to find the average speed

We need to find the total time taken by both Arun and Kishor to reach their respective destinations.

$$\text{Time taken by Arun to reach point Q from P} = (400/50) + (400/80) + (400/64)$$

$$\Rightarrow 8 + 5 + 6.25 = 19.25 \text{ hours} = 77/4 \text{ hours}$$

Arun takes $77/4$ hours to cover 1200 km distance

$$\Rightarrow \text{Time taken by Arun to cover 500 km} = (500/1200) \times (77/4) = 8 \text{ hours approximately}$$

$$\text{Time taken by Kishor to reach point P from Q} = (300/60) + (300/40) + (300/50) + (300/75)$$

$$\Rightarrow 5 + 7.5 + 6 + 4 = 22.5 \text{ hours} = 45/2 \text{ hours}$$

Kishor takes $45/2$ hours to cover 1200 km distance

$$\Rightarrow \text{Time taken by Kishor to cover 500 km} = (500/1200) \times (45/2) = 9.375 \text{ hours}$$

$$\therefore \text{Difference of the time} = 9.375 - 8 = 1.375 \text{ hours} = 82.5 \text{ minutes}$$

30. Answer: A)

$$\text{Speed of train X on Monday} = 245/3.5 = 70 \text{ km/hr}$$

Since the average speed of the train X and another train Y is 75 km/hr on Monday

$$\Rightarrow \text{Speed of train Y on Monday} = 150 - 70 = 80 \text{ km/hr}$$

Since the time of travelling of both the trains is same on that day i.e. 3.5 hours

$$\therefore \text{Distance covered by train Y on Monday} = 80 \times 3.5 = 280 \text{ km}$$

31. Answer: B)

$$\text{Normal speed of train X on Monday} = 245/3.5 = 70 \text{ km/hr}$$

$$\text{Normal speed of train X on Tuesday} = 180/2.5 = 72 \text{ km/hr}$$

Since the speed of train X on Monday is increased by 20% and speed of train X on Tuesday is decreased by 25%

$$\Rightarrow \text{Increased speed of train X on Monday} = 70 \times 1.2 = 84 \text{ km/hr}$$

$$\text{Decreased speed of train X on Tuesday} = 72 \times 0.75 = 54 \text{ km/hr}$$

∴ Required percentage = $[54/84] \times 100 = 64.28 \approx 64\%$

32. Answer: C)

Given that the distances covered by train X on Wednesday and Tuesday are 280 km and 400 km

Since distance to be covered by train X on Wednesday is increased by 25%

⇒ Increased distance to be covered by train X on Wednesday = $280 \times 1.25 = 350$ km

Since distance to be covered by train X on Thursday is decreased by 10%

⇒ Decreased distance to be covered by train X on Thursday = $400 \times 0.9 = 360$ km

Since the time taken remains same as before on both the days

⇒ Given that train X takes 5 hours on Wednesday and 4.5 hours on Thursday

⇒ Speed of train X on Wednesday = $350/5 = 70$ km/hr

⇒ Speed of train X on Thursday = $360/4.5 = 80$ km/hr

∴ Required difference = $80 - 70 = 10$ km/hr

33. Answer: A)

Time taken by A to cover the distance by car = 9 hour

Total time taken by A, B and C to cover the distance by car = $9 \times 9/3 = 27$ hours

Time taken by B to cover the distance by car = $2 \times 27/9 = 6$ hours

Time taken by C to cover the distance by car = $4 \times 27/9 = 12$ hours

Speed of car driven by A = $(120/100) \times 45 = 54$ km/hr

Speed of car driven by B = $(120/100) \times 35 = 42$ km/hr

Speed of car driven by C = $(120/100) \times 40 = 48$ km/hr

Distance covered by A by car = $54 \times 9 = 486$ km

Distance covered by B by car = $42 \times 6 = 252$ km

Distance covered by C by car = $48 \times 12 = 576$ km

Total distance covered by car = $486 + 252 + 576 = 1314$ km

Time taken by C to cover the distance by train = $(50/100) \times 12 = 6$ hours

Total time taken by A, B and C to cover the distance by train = $6 \times 27/9 = 18$ hours

Time taken by A to cover the distance by train = $7 \times 18/27 = 14/3$ hours

Time taken by B to cover the distance by train = $11 \times 18/27 = 22/3$ hours

New speed of A by train = $(110/100) \times 70 = 77$ km/hr

New speed of B by train = $(110/100) \times 75 = 82.5$ km/hr

New speed of C by train = $(110/100) \times 65 = 71.5$ km/hr

Distance covered by A by train = $77 \times 14/3 = 359.33$ km

Distance covered by B by train = $82.5 \times 22/3 = 605$ km

Distance covered by C by train = $71.5 \times 6 = 429$ km

Total distance covered by train = $359.33 + 605 + 429 = 1393.33$ km

Percentage = $((1393.33 - 1314)/1314) \times 100 = 6\%$

34. Answer: E)

Total time taken by A = 19 hours

Let d is the distance covered by A on travelling with bus.
Then,

Distance covered on foot = $(50/100) \times d = d/2$

Distance covered by car = distance covered by bicycle =
 $(90/100) \times d = 9d/10$

Distance covered by train = $(140/100) \times d = 7d/5$

Therefore, $19 = d/10 + d/50 + 9d/450 + 7d/350 + 9d/300$
 $d = 100 \text{ km}$

Distance covered by train = $7d/5 = 7 \times 100/5 = 140 \text{ km}$

35. Answer: C)

For C:

Time taken by car = $320/40 = 8 \text{ hours}$

Time taken by bus = $450/45 = 10 \text{ hours}$

Time taken by bicycle = $150/25 = 6 \text{ hours}$

Total time taken by A, B and C to cover the distance by
car = $8 \times 9/4 = 18 \text{ hours}$

Total time taken by A, B and C to cover the distance by
bus = $10 \times 18/5 = 36 \text{ hours}$

Total time taken by A, B and C to cover the distance by
bicycle = $6 \times 7/2 = 21 \text{ hours}$

For A:

Time taken by bus = $6 \times 36/18 = 12 \text{ hours}$

For B:

Time taken by car = $2 \times 18/9 = 4 \text{ hours}$

Time taken by bus = $7 \times 36/18 = 14 \text{ hours}$

Time taken by bicycle = $3 \times 21/7 = 9 \text{ hours}$

Distance covered by A and B while travelling with bus =
 $50 \times 12 + 55 \times 14 = 1370 \text{ km}$

Distance covered by B while travelling with car and
bicycle = $35 \times 4 + 25 \times 9 = 365 \text{ km}$

Difference = $1370 - 365 = 1005 \text{ km}$

36. Answer: E)

Let a , b and c are distance covered by A on travelling
with foot, car and bicycle respectively. Then,

$a + b = 165 \text{ km}$

$b + c = 255 \text{ km}$

$a + c = 150 \text{ km}$

$b - a = 255 - 150 = 105 \text{ km}$

$b = 105 + a$

$a + 105 + a = 165$

$a = 30 \text{ km}$

$b = 105 + 30 = 135 \text{ km}$

$c = 150 - 30 = 120 \text{ km}$

Time taken by A to cover distance by car = $135/45 = 3$
hours

Time taken by A to cover the distance by bicycle =
 $120/30 = 4 \text{ hours}$

Total time taken by A, B and C to cover the distance by
car = $3 \times 9/3 = 9 \text{ hours}$

Total time taken by A, B and C to cover the distance by
bicycle = $4 \times 7/2 = 14 \text{ hours}$

Time taken by B to cover distance by car = $2 \times 9/9 = 2$
hours

Time taken by B to cover the distance by bicycle = $3 \times \frac{14}{7} = 6$ hours

Time taken by C to cover distance by car = $4 \times \frac{9}{9} = 4$ hours

Time taken by C to cover the distance by bicycle = $2 \times \frac{14}{7} = 4$ hours

Sum of time taken by B to cover the distance by car and bicycle = $2 + 6 = 8$ hours

Sum of time taken by C to cover the distance by car and bicycle = $4 + 4 = 8$ hours

Ratio = 8: 8 = 1: 1

37. Answer: E)

New speed of car driven by A = $(120/100) \times 45 = 54$ km/hr

New speed of car driven by B = $(120/100) \times 35 = 42$ km/hr

New speed of car driven by C = $(125/100) \times 40 = 50$ km/hr

New time taken by B to cover the distance by car = 10 hours

New total time taken by A, B and C to cover the distance by car = $10 \times \frac{9}{2} = 45$ hours

New time taken by A to cover the distance by car = $3 \times \frac{45}{9} = 15$ hours

New time taken by C to cover the distance by car = $4 \times \frac{45}{9} = 20$ hours

Distance covered by A = $54 \times 15 = 810$ km

Distance covered by B = $42 \times 10 = 420$ km

Distance covered by C = $50 \times 20 = 1000$ km

Actual time taken by A = $810/45 = 18$ hours

Actual time taken by B = $420/35 = 12$ hours

Actual time taken by C = $1000/40 = 25$ hours

Sum = $18 + 12 + 25 = 55$ hours

38. Answer: B)

Total distance travel by train A
= $1500 + 3000 = 4500$ km

Total Time taken by train A = $\frac{4500}{80} = 56.25$ hour

Time taken by train C from Mumbai to Lucknow
= $\frac{1000}{120} = \frac{50}{6}$ hours

Time taken by train C from Lucknow to Delhi
= $56.25 - \frac{50}{6}$

= $\frac{287.5}{6}$ hours

Distance between Lucknow to Delhi

= $\frac{287.5}{6} \times 120 = 5750$ km

39. Answer: A)

Distance between Lucknow and Kanpur

= $\sqrt{1000^2 + 1500^2} = \sqrt{1000000 + 2250000}$

= $\sqrt{3250000} = 500\sqrt{13}$ km

Approximate time taken by train E

= $\frac{500\sqrt{13}}{150} \approx 12$ hours

40. Answer: C)

Expected DI and Caselet based on Time Speed Distance Questions for Upcoming Bank Mains Exam

Let speeds of train B and train D be a km/hr and b km/hr respectively.

ATQ—

$$\Rightarrow \frac{3000}{a} = \frac{2000}{b}$$

$$\Rightarrow \frac{a}{b} = \frac{3}{2}$$

Let speed of train B and train D be $3x$ km/hr and $2x$ km/hr respectively

Distance between Delhi and Gorkhpur = 1500 km

$$\text{Time taken to cross each other} = \frac{1500}{5x} = \frac{300}{x}$$

$$\text{Time taken by train B to reach Delhi from Mumbai} = \frac{3000}{3x} = \frac{1000}{x}$$

$$\text{Required\%} = \frac{300 \times 100}{1000} = 30\%$$

41. Answer: D)

Distance at policeman catch the thief

$$\frac{1500 \times 3}{5} = 900 \text{ km}$$

$$\text{Time taken by train C to cover this distance} = \frac{900}{120} = 7.5 \text{ hour}$$

Let initial speed of train D = s km/hr

So, ATQ

$$6s + 7.5(2s) = 900$$

$$6s + 15s = 900$$

$$21s = 900$$

$$s = \frac{300}{7} \text{ km/hr}$$

42. Answer: E)

Distance between Mumbai and Lucknow = 1000 km

Distance covered by train B before first meeting = 1200 km

Distance covered by train A before first meeting = 800 km

Speed of train A = 80 km/hr

$$\Rightarrow \text{Time for first meeting} = \frac{800}{80} = 10 \text{ hours}$$

$$\text{Speed of train B} = \frac{1200}{10} = 120 \text{ km/hr}$$

When train A reaches Lucknow, distance

$$\text{covered by train B} = \frac{200}{80} \times 120 = 300 \text{ km}$$

$$\text{Time taken by train B to reach Mumbai} = \frac{500}{120} = \frac{25}{6} \text{ hr}$$

$$\text{Distance covered by train A' in } \frac{25}{6} \text{ hour} = \frac{25}{6} \times 80 = \frac{1000}{3} \text{ km}$$

$$\text{Distance between train B and train A} = 1000 - \frac{1000}{3} = \frac{2000}{3}$$

$$\text{Time to meet} = \frac{\frac{2000}{3}}{120+80} = \frac{10}{3} \text{ hour}$$

$$\text{Total time} = \frac{200}{80} + \frac{25}{6} + \frac{10}{3} = 10 \text{ hours}$$

43. Answer: B)

$$\text{Length of train B} = \frac{18}{100} \times 1600 = 288 \text{ m}$$

$$\text{Length of Train D} = \frac{12}{100} \times 1600 = 192 \text{ m}$$

$$\text{Length of Train F} = \frac{8}{100} \times 1600 = 128 \text{ m}$$

$$\text{Speed of train B on Monday} = 97.2 \times \frac{5}{18} = 27 \text{ m/sec}$$

$$\text{Speed of train 'B' on Wednesday} = \frac{27}{3} \times 5 = 45 \text{ m/sec}$$

ATQ,

$$288 + 192 = (45 + y) \times 6$$

where y is the speed of train 'D' on Wednesday

$$\Rightarrow y = 80 - 45 = 35 \text{ m/sec}$$

$$\text{Speed of train 'D' on Monday} = \frac{35}{7} \times 4 = 20 \text{ m/sec}$$

$$\text{Time required to cross train F} = \frac{192+128}{20+20} = 8 \text{ seconds}$$

44. Answer: E)

Let speed of train 'C' on Monday, Tuesday and Wednesday be $4x$, $6x$ and $5x$ respectively.

