INSTA 75 Days REVISION PLAN
UPSC Prelims 2020

INSTA Tests
CSAT (1-10)

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1. A group of men could do a piece of work in 18 days. However, 6 men left the group before the work began and the remaining men in the group completed the work in 20 days. What was the original size of the group?

(a) 60
(b) 120
(c) 48
(d) 72

Solution: A

- If $M_1$ persons can do a piece of work in $D_1$ days and $M_2$ persons can do the same piece of work in $D_2$ days, then $M_1D_1 = M_2D_2$.
- Let the original number of men in the group be ‘$x$’ (M1).
- After 6 men left, the size of the group be $(x-6)$ men (M2).

Now using the above formula, we get

\[
x \times 18 = (x-6) \times 20
\]
\[
18x = 20x - 120
\]
\[
120 = 2x
\]
\[
x = 60
\]

Therefore, the original number of men in the group is 60 men.

2. A water tank is $2/5$ th full. Pipe A can fill a tank in 10 minutes and pipe B can empty in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely?

(a) 6 min to empty
(b) 7 min to full
(c) 6 min to full
(d) 7 min to empty

Solution: A

- Since pipe B is faster than pipe A and thus, the tank will be emptied.
- Part of the tank to be emptied = $2/5$
• Part emptied by (A+B) in 1 minute = \( \frac{1}{6} - \frac{1}{10} \) = \( \frac{1}{15} \).

Therefore, \( \frac{1}{15} : \frac{2}{5} :: 1: x \)  
\[
-> \quad 2/5 \times 15 = 6 \text{ minutes}
\]

3. A and B together can do a work in 8 days, B and C together in 6 days, while C and A together in 10 days. If they all work together, the work will be completed in how many days?

(a) 250/47  
(b) 230/37  
(c) 240/47  
(d) 240/57

Solution: C  

Formula: A and B together can do a work in \( x \) days, B and C together in \( y \) days, while C and A together in \( z \) days. If they all work together, the work will be completed in:  
\[
\frac{2xyz}{xy+yz+zx}
\]

In the above given problem, \( x = 8 \) days, \( y = 6 \) days and \( z = 10 \) days.

Substituting the values \( x, y \) and \( z \) in the formula, If they all work together, the work will be completed in:

\[
\frac{2 \times 8 \times 6 \times 10}{(8 \times 6)+(6 \times 10)+(10 \times 8)}
\]

\[
960/(48+60+80) = 960/188 = 240/47 \text{ days}
\]

Directions for the following (one) item:

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

Governments need to be generous in supporting international humanitarian agencies, whether with food or funds. Stepping-up supply of food to countries worst-hit by the hunger crisis is necessary. While this will help ease the symptoms of the crisis, it will not address its underlying causes. The latter is necessary to address the problem of food insecurity in the world. Humanitarian food aid is important but simultaneously, we need to put in place medium and long-term strategies to address conflict and climate shocks.

4. Which of the following is the most logical, critical and rational inference that can be drawn from the above passage?

(a) Cycle of hunger can be broken only by improving food production and distribution  
(b) The presence of hunger remains a global shame
(c) Climate change, extreme weather events and global conflicts remain the primary cause of hunger

(d) Humanitarian aid is a necessary but not a sufficient condition for addressing global hunger

Solution: A.

The passage states that humanitarian aid is important but other steps are also required for ending hunger. D appears correct but A is the more logical and critical choice because the passage harps on the importance of medium and long term steps required for addressing hunger which is captured by A. Hence A is the correct answer.

5. 15 men take 20 days to complete a work working 8 hours a day. How many number of hours a day should 20 men take to complete the work in 12 days?

(a) 15 hours
(b) 10 hours
(c) 20 hours
(d) 12 hours

Solution: B

Formula: If M1 persons can do a piece of work in D1 days for h1 hours and M2 persons can do the same piece of work in D2 days for h2 hours,

then: \( M_1 D_1 h_1 = M_2 D_2 h_2 \).

In the above given problem \( M_1 = 15 \text{ men}, D_1 = 20 \text{ days}, h_1 = 8 \text{ hours}, M_2 = 20 \text{ men}, D_2 = 12 \text{ days} \).

Substituting the above values in the formula, we get

\[ 15 \times 20 \times 8 = 20 \times 12 \times h_2; \quad 2400 = 240 \times h_2; \quad h_2 = 10 \text{ hours} \]

Therefore, 10 hrs a day should 20 men take to complete the same work in 12 days.

6. A can finish a work in 24 days, B in 9 days and C in 12 days. B and C start the work but are forced to leave after 3 days. The remaining work was done by A in?

(a) 6 days
(b) 5 days
(c) 10 days
(d) 10.5 days
Solution: C

From the given data, we can get
- A’s one day work = 1/24,
- B’s one day work = 1/9 and
- C’s one day work = 1/12.

Since, B and C start the work and left after 3 days;
- the work done by B and C is = 3 *((1/9) + (1/12)) = 7/12.
- Therefore, remaining work = 1 - 7/12 = 5/12.
- Time taken by A to complete the remaining work = 24 * 5/12 = 10 days.

7. Aman can complete a piece of work in 5 days, but with the help of his son he can finish the same piece of work in 3 days. Find the time taken by the son alone to complete the work?

(a) 6 days
(b) 7 days
(c) 9 days
(d) 7.5 days

Solution: D
If A can do a work in ‘x’ days and A + B can do the same work in ‘y’ days, then the number of days required to complete the work if B works alone is given by the formula: (x * y)/(x - y).

Aman alone takes 5 days (i.e x) to complete a piece of work and along with his son he can complete same of piece of work in 3 days(i.e y).

Therefore, his son alone takes (x * y)/(x-y) days to complete the same piece of work. By substituting the given values in formula, his so will take (5 * 3)/(5-3) = 15/2 = 7.5 days.

Directions for the following (one) item:

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

The impact of environmental disasters is immense but unequal. Houses in poorer areas will often be less stable, storm barriers may be weaker, sanitation is often a problem, emergency services will be poorly resourced – and preventing disease outbreaks may be hindered by the poor state of public health services.
8. Which among the following is the most logical and essential message conveyed by the above passage?

(a) We need to change the current approach to disaster aid
(b) Primary health management is critical in areas affected by natural disasters
(c) Poverty has a huge bearing on the impact of environmental disasters
(d) None of the above

Solution: C.

The focus of the passage is on bringing out how disasters unevenly impact the rich and poor. Hence C is the correct answer.

9. Three taps A, B and C can fill a tank in 12, 15 and 20 hours respectively. If A is opened all the time and B and C are opened one hour each alternatively, the tank will be full in:

(a) 4
(b) 4.5
(c) 5
(d) 7

Solution: D

- Tank filled in one hour when the taps A and B are open = (1/12)+(1/15)= 9/60= 3/20.
- Tank filled in one hour when the taps A and C are open = (1/12) + (1/20) = 8/60 = 2/15
- Therefore, part of the tank filled in two hours = (3/20) + (2/15) = 17/60.
- Part filled in 6 hours = (17/60) * 3 = 51/60
- Remaining part = 9/60 = 3/20

After 6 hours Now it is (A+B)’s turn

- Time taken by the A+B to fill 3/20 part = 1 hour
- Therefore, total time taken = 6+1 = 7 hours

10. If a pipe A can fill a tank 3 times faster than pipe B. If both the pipes can fill the tank in 32 minutes, then the slower pipe alone will be able to fill the tank in?

(a) 128 minutes
(b) 124 minutes
(c) 154 minutes
11. A, B and C together earn Rs.300 per day, while A and C together earn Rs.188 and B and C together earn Rs.152. The daily earning of C is?

(a) Rs.40  
(b) Rs.80  
(c) Rs.68  
(d) Rs.150

Solution: A

Daily Earning of A+B+C = Rs 300  
1) Daily Earning of A and C together = A + C = Rs 188 -------------(1)  
2) Daily Earning of B and C together = B + C = Rs 152 -------------(2)

Adding (1) and (2) we get A+B+2C = 188 + 152 = Rs 340

Therefore, Daily earning of C = 340 – 300 = Rs 40.

12. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs.3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

(a) Rs.600  
(b) Rs.400  
(c) Rs.375  
(d) Rs.800

Solution: B

- Work done by A in one day = 1/6.
- Work done by B in one day = 1/8
- Work done by C in one day = 1/3 – (1/6+1/8) = 1/3 – 7/24 = (8-7)/24 = 1/24.
A’s wage : B’s wage : C’s wage = 1/6 : 1/8 : 1/24 = 4: 3: 1
Therefore, C’s share = (1/8) * 3200 = Rs 400.