Train 'C' travel 5 hours on Monday and 15 hours on Tuesday.

$$\therefore \text{Total distance} = 5 \times 4x + 15 \times 6x$$

$$= 110x$$

On the same day i.e, Tuesday, train 'C' start from Kanpur. It travels 6 hours on Tuesday and 17.8 hours on Wednesday.

$$\therefore \text{total distance travel} = 6 \times 6x + 17.8 \times 5x$$

$$= 36x + 89x$$

$$= 125x$$

$$\text{ATQ, } 125x = 110x + 180$$

$$\Rightarrow 15x = 180$$

$$\Rightarrow x = 12$$

speed of train 'C' on Monday

$$= 12 \times 4 = 48 \text{ km/hour} = \frac{40}{3} \text{ m/sec}$$

$$\text{Length of train 'C'} = \frac{24}{100} \times 1600 = 384$$

$$\text{Required time} = \frac{384}{40} \times 3 = 28.8 \text{ sec}$$

45. Answer: A)

Let, speed of train 'A' and train 'C' on Monday be '4x' and '4y' respectively

ATQ,

$$2.5 = \frac{900}{4x} - \frac{900}{4y}$$

$$2.5 = 225 \left[\frac{1}{x} - \frac{1}{y} \right]$$

$$xy = 90(y - x)$$

$$\text{length of train 'A'} = \frac{16}{100} \times 1600 = 256$$

$$\text{speed of train 'A' on Tuesday} = \frac{256+128}{12.8} = \frac{384}{12.8}$$

$$= 30 \text{ m/sec}$$

$$\Rightarrow \text{Speed of train 'A' on Monday} = \frac{30}{3} \times 2 = 20 \text{ m/sec} = 72 \text{ km/hr}$$

$$\Rightarrow 4x = 72$$

$$\Rightarrow x = 18$$

$$xy = 90(y - x)$$

$$y = 5(y - 18)$$

$$\Rightarrow y = 22.5$$

$$\text{Speed of train 'C' on Monday} = 4y$$

$$= 4 \times 22.5$$

$$= 90 \text{ km/hr}$$

$$\text{Speed of train 'C' on Tuesday} = \frac{90}{4} \times 6$$

$$= 135 \text{ km/hr}$$

$$= 37.5 \text{ m/sec}$$

$$\text{Length of train 'C'} = \frac{24}{100} \times 1600 = 384$$

$$\text{Required time} = \frac{384+66}{37.5} = 12 \text{ seconds}$$

46. Answer: A)

$$\text{Length of train 'E'} = \frac{22}{100} \times 1600 = 352$$

$$\text{Length of train 'F'} = \frac{8}{100} \times 1600 = 128$$

Let speed of train 'E' and train 'F' on Monday be 6x and 4y respectively.

$$\Rightarrow \frac{6x}{4y} = \frac{3}{2} \Rightarrow \frac{x}{y} = \frac{1}{1}$$

Let speed of train 'E' on Tuesday = 9x

So speed of train 'F' on Tuesday = 5y = 5x

ATQ,

$$9x - 5x = \frac{352+128}{24} = 20$$

$$\Rightarrow 4x = 20$$

$$\Rightarrow x = 5$$

Speed of train 'E' on Wednesday = 5 × 5 = 25 m/sec

Speed of train 'F' on Wednesday = 3 × 5 = 15 m/sec

$$\text{Required time} = \frac{352+128}{25-15} = \frac{480}{10} = 48 \text{ seconds}$$

47. Answer: B)

Let, speed of train 'B' on Monday, Tuesday & Wednesday be 3x, 4x & 5x respectively.

And speed of train 'D' on Monday, Tuesday & Wednesday be 4y, 4y & 7y respectively.

$$\text{Length of train 'B'} = \frac{18}{100} \times 1600 = 288$$

$$\text{Length of train 'D'} = \frac{12}{100} \times 1600 = 192$$

ATQ,

$$\frac{288}{3x} = \frac{1}{1}$$

$$\frac{192}{4y} = \frac{1}{1}$$

$$\Rightarrow \frac{3}{2} \times \frac{4y}{3x} = \frac{1}{1}$$

$$\Rightarrow \frac{y}{x} = \frac{1}{2}$$

$$\Rightarrow x = 2y$$

$$\text{Time taken by train 'B' on Wednesday to cross pole} = \frac{288}{5x} = \frac{57.6}{x}$$

Expected DI and Caselet based on Time Speed Distance Questions for Upcoming Bank Mains Exam

Time taken by train 'D' on Monday to cross a pole = $\frac{192}{4y} = \frac{96}{x}$

$$\text{Required \%} = \frac{\left(\frac{96}{x} - \frac{57.6}{x}\right) \times 100}{\frac{96}{x}}$$

$$= \frac{38.4}{96} \times 100$$

$$= 40\%$$

48. Answer: E)

Distance between 4 to 5 = $214 \times 5 = 1070$

Time taken from 4 to 5 = $1070/107 = 10\text{hr}$

Distance between 5 to 6 = 360

Time taken from 5 to 6 = $360/90 = 4\text{ hr}$

Average speed = $(1070+360)/(10+4) = 102\text{km/hr approx}$

49. Answer: E)

Distance between 1 to 3 = $702 + 96 \cdot (3 \frac{1}{4})$

$702+312 = 1014$

Relative speed = $78+96= 174\text{km/hr}$

Time taken = $1014/174 = 5.8\text{ hr}$

50. Answer: D)

Required Distance = $702+312+574+1070+360+722+440$
 $= 4180\text{ km}$

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DIRECTION

Directions (1-3): Study the following information and answer the questions below:

From point A, Sachin moves towards 3meters west to reach point B. Then he takes a left turn and moves 4 meters to reach point C and then he takes the right turn to move 5 meters to reach point D, from there he takes a right turn of 6meters to point E.

1. What is the direction of E with respect to point A?

- a) East
- b) West
- c) South west
- d) North east
- e) North west

2. What is the shortest distance between point A and point C?

- a) 4
- b) 5
- c) 6
- d) 3
- e) None of these

3. If point F is 2meters south of point E, then what will be the distance between point A and point F?

- a) 6
- b) 7
- c) 8
- d) 9
- e) 4

Directions (4 - 6): Study the following information and answer the questions below:

A man facing west moves 5 meter towards his right to reach point P and takes a right turn of 4 meter to reach point Q, then he takes a right turn of 8 meter to reach point R. From point R he walks 3meters east direction to reach point S, Which is 3meters south of T.

4. What is the direction of R with respect to P?

- a) East
- b) West
- c) South east
- d) North east
- e) North west

5. What is the distance between Man's initial position and T?

- a) 6
- b) 8
- c) 9
- d) 7
- e) 5

6. What is the shortest distance between P and R?

- a) $\sqrt{82}$
- b) $\sqrt{81}$
- c) $\sqrt{80}$
- d) $\sqrt{83}$
- e) $\sqrt{84}$

Directions (7 - 9): Study the following information and answer the questions below:

Mr.Prakash starts his journey from home, moves 5meter east and takes a left turn of 4 meters to reach the shop. Then he takes the right and walks 10meters and again he

Expected Direction questions for Upcoming Exam

takes a right turn of 12meters temple. From the temple he walks 10 meters right and takes a left turn of 3meters to reach the office.

7. What is the direction of the temple with respect to Prakash's home?

- a) West
- b) South east
- c) North east
- d) North west
- e) East

8. What is the shortest distance between shop and the temple?

- a) $\sqrt{256}$
- b) $\sqrt{244}$
- c) $\sqrt{248}$
- d) $\sqrt{246}$
- e) $\sqrt{242}$

9. What is the total distance covered by Mr.Prakash?

- a) 43
- b) 40
- c) 44
- d) 45
- e) 42

Directions (10-12): Study the following information and answer the questions below:

From point P, Sathya starts his travelling of 8m towards north direction and reaches point Q, which is 11m east of point R. From Q he takes a right turn of 6m to reach point S and then he takes left to move 7m to attain the destination point T.

10. What is the shortest distance between point P and S?

- a) 8
- b) 15
- c) 10
- d) 11
- e) 12

11. What is the direction of R with respect to T?

- a) East
- b) West
- c) North west
- d) North east
- e) South west

12. If Z is 5m east of point T, then the direction of Z with respect to P?

- a) East
- b) West
- c) South west
- d) North east
- e) North west

Directions (13-15): Study the following information and answer the questions below:

A is west of B, which is north of D and is south of E. D is east of C and B is west of F. G is southeast of B and east of D.(Consider all are equal distance)

13. What is the direction of C with respect to B?

- a) East
- b) West
- c) South west
- d) North east
- e) Can't be determined

14. What is the direction of E with respect to F?

- a) East
- b) West
- c) South west
- d) North east
- e) North west

15. What is the direction of G with respect to C?

- a) East
- b) West
- c) South west
- d) North east
- e) North west

Expected Direction questions for Upcoming Exam

Directions (16-18): Study the following information and answer the questions below:

Village B is 4m west of village A & village E is 10m south of D. Village D is 8m west of C and village B is 6m south of C. Village E is 9m west of village F.

16. What is the direction of the F with respect to B?

- a) East
- b) West
- c) South east
- d) North east
- e) North west

17. What is the shortest distance between C and E?

- a) $\sqrt{125}$
- b) $\sqrt{144}$
- c) $\sqrt{169}$
- d) $\sqrt{164}$
- e) $\sqrt{165}$

18. What is the direction of E with respect to A?

- a) East
- b) South west
- c) West
- d) North east
- e) North west

Directions (19-21): Study the following information and answer the questions below:

The medical shop is 15 meters north of the hospital, which is 10meters west of home. The bus stand is 20metre east of the railway station and 9 meters south of home. Also the airport is in the middle of the railway station and bus stand.

19. What is the direction of the airport with respect to the medical shop?

- a) North east
- b) South east
- c) South

d) North west

e) North

20. What is the shortest distance between the medical shop and bus stand?

- a) 23
- b) 24
- c) 26
- d) 29
- e) 27

21. What is the direction of the railway station with respect to home?

- a) North east
- b) South east
- c) South
- d) South west
- e) North

Directions (22-24): Study the following information and answer the questions below:

A person starts from point A, moves towards the east direction and walks 20km to reach point B. Then he turns left and moves 30km to reach point C and takes a right walk 20 km to reach point D. Then he takes right and walks 50km to reach point F. Point E is the midpoint of D & F.

22. What is the direction of point E with respect to point A?

- a) East
- b) West
- c) South west
- d) North east
- e) North west

23. What is the shortest distance between B and F?

- a) $\sqrt{820}$
- b) $\sqrt{800}$
- c) $\sqrt{850}$
- d) $\sqrt{830}$

Expected Direction questions for Upcoming Exam

e) $\sqrt{(824)}$

24. What is the direction of F with respect to C?

- a) South East
- b) West
- c) South west
- d) North east
- e) North west

Directions (25-27): Study the following information and answer the questions below:

Point A is 10m east of point B, which is 8m north of point C. Point E is 5m west of point C. Point F is 9m south of point E. Point G is 15m east of point F.

25. What is the direction of point E with respect to A?

- a) North west
- b) South west
- c) South east
- d) North east
- e) None of these

26. What is the shortest distance between B and E?

- a) $\sqrt{(93)}$
- b) $\sqrt{(92)}$
- c) $\sqrt{(89)}$
- d) $\sqrt{(91)}$
- e) $\sqrt{(95)}$

27. If point D is 12m south of point A, then what is the distance between D and G?

- a) 4
- b) 7
- c) 6
- d) 5
- e) 9

Directions (28-30): Study the following information and answer the questions below:

Bharathi walks 25m towards north to reach point A then she turns right and walks 30m to reach point B. Then she turns right and walks 50m to reach point C. And she

turns left for a 20m walk to reach point D. Finally, she turns left and walks 50m to reach point E.