13. A and B together can complete a work in 12 days. A alone can complete it in 20 days. If B does the work only for half a day daily, then in how many days A and B together will complete the work?

(a) 10 days
(b) 20 days
(c) 15 days
(d) 11 days

Solution: C

- Work done by A in one day = 1/20.
- B’s 1 day’s work (1/12 – 1/20) = (2/60) = 1/30.
- B’s half day work = (1/30)/2 = 1/60
- A and B’s one day work (if B work for half day) = (1/20 + 1/60) = (4/60) = 1/15
- Therefore, total number of days to complete the work = 15 days.

Directions for the following (one) item:
Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

As the planet warms, we need to be able to predict what populations will be at risk for infectious diseases because prevention is always superior to reaction. The researchers are now working on a map to pin point future changes in the distribution of vector-borne diseases.

14. Which among the following is the most critical and rational inference that can be drawn from the above passage?

(a) Climate change will increase risk of vector-borne diseases
(b) With climate change, lifestyle diseases will no longer remain a threat
(c) Prevention is always superior to reaction
(d) The world remains ill-prepared for the health impacts that come with increasing temperatures and extreme weather events.

Solution: A
Options B and C are wrong because they are not the key focus of the passage. The passage tells us about the increasing risk of vector borne diseases as a result of climate change and the efforts undertaken by scientists to deal with such threat which doesn’t necessarily lead to the inference that the world is ill prepared, even though it might be the case. Hence option A is correct.

15. A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively, working alone. How soon can the work be done if A is assisted by B on odd days and C on even days?
   (a) 7 days
   (b) 8 days
   (c) 9 days
   (d) 10 days

Solution: B
- \((A+B)’s\) 1 day’s work = \(\frac{1}{11} + \frac{1}{20}\) = \(\frac{31}{220}\)
- \((A+C)’s\) 1 day’s work = \(\frac{1}{11} + \frac{1}{55}\) = \(\frac{6}{55}\)
- Work done in 2 days by them= \(\frac{31}{220} + \frac{6}{55}\) = \(\frac{55}{220}\) = \(\frac{1}{4}\).
- Therefore, Whole work will be done in 8 days

16. 9 kids can finish a bit of work in 360 days. 18 men can finish the same work of piece in 72 days and 12 ladies can finish it in 162 days. In how long can 4 men, 12 ladies and 10 kids together finish the bit of work?
   (a) 68 days
   (b) 81 days
   (c) 96 days
   (d) 124 days

Solution: B
- 9 kids’ 1 day work = \(\frac{1}{360}\) ⇒ 1 kid’s 1 day work = \(\frac{1}{3240}\)
- 18 men’s 1 day work = \(\frac{1}{72}\) ⇒ 1 man’s 1 day work = \(\frac{1}{1296}\)
- 12 women’s 1 day work = \(\frac{1}{162}\) ⇒ 1 women’s 1 day work = \(\frac{1}{1944}\)
- \((4\text{men} + 12\text{ women} + 10 \text{ kid})\) 1 day work = \((\frac{4}{1296} + \frac{12}{1944} + \frac{10}{3240})\)
- \(= \frac{1}{324} + \frac{1}{162} + \frac{1}{324}\) = \(\frac{4}{324}\) = \(\frac{1}{81}\)
- Hence they can finish the work in 81 days.
17. 4 men and 6 women complete a piece of work in 8 days while 3 men and 7 women complete it in 10 days. In how many days 10 women can finish the work?
(a) 24 days
(b) 32 days
(c) 36 days
(d) 40 days

Solution: D
- Let 1 man’s 1 day work be x and 1 woman’s 1 day work be y. then
- 4x + 6y = 1/8 … (1)
- 3x + 7y = 1/10 … (2)
- Multiplying (1) by 3, (2) by 4 and subtracting, we get
- 10y = (4/10 – 3/8) = (16 – 15)/40 = 1/40
- 1 woman’s 1 day work = 1/400
- 10 women’s 1 day work = (1/400*10) = 1/40
- Hence 10 women can finish the work in 40 days

18. A works twice as fast as B. If two can together complete a bit of work in 12 days, then B alone can do it in:
(a) 24 days
(b) 27 days
(c) 36 days
(d) 48 days

Solution: C
- Let B’s 1 day work =x. Then, A’s 1 day’s work = 2x
- x + 2x = 1/12 ⇒ 3x = 1/12 ⇒ x = 1/36.
- B’s 1 day work = 1/36.
- Hence B alone can finish the work in 36 days.

19. In one minute 3/7 of a tank is filled. How much time will it take to fill the remaining part of the tank?
(a) 2 min
(b) 4/3 min
Directions for the following (one) item:

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

The Paris Agreement adopted last year marks the beginning of a new age in climate change response. The global climate pact will have a major impact on public health policy as countries take measures on adaptation and mitigation. Strengthening adaptation is a must in the face of climate change. This includes plans to protect the human health from air pollution, heat waves, floods, droughts and the degradation of water resources.

20. Which of the following option(s) is/are valid statement(s) that support the emphasis on adaptation as suggested in the passage?
   1. At present, more than 7 million deaths occur worldwide every year due to air pollution.
   2. In 2017, the world had 124 acutely hungry people
   3. Epidemics such as cholera, dengue and extreme weather events such as heat waves and floods have increased

Select the correct code from below:
   (a) 1 and 2 only
   (b) 2 and 3 only
   (c) 1 and 3 only
   (d) 1, 2 and 3

Solution: D.

All the three are issues that can be addressed or mitigated by increasing focus on adaptation. Hence all three are correct. Thus D is the correct answer.
21. A man travels a distance of 12 km at 3 km/hr, another distance of 12 km at 4 km/hr and a third distance of 12 km at 6 km/hr. His average speed for the whole journey is:

(a) 5 km/hr  
(b) 4.33 km/hr  
(c) 4 km/hr  
(d) 6 km/hr

Solution: C

- The **Average speed** = (Total Distance/Total Time taken)
- Time taken to cover first 12 km = (Distance/Speed) = (12/3) = 4 hours
- Time taken to cover second 12 km = 12/4 = 3 hours
- Time taken to cover last 12 km = 12/6 = 2 hours
- Hence, total time taken for whole journey = (4+3+2) hours = 9 hours
- Therefore, the average speed of whole journey = (Total distance/total time)
- Average speed of man = (36/9) = 4 km/hr

22. A boat sails 6 km/hr in still water, however it takes thrice as much time in going the same distance against the current when compared to the direction of the current. Find the speed of the current?

(a) 3 km/hr  
(b) 4 km/hr  
(c) 2 km/hr  
(d) 5 km/hr

Solution: A

Given condition:
- Speed of the boat in still water = 6 km/hr.
- Speed of boat in downstream = 3 * speed of boat in upstream.
- Let the speed of the current be ‘x’ km/hr.
- Therefore, speed of the boat in upstream (i.e against the current) = (6-x) km/hr.
- Speed of the boat in downstream (i.e in the direction of current) = (6+x) km/hr

Now, substituting values in given condition, we get

- (6+x) = 3 * (6-x)
- 6+x = 18-3x
- 4x = 12
- x = 3 km/hr
Thus, speed of the current = 3 km/hr.

23. A boat takes 26 hours for travelling downstream from point A to point B and coming back to point C midway between A and B. If the velocity of the stream is 4 km/hr and the speed of the boat in still water is 10 km/hr, what is the distance between A and B?

(a) 210 km
(b) 185 km
(c) 140 km
(d) 168 km

Solution: D

As per the given information, the velocity of the stream is 4 km/hr.
The speed of the boat in still water is 10 km/hr.
Therefore, speed of boat in downstream = (10 + 4) = 14 km/hr.
The speed of boat in upstream = (10 - 4) = 6 km/hr.
Let the distance between A and B be ‘x’. As C is in the midway between A and B, distance between B and C is x/2.
Total time taken to reach is 26 hours.

Therefore, x/14 + (x/2)/6 = 26
x/14 + x/12 = 26
(7x + 6x)/84 = 26
13x/84 = 26
x/84 = 2
x = 168.

The distance between A and B is 168 km.

24. Tina goes to school from her house at a speed of 3 km/hr and returns at a speed of 2 km/hr. If she takes 5 hours in total, then what is the distance between her house and school?