28. What is the direction of D with respect to Bharathi's starting point?

- a) South west
- b) North west
- c) South east
- d) North east
- e) None of the above

29. What is the total distance covered by Bharathi in the entire journey?

- a) 135
- b) 125
- c) 155
- d) 165
- e) 175

30. If F is the midpoint of E and D, then the shortest distance between F and Bharathi's starting point?

- a) 55
- b) 40
- c) 50
- d) 35
- e) 60

Directions (31-35): Study the following information and answer the questions below:

Selva starts moving from point A towards east of 10meters to reach point B. From B he takes the left turn and walks 15 meters to reach point C. Then he takes the right turn and walks 12meters to reach point D. From point D he walks 8meters right turn to reach point F. Then he takes a right turn to and walks 8meters point J. Also point E is the midpoint of C and D.

31. What is the shortest distance between point E and point F?

- a) 12
- b) 11

Expected Direction questions for Upcoming Exam

- c) 10
- d) 9
- e) 8

32. If point H is 7meters south of point J then what is the distance between point A to point H?

- a) 12
- b) 14
- c) 16
- d) 18
- e) 20

33. Which of the following does not belong to the group ?

- a) AJ
- b) JD
- c) BE
- d) FB
- e) BJ

34. What is the direction of A with respect to D?

- a) South
- b) Southeast
- c) Southwest
- d) Northeast
- e) Northwest

35. If A starts moving in the north direction finally F is moving which direction to reach J?

- a) North
- b) East
- c) South
- d) West
- e) Southeast

Directions (36-40): Study the following information and answer the questions below:

Janu starts moving from point P toward north direction and walks 10meter to reach point Q. Then she takes left turn of 8meters to reach point R. Then she takes left turn and walks 5meters to reach point S. Then he takes a right turn of 9meters to reach point T. Then she took a left turn

and walks 12meters to reach point V. From point V she walks 9 towards east direction to reach point U.

36. What is the shortest distance between point V and point S?

- a) 14
- b) 15
- c) 16
- d) 17
- e) 18

37. Which of the following three points are arranged in the same vertical line?

- a) PQR
- b) TVU
- c) PRS
- d) RSU
- e) TPS

38. What is the total distance between point T and point U?

- a) 19
- b) 12
- c) 17
- d) 23
- e) 22

39. What is the direction of point V with respect to Q?

- a) South
- b) South east
- c) South west
- d) North east
- e) North

40. What is the direction of P with respect to U?

- a) North east
- b) South west
- c) North west
- d) South east
- e) None of the above

Expected Direction questions for Upcoming Exam

41. Pavi is facing west direction. She takes left turn. Then she takes right turn. Then she takes right turn again. Then she takes a left turn Then she takes a right. And again she takes a right turn. Finally in which direction she is facing now?

- a) East
- b) South
- c) North
- d) West
- e) None of these

42. In the early morning, Kavin and Ramesh are standing in the ground. Ramesh's shadow fell exactly on his left hand side. If they are facing each other, then Kavin is facing which direction?

- a) North
- b) West
- c) East
- d) South
- e) None of these

43. In a clock at 9pm, the minute hand points towards the south direction. In which direction does the hour hand face at 3pm?

- a) East
- b) West
- c) North
- d) South
- e) None of the above

44. In the evening, Ramya and Nivi are standing and opposite to each other on the ground. Nivi shadow fell on her left hand side. Then Ramya is facing which direction?

- a) North
- b) West
- c) East
- d) South
- e) None of these

45. Dhamu and Saravana are starting their journey from the same point in the opposite direction. First they move

10metre and both turn left. Finally Saravana faces north direction, then Dhamu faces which direction finally?

- a) East
- b) West
- c) South
- d) North
- e) None of these

Directions (46-50): Study the following information and answer the questions below:

P@Q means "P is 5m west of Q"

P#Q means "P is 3m east of Q"

P&Q means "P is 4m north of Q"

P%Q means "P is 6m south of Q"

46. In the expression G#H&J@K%L, G is in which direction with respect to L?

- a) North
- b) East
- c) north west
- d) South west
- e) None of these

47. If M&N#O%P@Q, what is the shortest distance between M and O?

- a) 6
- b) 5
- c) 4
- d) 3
- e) 7

48. If E&F#G%H@I, then E is in which direction and how far with respect to G?

- a) 4m, north
- b) 5m south east
- c) 5m, north east
- d) 4m, south west
- e) 5m, south

49.If A%B#C&D, Then what is the distance between B and D?

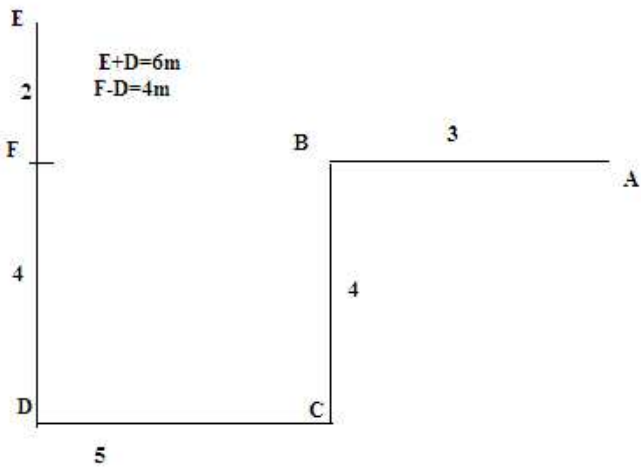
- a) 2
- b) 4
- c) 5
- d) 3
- e) 6

50.In the expression, U#V%W@X&Y then what is the direction of W with respect to Y?

- a) North
- b) East
- c) North west
- d) South west
- e) None of these

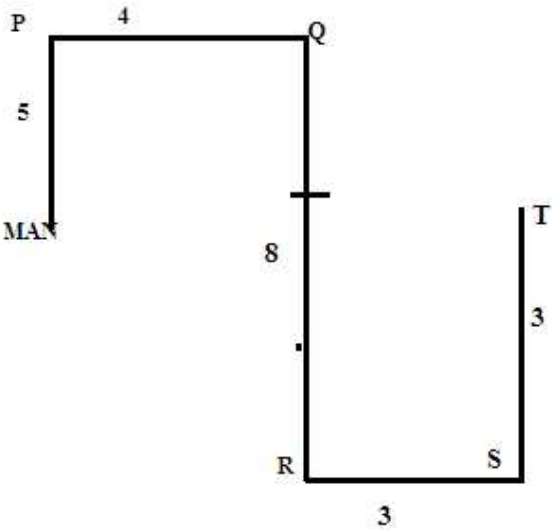
ANSWERS WITH EXPLANATION:

Directions (1-3):



- 1. e North west
- 2. b $\sqrt{(4^2+3^2)} = 5$
- 3. c (8)

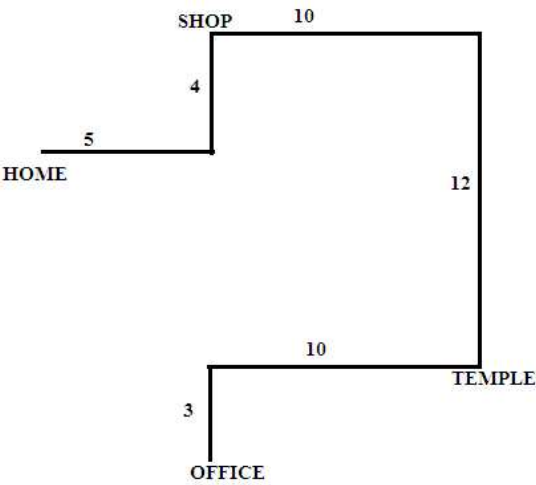
Directions (4-6):



- 4. c South east
- 5. d (7)
- 6. c $\sqrt{(8^2+4^2)} = \sqrt{(80)}$

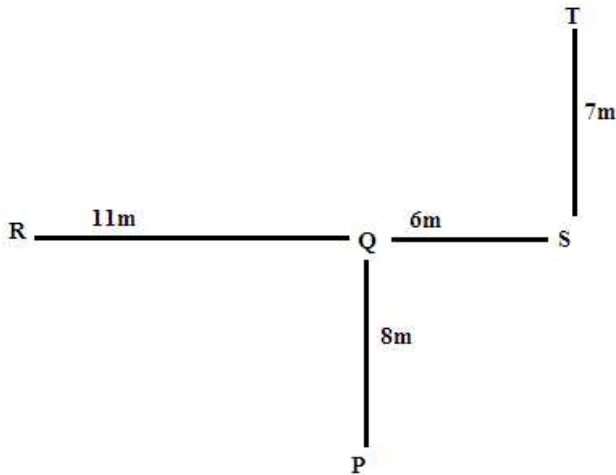
Directions (7-9):

Expected Direction questions for Upcoming Exam



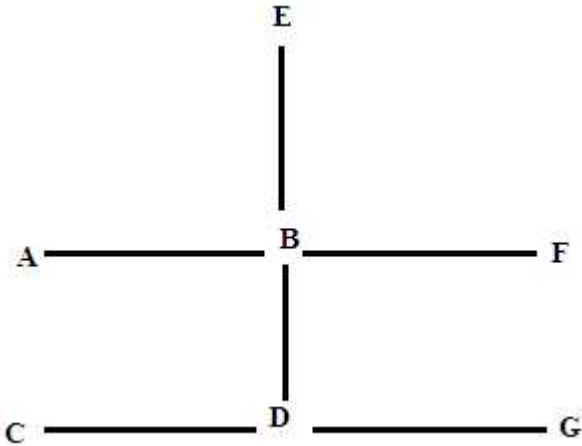
- 7. b South east
- 8. b $\sqrt{(10^2+12^2)} = \sqrt{(244)}$
- 9. c (44)

Directions (10-12):



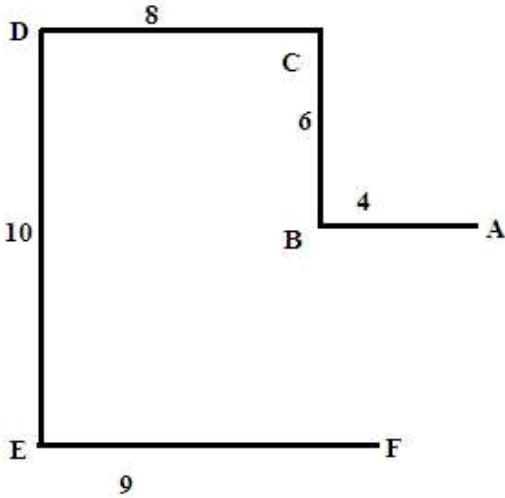
- 10. c (10))
- 11. e South west
- 12. d North east

Directions (13-15):



- 13. c South west
- 14. e North west
- 15. a East

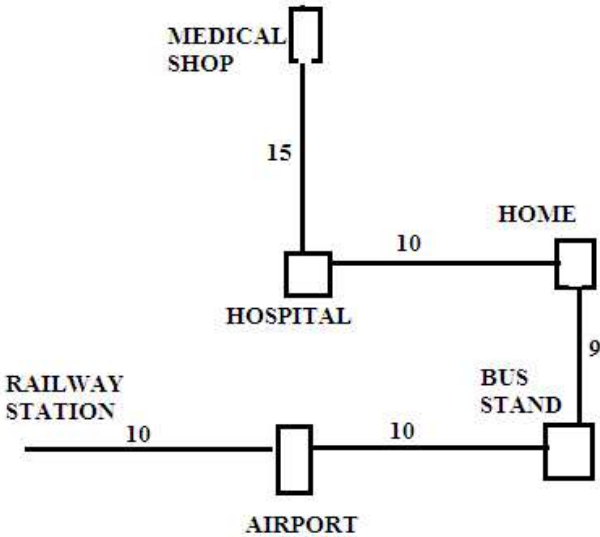
Directions (16-18):



- 16. c South east
- 17. d $\sqrt{(10^2+8^2)} = \sqrt{(164)}$
- 18. b South west

Directions (19-21):