(a) 6 km
(b) 7 km
(c) 5 km
(d) 6.5 km

Solution: A
Let the distance between Tina’s house and school be ‘x’ km.

- Therefore, time to cover the distance from her house to school = \(\frac{\text{Distance}}{\text{speed}} = \frac{x}{3}\) hours.
- Similarly, time to cover the distance from her school to house = \(\frac{x}{2}\) hours.

It is given that total time taken for whole journey = 5 hours.

- Thus, \(\frac{x}{3} + \frac{x}{2} = 5\)
- \(\frac{(2x+3x)}{6} = 5\)
- \(\frac{5x}{6} = 5\)
- \(5x = 30\) or \(x = 6\)

Thus, distance between her house and school is 6 km

**Directions for the following (one) item:**

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

The two criteria that an innovator must satisfy are whether the innovation or invention adds to existing technical knowledge and whether it is inventive enough. Patent filings are seen as a measure of the spread of science and technology in a country. Patent protection also provides monopoly rights to the inventor.

25. Which of the following is the most crucial and logical inference that can be made from the above passage?

(a) Enforcement of IPR is critical for boosting research and development in a country
(b) There are several patent claims which fail the claim of patentability
(c) The filing of patents does not automatically guarantee the patent rights
(d) None of the above

Solution: C.

It is clear based on a reading of the passage that C is the correct answer.

26. Amit can row 8 km/hr in still water. If the river is flowing at 4 km/hr, it takes 1.5 hours to row to a place and back. How far is the place?

(a) 4.5 km
(b) 5.5 km
(c) 4 km
(d) 3.5 km

Solution: A

It is given that: Speed in still water = 8 km/hr

- Speed of the stream = 4 km/hr
- Speed of upstream = (8-4) = 4 km/hr
- Speed of downstream = (8+4) = 12 km/hr
- Total time = 1.5 hrs

Let x is the distance.

- Then substituting the values, we get
  - $x/12 + x/4 = 3/2$
  - $x = 4.5$ km

27. A train passes two persons walking in opposite direction at a speed of 5 m/s and 10 m/s in 6 seconds and 5 seconds respectively. Find the length of the train?

(a) 140 m
(b) 150 m
(c) 160 m
(d) 120 m

Solution: B

Let the speed of the train be ‘s’ m/s.

Let the length of the train be ‘x’ meters.

**Relative speed** of train and the first person who is moving at the speed of 5 m/s in opposite direction = (s+5) m/s.

Therefore, total distanced travelled (i.e length of train) ‘x’ = Relative speed X time

$x = (s+5) * 6 \quad \text{(Eq 1)}$

Relative speed of train and the second person who is moving at the speed of 10 m/s in opposite direction = (s+10) m/s

Therefore, total distanced travelled (i.e length of train) ‘x’ = Relative speed X time

$x = (s+10) * 5 \quad \text{(Eq 2)}$

Since length of the train is same in both the cases, if we equate the equation 1 and equation 2 we get
\[ (s+5) \cdot 6 = (s+10) \cdot 5 \]
\[ 6s + 30 = 5s + 50 \]
\[ 6s - 5s = 50 - 30 \]
\[ s = 20 \text{ m/s (i.e speed of the train)} \]

Now, putting the value of speed of the train in equation 1 (we can put the value equation 2 as well) we get

Length of the train \( 'x' \) = \((20+5) \cdot 6\)
\[ x = 25 \cdot 6 \]
\[ x = 150 \]

Therefore, length of the train is 150 meters.

28. A man covers a distance via auto driving at 70 km/hr and returns back to the beginning point riding on a bike at 55 km/hr. What is his average speed for the entire trip?

(a) 62.6 km/hr
(b) 61.6 km/hr
(c) 60.6 km/hr
(d) 59.6 km/hr

Solution: B

Average speed = \( \frac{2xy}{x+y} \) km/hr = \( \frac{2\times70\times55}{70+55} \) km/hr
\[ = \frac{2\times70\times55}{125} \text{ km/hr} = 308/5 \text{ km/hr} = 61.6 \text{ km/hr} \]

29. How much time will a train 171 m long take to cross a bridge 229 m long, if it is running at a speed of 45 kmph?

(a) 40 sec
(b) 35 sec
(c) 32 sec
(d) 30 sec

Solution: C

Speed = \( \frac{45\times5}{18} \) m/sec = 25/2 m/sec.