Expected Direction questions for Upcoming Exam

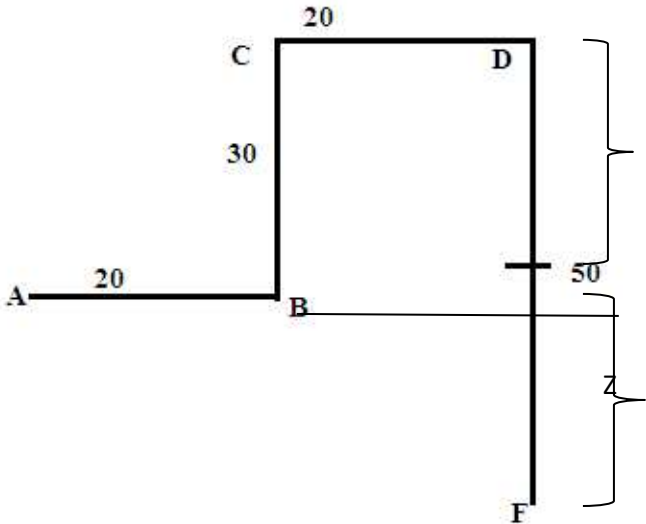


19. c South

20. c (26) $\sqrt{(24^2+10^2)} = \sqrt{(676)}$

21. d South west

Directions (22-24):

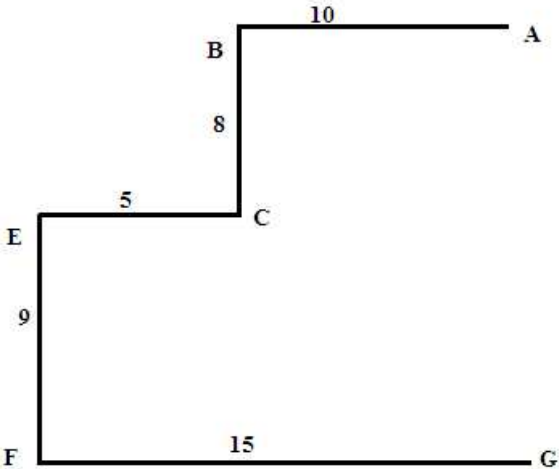


22. d North east

23. b $\sqrt{(20^2+20^2)} = \sqrt{(800)}$

24. a South East

Directions (25-27):

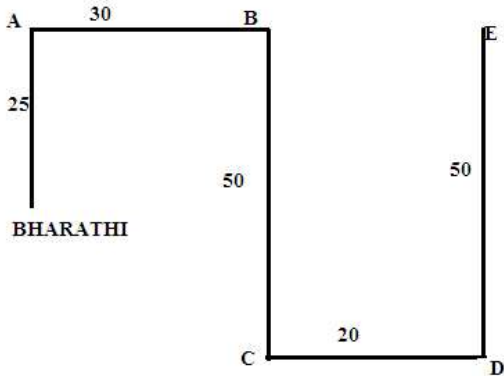


25. b South west

26. c $\sqrt{(8^2+5^2)} = \sqrt{(89)}$

27. d (5)

Directions (28-30):

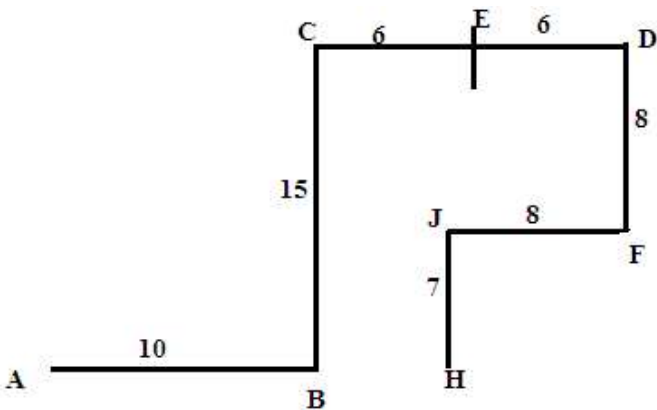


28. c South east

29. e 175

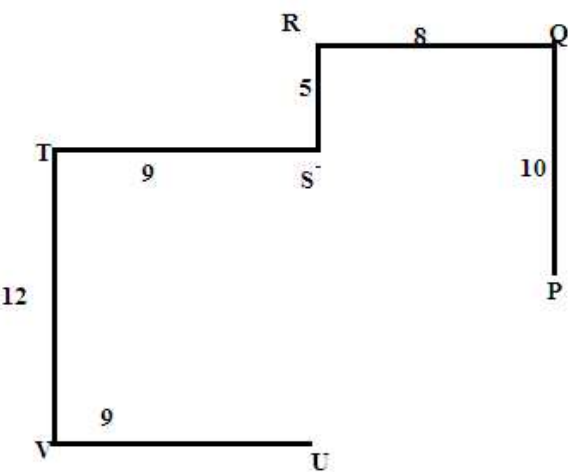
30. c (50)

Directions (31-35):



- 31. c $\sqrt{(8^2+6^2)} = \sqrt{(100)} \Rightarrow 10$
- 32. c (16)
- 33. d FB (only in FB first letter is northwest direction other options have first letter as southeast direction)
- 34. c South
- 35. c South

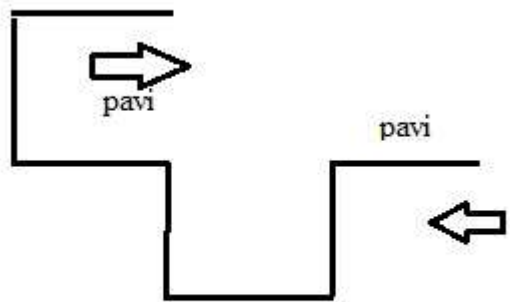
Directions (36-40):



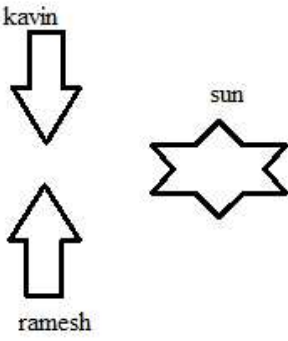
- 36. b $\sqrt{(122^2+9^2)} = \sqrt{(225)} \Rightarrow 15$
- 37. d RSU
- 38. c (17)
- 39. c South west
- 40. a North east

Directions (45-50):

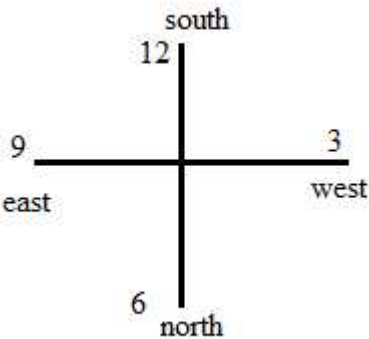
- 41. a East



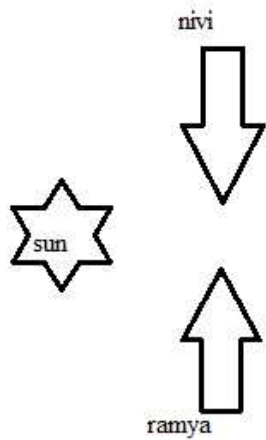
- 42. d South



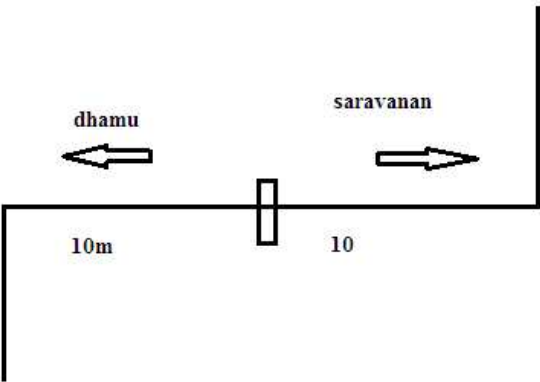
- 43. b West



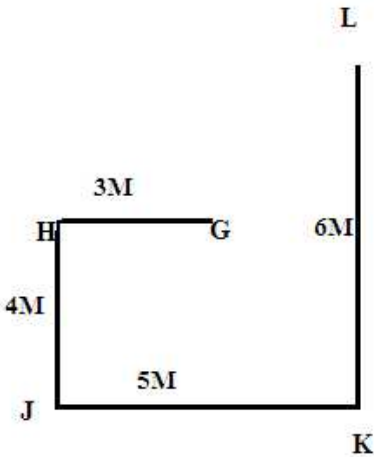
44. a North



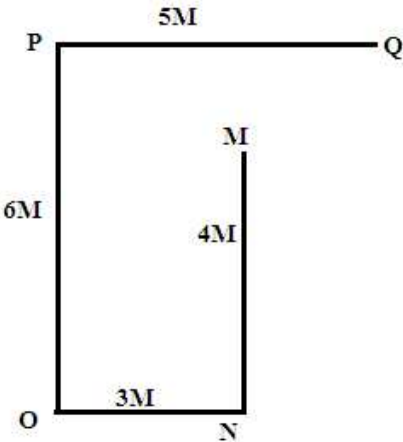
45. c South



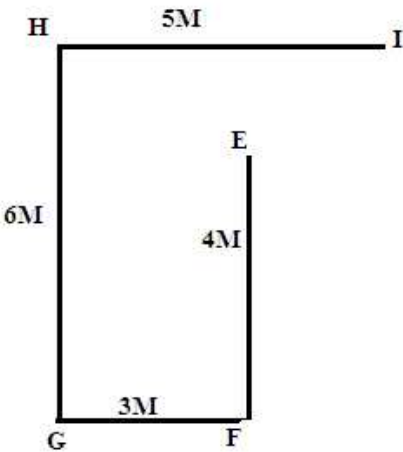
46. d South west



47. b (5)

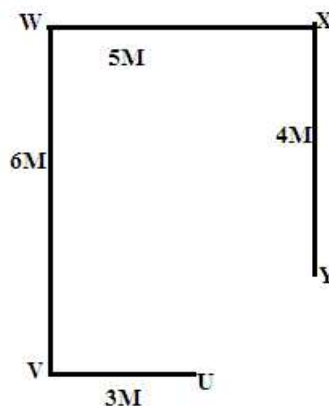
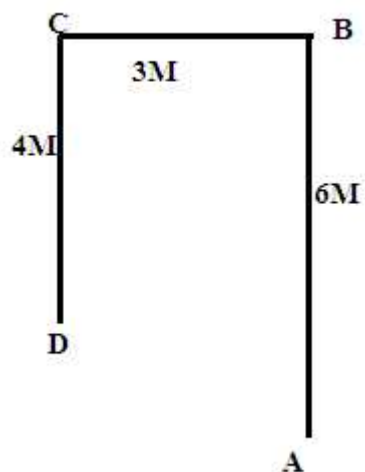


48. c (5m, north east)



Expected Direction questions for Upcoming Exam

49. c (5)



50. c (North west)

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ERROR DETECTION (New pattern)

Direction (1-50): Each question contains three sentences I, II and III. The error, if any, may be in one or more parts of the sentence. Find the error and mark the answer from options A, B, C and D. If there is no error in the statement, then mark option (E) as your answer choice.

1.

- I. An Air India aircraft was force to get airborne earlier than planned at Pune airport to avoid colliding with an IAF jeep that was dangerously near the airstrip.
- II. Credit flow is reviving slowly and steadily and is set to improve on the back of steps took by the government and RBI.

III. Even as Gujarat waits with bated breath to welcome the US President with “Kem Chho Trump”, the state government has been directed to replace the Gujarati expression with “Namaste President Trump” to help the event find resonance across India.

- A) Only I
- B) I & II
- C) II & III
- D) None is correct
- E) No correction required

2.

Expected Error Detection (New Pattern) for Upcoming Mains Exam

- I. Within the bounds of law, liberal democracies ensure that citizens enjoy the right to expressed themselves in every conceivable manner, including the right to protest, and express dissent against prevailing laws.
 - II. What is of utmost relevant today is our ability and commitment to preserve, conserve and build on the rich pluralistic history that we have inherited.
 - III. Dissenting voices cannot be labeled 'anti-national' or 'anti-democratic' and such assertions are an attacked on people's commitment to protecting constitutional values.
- A) Only II
- B) I & III
- C) None is correct
- D) Only I
- E) No correction required
- 3.
- I. The video gone viral on social media platforms on Friday, but caught police's attention when right-wing activists approached the college seeking action against the students on Saturday.
 - II. Production of several commonly used medicines may be adversely hit along with smartphones and solar equipment if the supply disruption caused by the outbreak of

- coronavirus in China lasts beyond two months.
- III. Quite often, disasters are proof of our own failings, man-made transgressions of order, of throw caution to the winds.
- A) II & III
- B) I & III
- C) None is correct
- D) I & II
- E) No correction required
- 4.
- I. The government ordered an inquiry, but members of the opposition wanted to know why the circus company was issue a license to operate in such an unsafe place.
 - II. The rumour mills were abuzz too: word spread that the horses had bolted towards Majestic, a lion was prowling in the vicinity and a hippo was bounding the railway colony.
 - III. Rescue work was challenging, not only because it had to be done in the glare of the headlights of police and fire brigade vehicles, but also because of the location.
- A) I & III
- B) Only I
- C) None is correct
- D) Only II

E) No correction required

5.

- I. Though the place is devoid of large wing scavengers, the shrub forest hosts many tiny birds whose chirping rent the air, especially during mornings and evenings.
- II. Every Saturday, the temple is thronged by villagers and other devotees – many of what cover long distances – to pray to the deity.
- III. As though to celebrate the eternal love of the washerman and his wife, the place also plays host to many young couples during weekends.

A) II & III

B) I & II

C) Only I

D) None is correct

E) No correction required

6.

- I. The justice took treatment for 49 days and resumed work despite not having fully recovered, keeping the interest of the institution and the general public in mind.
- II. Filled with paper notes that evolve in the country even before the British Rule, the museum has over 700 artefacts collected over a span of 20 years.
- III. A Hyderabad Rs 10 note which was losted in a shipwreck in 1932 and was salvaged

later was the cynosure of all eyes on Saturday.

A) II & III

B) I & III

C) None is correct

D) Only II

E) No correction required

7.

- I. Every western country has began appreciating yogic sciences and is taking it as a holistic approach towards health after consulting right doctors.
- II. Our doctors need to equip themselves with latest technology like Artificial Intelligence and machine learning to match international standards.
- III. New technologies like AI for better diagnosis of an ailing patient and robotics for conducting surgical procedures have to be embraced, along with IT and computer skills.

A) II & III

B) I & II

C) Only I

D) None is correct

E) No correction required

8.

Expected Error Detection (New Pattern) for Upcoming Mains Exam

- | | |
|--|---|
| <p>I. Industrialization and technological advancement have also adversely affected the environment and led to new lifestyle diseases emerging new challenges.</p> <p>II. A day after Scindia said he would hit the streets if manifesto promises weren't fulfilled by MP government, his real departure from a review meeting further deepened the impression of rift.</p> <p>III. Differences between CM Nath and Scindia have been out in the open for around eight months after Scindia criticised the Congress government in MP over crop damage survey, farm loan waiver and more.</p> <p>A) II & III</p> <p>B) I & III</p> <p>C) Only II</p> <p>D) None is correct</p> <p>E) No correction required</p> <p>9.</p> <p>I. Embattle telecom provider Vodafone Idea is ready to pay the government dues related to the Supreme Court's AGR judgment, but said that its ability to remain a going concern hinges on a leniency in the payment schedule.</p> <p>II. While Vodafone mulls the amount that it will be paying, Sunil Mittal's Airtel has already make clear its intentions to pay, as well as the schedule.</p> | <p>III. The RBI said that the credit flow was reviving and is expected to improve further in the coming months on the back of steps taken by the central bank and the government.</p> <p>A) Only I</p> <p>B) I & II</p> <p>C) II & III</p> <p>D) None is correct</p> <p>E) No correction required</p> <p>10.</p> <p>I. RBI has reduced policy rates five time since February 2018 and there are indications that banks are passing on the cuts now.</p> <p>II. The RBI has proposed a change in its July-June accounting year to align from the government's financial year of April-March.</p> <p>III. The RBI would be able to provide better estimates of the projected surplus transfers of the government for the financial year of budgeting purposes.</p> <p>A) None is correct</p> <p>B) Only II</p> <p>C) I & III</p> <p>D) II & III</p> <p>E) No correction required</p> <p>11.</p> |
|--|---|

Expected Error Detection (New Pattern) for Upcoming Mains Exam

- I. The Indian embassy in Japan said it is making efforts to disembark all the Indians on board the cruise ship moored off the Japanese coast after the end of the quarantine period.
- II. India's biggest Chinatown, has ended up being an unwitting victim of coronavirus that has already claimed 1367 lives in mainland China.
- III. Terming it a direct invasion and attack on media freedom, the Madras high court has quashed criminal defamation proceedings initiated by former CM J Jayalalitha against TOI and a Tamil daily in 2014.

- A) Only I
- B) II & III
- C) I & II
- D) None is correct
- E) No correction required

12.

- I. Derailing the print media from publishing content, which in no way could be termed defamatory, by initiating prosecution, is nothing but an attack on the rights enshrined under the constitution.
- II. The case relates to reports on BJP leader Subramanian Swamy's statement accusing Jayalalitha of trying to usurp credit for release of some Indian fisherman from the custody of Sri Lankan authorities.

- III. AAP has decided to repeat all the ministers because it believes that people voted it back to power because of the work done by the government and for continuing the work.

- A) Only I
- B) Only II
- C) I & III
- D) None is correct
- E) No correction required

13.

- I. The agency recovered emails of Iqbal Memon and analysed allege extortion and drug proceeds laundered from India to Dubai where he ran a few hotels to cover up the dirty money.
- II. The agency has noted travel details of Dheeraj Wadhwan to Dubai and London and how he had allegedly helped the fugitive late drug lord in laundering money to London via Dubai through non-banking hawala channels.
- III. It is only through your power of expressing views and courage of stating contrary positions that you will make others stop and think.

- A) I & II
- B) I & III
- C) Only II
- D) Only I

E) No correction required

14.

- I. Build in 1920 to tame the flood fury of River Musi, Osman Sagar has served the drinking water needs of a million people in parts of Hyderabad for 100 years.
- II. During his talk on 'Hues that make India' Justice Chandrachud called on audience to include communities that is pushed to the fringe of the mainstream for being minorities – based on their language, faith, culture or gender.
- III. A research founded that Walnut consumption by healthy, elderly adults had little effect on cognitive function over two years, but it had greater effect on elderly adults who had lower baseline neuropsychological test scores.

A) Only III

B) I & III

C) None is correct

D) II & III

E) No correction required

15.

- I. Walnuts contain omega-3 fatty acids and polyphenols, which has been found to counteract oxidative stress and inflammation, both of which are drivers of cognitive decline.

II. When it comes to how algorithms and artificial intelligence can enable bias in the job hiring process, the biggest issue isn't even with the employers themselves.

III. While algorithms may speed up the process of narrowing the pool of job candidates, they are often not great at finding the most qualified ones, and instead, end up disproportionate filtering out people in those categories.

A) I & III

B) Only I

C) None is correct

D) I & II

E) No correction required

16.

I. Though the POSCO act becomes law in 2012, changes in infrastructure and judicial staff training took a couple of years and the results can be seen now with testimonies of minors that have ended in convictions.

II. There have been a sea change in how subtitles are written, because of streaming platforms and new markets.

III. The growth momentum of the first seven years were remarkable, but economies have ups and downs and there was a downturn in the last three years.

A) II & III

B) I & III

C) Only II

D) None is correct

E) No correction required

17.

I. The decision to raise import duties is a major reversal of the policy of gradually reducing import duties, which have been in place for 30 years and was followed by several governments.

II. The CAG came up with unrealistically large estimates of revenue losses and public opinion came to the view that not auction spectrum was a big mistake.

III. Some critics accuse finance minister Nirmala Sitharaman of gross fiscal conservation and failure to use a bi budget stimulus to boost growth.

A) I & II

B) I & III

C) Only I

D) None is correct

E) No correction required

18.

I. The MEA's management and functioning structure remains hidebound and out of sync with modern practices and demands of India's foreign policy, which is turning more complex and diverse.

II. He was a well-behaved boy, drawing a personality sharply divergent from the one his Facebook friends saw: of undisguised hatred towards one community and her violent intentions.

III. The Election Commission has found Kejriwal in violation of a provision that prohibits ministers and other authorities from making any promise of construction roads, provision of drinking water facilities etc.

A) II & III

B) Only II

C) I & III

D) None is correct

E) No correction required

19.

I. Deploing the use of chemicals to ripe fruits, Delhi high court equated it to poisoning the consumer and called for a launch of criminal prosecution against such culprits.

II. A Delhi court issued notice to Tihar Jail authorities asking them to respond to a plea of the death row convicts seeking stay on their execute slated for February 1.

III. The Mumbai Police withdrew protection extended to nine builders who allegedly faced threats from the underworld, saying most of the dreaded gangsters were lodged in jails.

<p>A) I & II</p> <p>B) None is correct</p> <p>C) Only I</p> <p>D) II & III</p> <p>E) No correction required</p> <p>20.</p> <p>I. Crude prices are in the comfort zone and product prices are expected to face deflationary pressure as coronavirus casts a shadow over trade.</p> <p>II. The deliberations pointed to the strong possibility of CAA turning out to be the flashpoint which may mar the Budget session, accusing the government of focusing merely on passage of its bills and not addressing the nationwide protests.</p> <p>III. The National Democratic Front of Bodoland gave into arms marking an end to a 34-year armed struggle for a separate Bodoland state.</p> <p>A) Only III</p> <p>B) I & III</p> <p>C) None is correct</p> <p>D) Only II</p> <p>E) No correction required</p> <p>21.</p> <p>I. The Supreme Court refused to stop BSP MP, which is accused of rape and is in</p>	<p>custody, from taking oath as Member of Parliament eight months after he got elected as a candidate of SP-MSP coalition.</p> <p>II. While Beijing was yet to approve India’s request to operate two aircraft to fly back Indian nationals, the Indian side was hoping evacuate will finally begin January 31st evening.</p> <p>III. India’s envoy to Brussels has met all the groups who have sponsored the drafts for Brexit in the past couple of days to explain the Indian perspective.</p> <p>A) I & III</p> <p>B) Only I</p> <p>C) I & II</p> <p>D) None is correct</p> <p>E) No correction required</p> <p>22.</p> <p>I. Outgoing British high commissioner Dominic Asquith expressed hope the Indian government will continue to address the CAA-related issues in the spirit of its manifesto commitment of “with all, development of all, and trust of all”.</p> <p>II. Balance between the right to protect, and ensuring that they don’t cross the line to illegality is a balanced difficult to maintain.</p> <p>III. Urns containing the ashes of deceased members of Hindu families in Pakistan are piling up in temples and crematoriums there as the community awaited restoration of</p>
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Expected Error Detection (New Pattern) for Upcoming Mains Exam

train and bus links with India to perform the final ritual.

- A) II & III
- B) Only II
- C) I & III
- D) None is correct
- E) No correction required

23.

- I. Vehicle owners will now receive messages from the transport department if their vehicle don't have third party insurance or the policy has expired.
- II. Sending a strong message down the line to lower courts, a five judge constitution bench of the Supreme Court has ruled that anticipatory bail can be granted until the completion of trial.
- III. Being the largest economy in the subcontinent, India would arguably attract workers from neighbouring countries with lagging economies.

- A) I & II
- B) I & III
- C) None is correct
- D) Only I
- E) No correction required

24.

- I. Before a presidential candidate get their name on the ballot for election day, they must survive a nomination process, which whittle down the fird of candidates to one for each party.
- II. Sceptics argue that every census undercounts the illegals since Bangladeshis, fearful of detention or deportation, lies about their birthplace.
- III. Within hours of Delhi high court refusing permission for the execution of the four Nirbhaya case convict separately, the Centre challenged it in the Supreme Court.

- A) I & III
- B) Only II
- C) None is correct
- D) II & III
- E) No correction required

25.

- I. Maharashtra CM Thackrey said there was no need to fear the CAA, but asserted his government will not allowed the proposed NRC to be implemented as it would "impact people of all religions".
- II. The House committee suggested keeping an option for compensating the surrogate mother beyond medical expenses and insurance coverage that includes taking care of her nutritional food requirements.
- III. Cabinet's decision to approve MTP (Amendment) Bill, 2020, will truly address

the needs of gender justice through the prism of reproductive rights, providing a solution which women in our country has sought for decades.

- A) None is correct
- B) I & III
- C) Only II
- D) I & II
- E) No correction required

26.

- I. The government is likely to push for legislation on curbing child pornography after a parliamentary ad hoc committee reported to the House the “serious menace” of child porn.
- II. In the Indian context, anticipatory bail was found necessary because of incessant targeting of political rivals and the tendency of police to used its power of arrest even in cases which require no custodial interrogation.
- III. Every year the Annual Status of Education Report brings the sad news that less than half the students in Class V can read a paragraph or do an arithmetic sum from a Class II text.

- A) Only II
- B) I & III
- C) None is correct

- D) Only I
- E) No correction required

27.