Required time = \((171+229)/(25/2) \) sec. = \( 400\times2/25 \) sec. = 32 sec.
Directions for the following (one) item:

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

Agriculture in India needs to become more sustainable even as small and marginal farmers struggle to build resilience against many threats. First, they remain price-takers and economically vulnerable, beholden to traders who set prices, and with limited opportunities to sell at a time of their choice (due to poor storage). Further, decades of intensive agriculture have added to water stress and declining soil health. Farmers rely on groundwater for more than 60% of irrigation needs. Chemical fertilizers, once a boon to boost soil nutrients, have been applied so intensively (particularly urea) that the long-term health of soils is now of deep concern.

30. Which among the following is the most logical, rational and critical inference that can be made from the above passage?

(a) Agricultural policies in India have prioritized productivity in place of sustainability
(b) Agricultural policies in India have favoured small and marginal farmers over the bigger farmers
(c) Agricultural policies in India have favoured large farmers over small and medium farmers
(d) Agricultural policies in India leave a lot to be desired

Solution: A

The passage focuses on bringing out the lack of sustainable practices in Indian agriculture which are creating several issues. All the examples given above are examples of measures undertaken to boost productivity at the expense of sustainability. Hence A is the correct answer.

31. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 kms in 4 hours, then the speed of the first train is :

(a) 70 kmph
(b) 75 kmph
(c) 84 kmph
(d) 87.5 kmph

Solution: D
Let the speed of two trains be 7x Kmph and 8x kmph (speed of second train)

- Then, 8x = 400 kms/4hrs = 100kmph
- Therefore, speed of first train = 7x = (8/7) * 100
- Speed of first train = 87.5 kmph

32. A truck covers a distance of 550 meters in 1 minute whereas a bus covers a distance of 33 kms in 45 minutes. The ratio of their speeds is:

(a) 3:4
(b) 4:3
(c) 3:5
(d) 50:3

Solution: A
- Ratio of speeds = (550 m/60s * 18/5) : (60 * 33/45) = 33: 44 = 3: 4

33. Reena runs 9 km at a pace of 6 km/hr. At what pace would she have to go amid the following 1.5 hours to have an average speed of 9 km/hr for the whole running session?

(a) 9 km/hr
(b) 10 km/hr
(c) 12 km/hr
(d) 14 km/hr

Solution: C
- Time taken to cover 9 km = 9/6 hrs. = 1.5 hrs
- Total time taken = (1.5 +1.5) hrs = 3 hrs.
- Total distance covered in 3 hrs = Average speed * Total Time = (9 *3) = 27 km
- In 1.5 hrs, distance covered = (27-9) km = 18 km
- Required speed = 18/ (3/2) km/hr = (18*2/3) km/hr = 12 km/hr

34. How long will a boy take to run round a square field of side 35 metres, if he runs at the rate of 9 km/hr ?

(a) 50 sec
(b) 52 sec
(c) 54 sec  
(d) 56 sec

Solution: D

- Speed = 9km/hr = (9 * 5/18) m/sec = 5/2 m/sec
- Total Distance = Perimeter of Square
- 4 * side of the square = 35 * 4 = 140 m
- Therefore, time taken = Distance / Speed = 140/(5/2) = 140* 2/5 = 28 * 2 = 56 sec

**Directions for the following (one) Item:**

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

Health accessibility and affordability remain a crucial healthcare problem even in the 21st century. Therefore World Health Organisation chose “Universal Health Coverage” as the theme for World Health Day 2019. India started working towards the universal problem of affordability and accessibility with the introduction of Ayushman Bharat. The scheme gave a family cover of Rs. 5 lac to socio-economically weaker section and roped it many private sector hospitals to deliver the services. Sadly, most of the roped in hospitals are situated in the urban localities and last mile accessibility remains a point of concern in the country with diverse cultures and topography.