- I. Educationists fear that a ban will cut off Indian children from the learn revolution happening in the world, especially digital learning, and disconnect them from job opportunities in the knowledge economy.
- II. The interesting thing is that one who really becomes youthful does not become old, because one who knows the secret of being a youth does not need to become old.
- III. Demographic and economic trends in the two countries suggest that India’s economic attraction for Bangladeshi migrants have diminished, especially in Assam which is among the most poorest and least economically dynamic of Indian states.

- A) I & III
- B) Only II
- C) None is correct
- D) I & II
- E) No correction required

28.

- I. Illustrating the heavy traffic congestion on Indian roads, a report released recently has ranked three Indian cities in the top five among 416 cities across 57 countries, to having the worst traffic gridlocks.

- II. Despite a plethora of judgments allowing termination of pregnancy in case of foetal abnormalities, the Supreme Court denied the right to abort a foetus detected with Down Syndrome at 22 weeks.

III. Frozen nitrogen covers part of Pluto's surface in the shape of a heart and during the day, a thin layer of nitrogen ice warms and turns into vapour.

A) II & III

B) I & II

C) None is correct

D) Only I

E) No correction required
29.

I. As air whips close to the surface, it transports heat, grains of ice and haze particles to create dark wind streaks and plains across the north and north-western regions.

II. Russian priests should refrained from the practice of blessing nuclear weapons and other weapons of mass destruction that can inflict indiscriminate loss of life.

III. Fear of undertrial prisoners absconding, especially those with no one to vouch for their credentials, hinders a more liberal bail policy.

A) Only III

B) Only II

- C) I & III

D) I & II

E) No correction required

30.

I. The government is looking to introduce pre-filled forms with your capital gains data on mutual fund and share sales in time for you to file the income tax returns by the end of July.

II. Atalji's NDA government made serious efforts to ensuring safer abortions, by eliminating abortion by untrained persons and in unhygienic conditions, thus reducing maternal morbidity under the aegis of the MTP.

III. The Union Cabinet cleared amendments to the Banking Regulation Act to strengthen the regulation of cooperative banks after the massive fraud at PMC Bank, which were unnoticed and exposed several gaps in the legal framework.

A) I & III

B) None is correct

C) Only I

D) Only II

E) No correction required
31.

Expected Error Detection (New Pattern) for Upcoming Mains Exam

- I. Progressive companies are becoming aware of the need to just provide health insurance, but ensure that employees remain healthy.
- II. Underlining the effectiveness of mediation to address commercial disputes, Chief Justice S A Bobde said it is time to have a comprehensive law on making pre-litigation mediation mandatory.
- III. The bill allows abortion up to 24 weeks of gestational age for vulnerable categories of women and there is no limit of gestational age in case of pregnancies with substantial foetal abnormalities, diagnosed by a medical board.

- A) I & II
- B) I & III
- C) Only I
- D) None is correct
- E) No correction required

32.

- I. Under the tent, occupied mostly by farmers from Punjab during the day, the organizers went around requesting people not to interact with the media and refrain from political suggestions.
- II. The bill seeks to strengthen provisions for protecting the dignity and privacy of women who seek the refugee of law when confronted with such a life altering decision.

- III. The government believes that the slowdown of the economy is due to cyclical factors and the upturn will happen if they do more of the same – scrounge for money.

- A) Only III
- B) Only II
- C) I & III
- D) None is correct
- E) No correction required

33.

- I. In its bid to open up the railways for private investment, the railway ministry has prepared an ambitious plan to allow private players to run 500 passenger trains, manage 750 stations and even buy rolling stock from private players.
- II. Recognising the burgeoning numbers of undertrial prisoners in jails, initiatives to free those not accused of heinous offences on personal bail need to be stepped down.
- III. Intelligence can perhaps be described in functional terms, as the ability to learn new skills and solve various types of problems.

- A) Only I
- B) II & III
- C) I & II
- D) None is correct
- E) No correction required

34.

- I. Once a machine achieves superhuman competence in any given domain, that competence can be rapidly replicate multiple times.
- II. Spirituality is that which enhances the sense of belongingness among people, so there is that natural tendency to be honest and to care for each other.
- III. There is no apparent reason a higher intelligence will treat us any better than we treat animals bred for meat, fur and milk.

- A) II & III
- B) Only I
- C) I & III
- D) None is correct
- E) No correction required

35.

- I. Humans live longer and stay healthy and active for much longer due to better nutrition and the ability to combat disease.
- II. Don't be friend with people who are complaining and negative in their mindset because if you are friendly with them, you also get into that mode.
- III. Doesn't matter if it's a fast food joint or an upscale diner, a cup of coffee or a round of beer, indulging in eating and drinking is a favourite pastime in many.

- A) I & II

B) II & III

C) None is correct

D) Only I

E) No correction required

36.

- I. India called off Sri Lanka to fulfill the aspirations of the island nation's Tamil minority by taking forward the process of reconciliation and implementing a constitutional provision aimed at the devolution of powers.
- II. As a Delhi went to the polls, polling locations in most unauthorized colonies in the city were abuzz with conversations suggesting how development and welfare schemes focused in such colonies.
- III. It would be useful to remind oneself that the rights which citizens cherish deeply is fundamental – it is not the restrictions that are fundamental.

A) I & II

B) Only II

C) I & III

D) None is correct

E) No correction required

37.

- I. The impact on the stock of unaccounted money will be known only after a few

Expected Error Detection (New Pattern) for Upcoming Mains Exam

months, when the holders of unaccounted money will have to treat the withdrawn notes as waste paper.

II. The Supreme Court directed that Cinema halls over the country must play the National Anthem before the screening of a film and people should stand up as a mark of respect.

III. To listen to someone without reacting means we accept him and do not create even a single judgmental thought in our mind.

A) II & III

B) I & II

C) None is correct

D) Only II

E) No correction required

38.

I. The various economic think tanks which depend on government funds to operate are said to be somewhat miffed that their battery of economists was not consulted by the PMO, the Finance Ministry or the RBI while planning demonetisation.

II. Three weeks after PM Modi's announcement about withdrawal of Rs 1000 and Rs 500 currency notes from circulation, the impact continues to be felt by the man on the street.

III. Smokers can effectively turn back time in their lungs by kicking the habit, with

healthy cells emerging to replace some of their tobacco damaged and cancer-prone ones.

A) Only I

B) II & III

C) I & III

D) None is correct

E) No correction required

39.

I. The bravado of instruction to BJP leaders that they should file expenditure statements for the period Nov 8 to Dec 31, 2016, camouflage the question of whether there was selective advance leakage of information of demonetisation.

II. Promises made during elections are to be backed up by performance, and results of good governance should gradually become visible to the public.

III. Scientists have developed a technique to help prevent robots from overheating using an innovative liquid cooling system that takes inspiration from the human body.

A) Only I

B) I & II

C) None is correct

D) II & III

E) No correction required

40.

- I. The perception that state assembly elections from time distract the centre from good governance is anathema to the concept of democracy and federalism and is disrespectful to the electorate.
- II. It’s the Supreme Court which has often protected and uphold the rights and liberties of the individual and the minority against attempts by the state to encroach on them, often in the name of the majority’s mandate.
- III. The technique allows machines to “sweat” off cooling liquid stored around actuators, the component responsible for moving and controlling a mechanism or system.

- A) II & III
- B) I & III
- C) Only I
- D) Only II
- E) No correction required

41.

- I. Even as the country mourns the young soldiers who laid down their lives in the line of duty, citizens need to push their elected leaders to demand answers, for there is no other way to ensure more young lives are not lost in vain.
- II. If we can work out where healthy cells normally lived and what makes them expand when someone stops smoking,

perhaps we have opportunities to make them even more effectively at repair.

- III. While sport is riddled with many ills, from corruption to unfair practices, administrators worldwide need to acknowledge child sex abuse as the gravest.

- A) I & II
- B) Only II
- C) I & III
- D) None is correct
- E) No correction required

42.

- I. NABARD, Cooperatives and RRBs need to take the lead in or organising nation-wide training/demonstration camps for farmers to familiarize them with digital banking.
- II. In past weeks, as violence both on the LoC and inside Kashmit has escalated, New Delhi appeared to be flailing, uncertain of what its next steps ought to be.
- III. Many people care greatly about their reputation and how they will be judged by others, and a concern about appearing honest may outweigh our desire to actually be honest, even in situations where it will cost us money to lie.

- A) Only III
- B) I & III
- C) Only I

D) None is correct

E) No correction required

43.

- I. The great American tragedy happened when US bombs, rained on Baghdad, glowing like maliciously fireflies on TV screens, CNN bringing humanity's first televised war, palpable excitement ruffling its correspondents' immaculate scarves.
- II. The Supreme Court order for playing national anthem in cinema halls has touched on an old debate on whether forcing someone to sing the anthem infringes fundamental rights.
- III. When people obtain extremely favourable outcomes, they anticipate other people's suspicious reactions, and prefer lying and appearing honest over telling the truth, and appearing as selfish liars.

A) II & III

B) Only II

C) None is correct

D) I & II

E) No correction required

44.

- I. Article 25 is an article of faith in the Constitution, incorporated in recognition of the principle that the real test of a true democracy is the ability of even an

insignificant minority to find its identity under the country's constitution.

- II. Assurance that rights are secure tends to diminish fear and jealousy of strong government, and by make us feel safe to live under it makes for its better support.
- III. A latest study found anxiety about appearing "rude" or "ungrateful" was stopping women from requesting more money – with around a quarter of woman saying they were fearful that contesting pay could endanger benefits like maternity leave or flexible working.

A) II & III

B) None is correct

C) I & III

D) Only I

E) No correction required

45.

- I. The aggression expansion of Chinese smartphone-makers in India has helped the country dethrone the US to become the second largest smartphone market in the world.
- II. The Centre offered to exiting Air India and Air India Express by selling its entire stake, instead of the 76% it had offered two years ago, apart from the 50% it owns in ground-handling joint venture AI-SATS.
- III. The coronavirus outbreak has stoked a waves of anti-China sentiment around the

globe, from shops barring entry to Chinese tourists, online vitriol mocking the country’s exotic mean trade and surprise health checks on foreign workers.

- A) II & III
- B) None is correct
- C) Only II
- D) I & II
- E) No correction required

46.

- I. The Enforcement Directorate is probing a series of financial transactions involving the PFI as part of a widening probe into the alleged role of the outfit in fanning protests against the CAA.
- II. With the European Parliament due to discuss a resolution sharply critical of the CAA, India is ramping up diplomacy in Brussels to counter the move by hundreds of MEPs.
- III. Donald Trump’s defence team made the audacious argument that anything the US president does to get re-elected is legal if he believes it is in public interest.

- A) Only I
- B) I & III
- C) None is correct
- D) II & III

E) No correction required

47.

- I. In general, those who are religious are more inclined to believe in end of the world theories, citing unspecified versions of ‘judgment day’ that have no scientific basis.
- II. It is in terms of modest lethality and human ability to react quick, some of the dynamic with regards to spread of coronavirus may be different with the increasing migration and mobility of people and products, which explains the massive quarantines underway in China.
- III. Chinese authorities have said the virus emerged from a market selling illegally traded wildlife, giving rise to widespread social media mocking of China’s demand for exotic delicacies and ingredients for traditional medicine.

- A) II & III
- B) None is correct
- C) Only I
- D) I & II
- E) No correction required

48.

- I. While Bajaj had already taken a back seat when it came to taking active business decisions years ago, this would be the first instant when he officially gets into a non-executive position.

Expected Error Detection (New Pattern) for Upcoming Mains Exam

II. Both Bengal or Delhi fancied their chances of collecting three points, but in the end it was the weather which had the final say as the teams settled for a point each from their drawn Ranji Trophy Elite 'A' match at the Eden Gardens.

III. US authorities announced the discovery of the longest smuggling tunnel ever founded on the southwest border, stretching more than three quarters of a mile from now to industrial site in Tijuana, Mexico, to the San Diego area.

A) I & III

B) Only II

C) None is correct

D) I & II

E) No correction required

49.

I. Unlike in India, where tea drinking is well entrenched, in the developed markets, black tea is seeing a decline as consumers are said to be moving to other alternatives.

II. The iconic "Taj Mahal" tea under Brooke Bond, which is marketed as a brand closely linked to the heritage culture, while Lipton focus to emerging consumer tastes such as green tea.

III. The finance ministry has summoned senior Infosys executives to find out why the

technology major has be unable to fix glitches in the GST Network system, which is causing hardship to lakhs of taxpayers.

A) Only I

B) I & II

C) Only II

D) II & III

E) No correction required

50.

I. While businesses has been complaining of problems with the platforms for several months, it is only now that the government has begun acknowledging the concerns.

II. While Unilever has initiated a strategic review of its global tea business, Industrial analysts does not expect the Indian subsidiary Hindustan Unilever to evaluate selling its tea business in India.

III. The Narendra Modi government battling an acute economic slowdown, has forcing to announce a series of steps to accelerate activity.

A) II & III

B) None is correct

C) Only I

D) I & II

E) No correction required

Solution and Explanation

1. The correct option is **B – I & II.**

‘Force’ will be replaced by ‘Forced’ in sentence A as it seems to be of passive voice which implies that an action is done on something. And for writing passive voice, we use 3rd form of verb after “was/were”.

‘To’ when followed by a verb always takes the verb in its 1st form. This “to + Verb1” shows a secondary verb in a sentence which does not show an active action. There it is never written in any past forms.

- An Air India aircraft was **forced** to get airborne earlier than planned at Pune airport to avoid colliding with an IAF jeep that was dangerously near the airstrip.
- Credit flow is reviving slowly and steadily and is set to improve on the back of steps **taken** by the government and RBI.

2. The correct option is **C – None is correct.**

For sentence A, same reason as written for Q.1 – Sentence applies. ‘To’ must be followed by 1st form of verb. Therefore, here we will write “**express**” in the place of “expressed”.

For sentence B, the word ‘relevant’ (adjective) should be replaced with “**relevance**” (noun) as per the requirement of the sentence.

For sentence C, we will replace ‘attacked’ with “**attack**” as before this word, we have ‘an’ which requires a noun. But ‘attacked’ is a verb.

- Within the bounds of law, liberal democracies ensure that citizens enjoy the right to **express** themselves in every conceivable manner, including the right to protest, and express dissent against prevailing laws.
- What is of utmost **relevance** today is our ability and commitment to preserve, conserve and build on the rich pluralistic history that we have inherited.
- Dissenting voices cannot be labeled ‘anti-national’ or ‘anti-democratic’ and such assertions are an **attack** on people’s commitment to protecting constitutional values.

3. The correct option is **B - I & III.**

The sentence shows a simple statement of past tense and sentences of simple past uses 2nd form of verb. But here, we have “gone” which is a 3rd form of “go”. Therefore, we will replace it with “went”.

“Of” when followed by a verb, takes the verb in its –ing form. Therefore, “throw” will be replaced by “**throwing**”.

- The video **went** viral on social media platforms on Friday, but caught police’s attention when right-wing activists approached the college seeking action against the students on Saturday.

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- Quite often, disasters are proof of our own failings, man-made transgressions of order, of **throwing** caution to the winds.

4. The correct option is B – Only I.

In sentence A, “issue” should be replaced with “issued”. Refer to same reason in Q1. – A.

- The government ordered an inquiry, but members of the opposition wanted to know why the circus company was **issued** a license to operate in such an unsafe place.

5. The correct option is B – I & II

In sentence A, “wing” should be replaced with “winged” as here it is used as participle form of verb to show a verb (in 2nd form) used as an adjective.

“What” in sentence B should be replaced with “whom” as here the position adjective is to be used for “devotees” which are living beings and for them, we use “whom”.

- Though the place is devoid of large **winged** scavengers, the shrub forest hosts many tiny birds whose chirping rent the air, especially during mornings and evenings.
- Every Saturday, the temple is thronged by villagers and other devotees – many of **whom** cover long distances – to pray to the deity.

6. The correct option is A – II & III

The sentence B shows evolution of paper notes before British rule, which needs a verb “evolved” to show evolution in the past.

“Lusted” is no word. “Lost” is the correct word.

7. The correct option is B – I & II

In sentence A, “**Has**” when followed by a verb always takes it in 3rd form. Therefore, “began” here must be replaced with “begun”.

In sentence B, ‘technology’ is followed by two names. This implies that there isn’t a single technology mentioned. Therefore, “technology” should be replaced with “technologies”.

- Every western country has **begun** appreciating yogic sciences and is taking it as a holistic approach towards health after consulting right doctors.
- Our doctors need to equip themselves with latest technologies like Artificial Intelligence and machine learning to match international standards.

8. The correct option is E - No correction required.

9. The correct option is B – I & II

In sentence A, the first word ‘Embattle’ is wrong as here, it is used as an adjective and when a verb is used as an adjective, it is written in its past forms. Therefore, ‘**Embattled**’ must be put there.

In sentence B, we have ‘has’ which shows a perfect tense, and ‘has’ is always followed by the 3rd form of verb. Therefore, ‘make’ must be replaced with ‘**made**’.

- **Embattled** telecom provider Vodafone Idea is ready to pay the government dues related to the Supreme Court's AGR judgment, but said that its ability to remain a going concern hinges on a leniency in the payment schedule.
- While Vodafone mulls the amount that it will be paying, Sunil Mittal's Airtel has already **made** clear its intentions to pay, as well as the schedule.

10. The correct option is **A – None is correct**

In sentence I, 'time' must be replaced with '**times**' as it is preceded by 'five' which is a plural number. And, the noun after a plural noun is always written in its plural form.

In sentence II, 'Align' is always followed by '**with**' to form a phrasal verb '**align with**' which means to do proceedings matching to something else.

The sentence III shows transfers of surplus by RBI. 'Transfers' must indeed have the preposition '**to**' to show the receiving organization.

- RBI has reduced policy rates five **times** since February 2018 and there are indications that banks are passing on the cuts now.
- The RBI has proposed a change in its July-June accounting year to align **with** the government's financial year of April-March.
- The RBI would be able to provide better estimates of the projected surplus transfers **to** the government for the financial year of budgeting purposes.

11. The correct answer is **E - No correction required**.

12. The correct option is **B – Only II**

Quantifier 'some' is always followed by a plural noun as it is used to show plural number (persons or things). Therefore, in sentence B, 'fisherman' must be replaced with '**fishermen**'.

13. The correct option is **D – Only I**

'Allege' in sentence II needs to be replaced with '**Alleged**' as here it is used as an adjective to extortion (noun) and when a verb is used as an adjective, it is written in its past form.

- The agency recovered emails of Iqbal Memon and analysed allege extortion and drug proceeds laundered from India to Dubai where he ran a few hotels to cover up the dirty money.

14. The correct option is **C – None is correct**.

'Build' is the first form of a verb which is used to show incidents of past. Sentence I shows building of a dam in 1920. Therefore, to show past, we will use '**Built**' instead of 'Build'.

'Communities' being a plural noun must be followed by a plural helping verb. Therefore, we will use '**are**' in place of 'is' in the sentence II.

The sentence III shows a research and a research is an obtained result of something. Therefore, to show the result, we use '**found**' and not 'find'.

- **Built** in 1920 to tame the flood fury of River Musi, Osman Sagar has served the drinking water needs of a million people in parts of Hyderabad for 100 years.
- During his talk on 'Hues that make India' Justice Chandrachud called on audience to include communities that **are** pushed to the fringe of the mainstream for being minorities – based on their language, faith, culture or gender.
- A research **found** that Walnut consumption by healthy, elderly adults had little effect on cognitive function over two years, but it had greater effect on elderly adults who had lower baseline neuropsychological test scores.

15. The correct option is **A – I & III**

In sentence I, the subject is 'Walnuts' which is a plural noun. Therefore, it must be followed with a plural helping verb. There '**have**' must be used there instead of 'has'.

'Filtering out' is a phrasal verb used in sentence III. To highlight a verb, we use an adverb. The word 'disproportionate' is wrong here as here, it is used as an adverb and the adverb form of it is '**disproportionately**'.

- Walnuts contain omega-3 fatty acids and polyphenols, which **have** been found to counteract oxidative stress and inflammation, both of which are drivers of cognitive decline.
- While algorithms may speed up the process of narrowing the pool of job candidates, they

are often not great at finding the most qualified ones, and instead, end up **disproportionately** filtering out people in those categories.

16. The correct option is **D – None is correct.**

The sentence I seem to be an action of simple past. Simple past is used to write sentences where we remember or tell a past action in a general way. And for writing simple past, we use 2nd form of verb. Therefore, 'becomes' must be replaced with '**became**'.

The sentence II is a sentence of passive voice where a sea change is observed. For a singular subject like 'sea change' we use a singular helping verb. Therefore, '**has**' must be written there.

The subject of the sentence III is a singular noun, and hence must be followed by a singular helping verb. Therefore, 'were' must be replaced with '**was**' to make it grammatically correct.

- Though the POSCO act **became** law in 2012, changes in infrastructure and judicial staff training took a couple of years and the results can be seen now with testimonies of minors that have ended in convictions.
- There **has** been a sea change in how subtitles are written, because of streaming platforms and new markets.
- The growth momentum of the first seven years **was** remarkable, but economies have ups and downs and there was a downturn in the last three years.

17. The correct option is **A – I & II**

The subject in statement I is 'policy' which is a singular noun. It must be followed with a singular helping verb. Therefore, '**has**' must be used here.

In sentence II, 'Auction' must be replaced with 'auctioning'.

- The decision to raise import duties is a major reversal of the policy of gradually reducing import duties, which **has** been in place for 30 years and was followed by several governments.
- The CAG came up with unrealistically large estimates of revenue losses and public opinion came to the view that not **auctioning** spectrum was a big mistake.

18. The correct option is **B – Only II**

The subject of sentence II is 'He' which represents a male. But in the last part of the sentence, the possessive adjective relating to it is 'her' which is incorrect. Therefore, 'her' must be replaced with 'his' to make it grammatically correct.

- He was a well-behaved boy, drawing a personality sharply divergent from the one his Facebook friends saw: of undisguised hatred towards one community and **his** violent intentions.

19. The correct option is **A – I & II**

As stated in many questions above, a verb when used as an adjective acts as a past participle and here, the verb is written in its past form.

Therefore, 'ripe' must be replaced with '**ripen**' to make it grammatically correct.

The word 'execute' is preceded by their, which means that indeed there need to be a noun. The word 'execute' is a verb which is incorrect here, therefore it must be replaced with 'execution'.

- Deploing the use of chemicals to **ripen** fruits, Delhi high court equated it to poisoning the consumer and called for a launch of criminal prosecution against such culprits.
- A Delhi court issued notice to Tihar Jail authorities asking them to respond to a plea of the death row convicts seeking stay on their **execution** slated for February 1.

20. The correct option is **A – Only III**

The sentence III contains a phrasal verb 'gave into' which means 'overlook. But the sentence intends to show 'submission' of National Democratic Front. Therefore, it must be replaced with 'gave up' which means 'submission to someone/something'.

- The National Democratic Front of Bodoland gave **up** arms marking an end to a 34-year armed struggle for a separate Bodoland state.

21. The correct option is **C – I & II**

The sentence I shows refusal of the Supreme Court for a BSP MP. Furthermore, the sentence

gives reference to the MP of being accused of rape. And for making a reference to the MP, the pronoun that should be used is '**who**' and not '**which**'.

In sentence II, the word 'evacuate' is wrong here as here we need to show a noun i.e. 'evacuation'.

- The Supreme Court refused to stop BSP MP, **who** is accused of rape and is in custody, from taking oath as Member of Parliament eight months after he got elected as a candidate of SP-MSP coalition.
- While Beijing was yet to approve India's request to operate two aircraft to fly back Indian nationals, the Indian side was hoping **evacuation** will finally begin January 31st evening.

22. The correct option is **A – II & III**

'Balanced' in sentence II, is preceded by an article 'a' and an article is always followed by a noun. Therefore, the word 'balanced' must be corrected with 'balance' to make it grammatically correct.

The sentence III is in simple present tense, but the verb 'awaited' is incorrect here as it indicates a past time. Therefore, it must be replaced with '**awaits**'.

- Balance between the right to protect, and ensuring that they don't cross the line to illegality is a **balance** difficult to maintain.
- Urns containing the ashes of deceased members of Hindu families in Pakistan are

piling up in temples and crematoriums there as the community **awaits** restoration of train and bus links with India to perform the final ritual.

23. The correct option is **D – Only I**

'Vehicle' is a singular noun and thus must have a singular helping verb. Therefore, 'don't' in sentence I is incorrect and must be replaced with '**doesn't**'.

- Vehicle owners will now receive messages from the transport department if their vehicle **doesn't** have third party insurance or the policy has expired.

24. The correct option is **C – None is correct**

The subject of sentence I is 'candidate' which is a singular noun. Therefore, it must be followed by a singular helping verb. Therefore, 'get' must be replaced with '**gets**'.

The subject of sentence II is 'illegals' which being a plural noun must be followed by a plural noun. Therefore, 'lies' must be replaced with '**lie**'.

In sentence III, the word 'convict' must be replaced with '**convicts**' as it is preceded by 'four' which needs a plural noun after it and not a singular noun.

- Before a presidential candidate **gets** their name on the ballot for election day, they must survive a nomination process, which whittle

down the fird of candidates to one for each party.

- Sceptics argue that every census undercounts the illegals since Bangladeshis, fearful of detention or deportation, **lie** about their birthplace.
- Within hours of Delhi high court refusing permission for the execution of the four Nirbhaya case **convicts** separately, the Centre challenged it in the Supreme Court.

25. The correct option is **B – I & III**

‘Will’ being a modal is always followed by the first form of verb because modals do not highlight an action verb. Therefore, ‘allowed’ in sentence I must be replaced with ‘**allow**’.

The subject in the last clause of sentence III is ‘women’ i.e. a plural noun and it must be followed by a plural helping verb. Therefore, ‘has’ in it must be replaced with ‘**have**’.

- Maharashtra CM Thackrey said there was no need to fear the CAA, but asserted his government will not **allow** the proposed NRC to be implemented as it would “impact people of all religions”.
- Cabinet’s decision to approve MTP (Amendment) Bill, 2020, will truly address the needs of gender justice through the prism of reproductive rights, providing a solution which women in our country **have** sought for decades.

26. The correct option is **A – Only II**

‘To’ when followed by a verb is always written in its basic form (1st form). Therefore, the word ‘used’ must be replaced with ‘**use**’.

- In the Indian context, anticipatory bail was found necessary because of incessant targeting of political rivals and the tendency of police to **use** its power of arrest even in cases which require no custodial interrogation.

27. The correct option is **A – I & III**

The word ‘revolution’ in Sentence I is a noun and ‘learn’ is a verb. Here, the verb is acting as a gerund (Verb + ing). Therefore, it must be replaced with ‘**learning**’.

‘Economic attraction’ being a singular noun must be replaced with a singular helping verb. Therefore, ‘have’ must be replaced with ‘**has**’.

- Educationists fear that a ban will cut off Indian children from the **learning** revolution happening in the world, especially digital learning, and disconnect them from job opportunities in the knowledge economy.
- Demographic and economic trends in the two countries suggest that India’s economic attraction for Bangladeshi migrants **has** diminished, especially in Assam which is among the poorest and least economically dynamic of Indian states.

28. The correct option is **D – Only I**

In sentence I, ‘to’ must be replaced with ‘for’.

- Illustrating the heavy traffic congestion on Indian roads, a report released recently has ranked three Indian cities in the top five among 416 cities across 57 countries, **for** having the worst traffic gridlocks.

29. The correct option is **B – Only II**

In sentence II, 'should' being a modal, must be followed by a basic form (1st form) of verb. Therefore, 'refrained' must be replaced with '**refrain**'.

- Russian priests should **refrain** from the practice of blessing nuclear weapons and other weapons of mass destruction that can inflict indiscriminate loss of life.

30. The correct option is **D – Only II**

In sentence II, 'to' is followed by 'ensured' which is incorrect. 'To' when followed by a verb must have verb in its basic form. Therefore, it must be replaced with '**ensure**'.

- Atalji's NDA government made serious efforts to **ensure** safer abortions, by eliminating abortion by untrained persons and in unhygienic conditions, thus reducing maternal morbidity under the aegis of the MTP.

31. The correct option is **E - No correction required.**

32. The correct option is **B – Only II**

'Refugee' is an inappropriate word here as here we need a verb and 'refugee' is a noun. Therefore, it must be replaced with '**refuge**'.

- The bill seeks to strengthen provisions for protecting the dignity and privacy of women who seek the **refuge** of law when confronted with such a life altering decision.

33. The correct option is **B – II & III**

'Stepped down' is an incorrect word in sentence II. Therefore, it must be replaced with '**stepped up**'.

'Can' being a modal must be followed by a verb in its basic form (1st form). Therefore, 'been' must be replaced with '**be**'.

- Recognising the burgeoning numbers of undertrial prisoners in jails, initiatives to free those not accused of heinous offences on personal bail need to be **stepped up**.
- Intelligence can perhaps **be** described in functional terms, as the ability to learn new skills and solve various types of problems.

34. The correct option is **B – Only I**

'Can + be' is always followed by the 3rd form of verb. Therefore, 'replicate' must be replaced with '**replicated**'.

- Once a machine achieves superhuman competence in any given domain, that competence can be rapidly **replicated** multiple times.

35. The correct option is **B – II & III**

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‘Friend’ in sentence II is incorrect as here we need an adverb while ‘friend’ is a noun. Therefore it must be replaced with ‘**friendly**’.

The preposition ‘in’ in the end of sentence III must be replaced with ‘**for**’ to make it grammatically correct.

- Don’t be **friendly** with people who are complaining and negative in their mindset because if you are friendly with them, you also get into that mode.
- Doesn’t matter if it’s a fast food joint or an upscale diner, a cup of coffee or a round of beer, indulging in eating and drinking is a favourite pastime **for** many.

36. The correct option is **C – I & III**

‘Called off’ in sentence I is incorrect as it shows finishing or cancelling something and must be replaced with ‘called on’ to show the call or step taken by India.

The subject of the sentence III is ‘rights’ which needs a plural helping verb after it. Therefore, ‘is’ must be replaced with ‘**are**’.

- India called **on** Sri Lanka to fulfill the aspirations of the island nation’s Tamil minority by taking forward the process of reconciliation and implementing a constitutional provision aimed at the devolution of powers.
- It would be useful to remind oneself that the rights which citizens cherish deeply **are**

fundamental – it is not the restrictions that are fundamental.

37. The correct option is **D – Only II**

In sentence II, ‘over’ is an incorrect preposition and must be replaced with ‘**across**’.

- The Supreme Court directed that Cinema halls **across** the country must play the National Anthem before the screening of a film and people should stand up as a mark of respect.

38. The correct option is **E - No correction required.**

39. The correct option is **B – I & II**

The subject of sentence I is ‘bravado’ which is an uncountable noun. And an uncountable noun is always followed by a singular helping verb. Therefore, ‘camouflage’ must be replaced with ‘**camouflages**’.

In sentence II, ‘should’ being a modal must always be followed by a verb in its basic form (1st form). Therefore ‘became’ must be replaced with ‘**become**’.

- The bravado of instruction to BJP leaders that they should file expenditure statements for the period Nov 8 to Dec 31, 2016, **camouflages** the question of whether there was selective advance leakage of information of demonetisation.
- Promises made during elections are to be backed up by performance, and results of

good governance should gradually become visible to the public.

40. The correct option is **D – Only II**

In sentence II, ‘uphold’ must be replaced with ‘upheld’ as it is incorrect.

- It’s the Supreme Court which has often protected and upheld the rights and liberties of the individual and the minority against attempts by the state to encroach on them, often in the name of the majority’s mandate.

41. The correct option is **B – Only II**

‘Effectively’ in sentence II is incorrect as it is preceded by ‘more’ which requires a verb. Therefore, it must be replaced with ‘**effective**’.

- If we can work out where healthy cells normally **live** and what makes them expand when someone stops smoking, perhaps we have opportunities to make them even more **effective** at repair.

42. The correct option is **E - No correction required.**

43. The correct option is **D – I & II**

‘Maliciously’ in sentence I must be replaced with ‘**malicious**’ as here we require an adjective while ‘maliciously’ is an adverb.

‘Touched on’ is a phrasal verb which means affecting something. But the sentence needs to show ‘closure/finish’ of something. Therefore, it must be replaced with ‘**touched off**’.

- The great American tragedy happened when US bombs, rained on Baghdad, glowing like **malicious** fireflies on TV screens, CNN bringing humanity’s first televised war, palpable excitement ruffling its correspondents’ immaculate scarves.
- The Supreme Court order for playing national anthem in cinema halls has touched **off** an old debate on whether forcing someone to sing the anthem infringes fundamental rights.

44. The correct option is **A – II & III**

‘Make’ in sentence II must be replaced with ‘**making**’.

‘Woman’ in sentence I must be replaced with ‘**women**’.

- Assurance that rights are secure tends to diminish fear and jealousy of strong government, and by **making** us feel safe to live under it makes for its better support.
- A latest study found anxiety about appearing “rude” or “ungrateful” was stopping **women** from requesting more money – with around a quarter of women saying they were fearful that contesting pay could endanger benefits like maternity leave or flexible working.

45. The correct option is **B – None is correct**

‘Aggression’ in sentence I must be replaced with ‘**aggressive**’ because here we need an adjective and not a noun.

‘To’ when followed by a verb always uses the verb in its basic form (1st form). Therefore, in

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sentence II 'exiting' must be replaced with '**exit**'.

In sentence III, 'waves' is incorrect as it is preceded by an article 'a' which always requires a singular noun. Therefore, it must be replaced with 'wave'.

- The **aggressive** expansion of Chinese smartphone-makers in India has helped the country dethrone the US to become the second largest smartphone market in the world.
- The Centre offered to **exit** Air India and Air India Express by selling its entire stake, instead of the 76% it had offered two years ago, apart from the 50% it owns in ground-handling joint venture AI-SATS.
- The coronavirus outbreak has stoked a **wave** of anti-China sentiment around the globe, from shops barring entry to Chinese tourists, online vitriol mocking the country's exotic mean trade and surprise health checks on foreign workers.

46. The correct option is **E - No correction required**.

47. The correct option is **A – II**

'Quick' is incorrect in sentence II as we need an adverb but 'quick' is an adjective. Therefore, it must be replaced with '**quickly**'.

- It is in terms of modest lethality and human ability to react **quickly**; some of the dynamic with regards to spread of coronavirus may be

different with the increasing migration and mobility of people and products, which explains the massive quarantines underway in China.

48. The correct option is C – None is correct

'Instant' is incorrect in sentence I and must be replaced with '**instance**'.

'Both' is always paired with 'and'. Therefore, 'or' in sentence II must be replaced with '**and**'.

'Founded' is no word. Therefore, it must be replaced with '**found**' in sentence III.

- While Bajaj had already taken a back seat when it came to taking active business decisions years ago, this would be the first **instance** when he officially gets into a non-executive position.
- Both Bengal **and** Delhi fancied their chances of collecting three points, but in the end it was the weather which had the final say as the teams settled for a point each from their drawn Ranji Trophy Elite 'A' match at the Eden Gardens.
- US authorities announced the discovery of the longest smuggling tunnel ever **found** on the southwest border, stretching more than three quarters of a mile from now to industrial site in Tijuana, Mexico, to the San Diego area.

49. The correct option is **D – II & III**

In statement II, the subject is a singular noun 'Lipton' and hence, must be followed by a

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singular helping verb, Therefore, 'focus' must be replaced with 'focuses'.

In sentences III, we find that 'be' is written after 'has'. The sentences of perfect tense are written with 'has/have/had', followed by a 3rd form of verb. Therefore, 'be' is wrong here and must be replaced with '**been**'.

- The iconic "Taj Mahal" tea under Brooke Bond, which is marketed as a brand closely linked to the heritage culture, while Lipton **focuses** on emerging consumer tastes such as green tea.
- The finance ministry has summoned senior Infosys executives to find out why the technology major has **been** unable to fix glitches in the GST Network system, which is causing hardship to lakhs of taxpayers.

50. The correct option is **B – None is correct**

In sentence I, the subject is 'businesses' which is a plural noun. And, it must be followed by a plural helping verb. Therefore, 'has' must be replaced with 'have' to make it grammatically correct.

In the second clause of sentence II, the subject is 'analysts', which is a plural noun. Therefore, as states above for sentence I, it must also be followed by a plural helping verb. Therefore, 'does' must be replaced with 'do'.

'Has' is never followed just by a verb in its -ing form. It becomes a sentence of Present Perfect Continuous tense, which has the following combination – "Has/have + been + Verb (1st form) + -ing". Also, a sentence of perfect continuous tense needs a time or duration because this tense defines how long has an action taken place. And it is advised to use 'perfect tense' when the sentences of present perfect continuous tense which do not mention any time frame or duration.

But, in this sentence, we don't have any time frame or duration. Therefore, here sentence III, 'has forcing' must be replaced with 'has been forced' to make it grammatically correct.

- While businesses **have** been complaining of problems with the platforms for several months, it is only now that the government has begun acknowledging the concerns.
- While Unilever has initiated a strategic review of its global tea business, Industrial analysts **do** not expect the Indian subsidiary Hindustan Unilever to evaluate selling its tea business in India.
- The Narendra Modi government battling an acute economic slowdown **has been forced** to announce a series of steps to accelerate activity.

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