35. Which is the most critical and rational inference that can be made from the above passage?

(a) Ayushman Bharat takes India closer to the goal of Universal health coverage
(b) While the objective of Ayushman Bharat is laudable, there are glitches in the scheme that need correction
(c) Health insurance for families is the way ahead if we want to achieve the aim of Universal Health coverage
(d) None of the above

Solution: B

The passage talks about the goal of universal health coverage and goes ahead and talks about the Ayushman Bharat Scheme which aims to take India closer to universal health coverage. The passage however goes on to mention the issues with Ayushman Bharat which highlight that for the objective of universal health coverage to be attained, we need to iron out the glitches in Ayushman Bharat and hence B is the most accurate option.
36. Two trains, one from Mumbai to New Delhi and the other from New Delhi to Mumbai, start simultaneously. After they meet, the trains reach their destinations after 9 hours and 16 hours respectively. What is the ratio of their speed?

(a) 5:4
(b) 4:3
(c) 3:2
(d) 2:1

Solution: B

**Standard Formula:** If two objects A and B begin their journey at the same time from two points P and Q towards each other and after crossing each other they take a and b hours in reaching Q and P respectively, then

\[
\frac{A\text{'s Speed}}{B\text{'s Speed}} = \frac{\sqrt{b}}{\sqrt{a}}
\]

By looking at the above problem, we can say that, a=9 hours, b=16 hours.

Therefore, Ratio of speeds of two trains = \(\sqrt{16}/\sqrt{9}\) = 4/3 or 4:3

37. If a train travels at 60 km/hr from Bangalore to Hyderabad and at 80 km/hr on return trip from Hyderabad to Bangalore. What is its average speed for the entire trip?

(a) 70 km/hr
(b) 65.5 km/hr
(c) 68.5 km/hr
(d) 75 km/hr

Solution: C

**Standard Formula:** If a certain distance is covered at x km/hr and the same distance is covered at y km/hr, then

\[
\text{Average Speed} = \frac{2xy}{x + y} \text{ km/hr}
\]

By looking at the above problem, we can say that, x= 60 km/hr and y= 80km/hr.

Therefore, average speed = \([(2 * 60 * 80)/(60+80)]\) km/hr = 9600/140 = 68. 57 km/hr
38. Two trains of lengths 150 m and 180 m respectively are running in opposite directions on parallel tracks. If their speed is 50 km/hour and 58 km/hour respectively. In how much time will they cross each other?

(a) 11 seconds
(b) 15 seconds
(c) 22 seconds
(d) 9 seconds

Solution: A

**Standard Formula:** Suppose A and B are two objects with lengths L1 and L2 respectively, and their speeds are S1 and S2 respectively and moving in opposite direction, then

\[
\text{Crossing Time (Ct)} = \frac{\text{Length of Objects}}{\text{Relative Speed of object(s)}}
\]

Thus, \( \text{Ct} = \frac{L1+L2}{S1 + S2} \)

By looking at the above problem, we can say that,

- \( L1 = 150 \text{ m}, \)
- \( L2 = 180 \text{ m}, \)
- \( S1 = 50 \text{ km/hr} \)
- \( S2 = 58 \text{ km/hr} \)
- Relative speed= \((S1+S2)= 108 \text{ km/hr} \) or \((108 \times \frac{5}{18}) \text{ m/s} = 30 \text{ m/s}. \)

Therefore, crossing time \( \text{Ct} = \frac{L1+L2}{\text{Relative speed}} \)

- \( \text{Ct} = \frac{150 \text{ m} + 180 \text{ m}}{30 \text{ m/s}} \)
- \( \text{Ct} = \frac{330 \text{ m}}{30 \text{ m/s}} = 11 \text{ seconds} \)

39. Amit covers one-fourth of the total distance at 20 kmph, one-fourth at 10 kmph and rest of his journey at 80 kmph. Find Amit’s average speed for the whole distance?

(a) 22.85 kmph
(b) 32 kmph
(c) 30 kmph
(d) 40 km/hr

Solution: A

**Average speed = Total Distance/Total Time**
Let the total distance = D Km
Therefore, Time taken to complete first D/4 distance = t1 = (D/4)km/20kmph
Time taken to complete second D/4 distance = t2 = (D/4)/10kmph
Time taken to complete remaining distance (that is D/2) = t3 = (D/2)/80kmph
Therefore, Average speed = Total Distance/Total Time = (D)/(t1+t2+3)
= D/((D/80) + (D/40) + (D/160))
= D/(2D + 4D + D)/160
= 160 D / 7D
Therefore, Average Speed = 22.85 kmph

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

The history of UN interventions on migration began with the initiation of the International Labour Organization (ILO) in 1919. Even though there have been several conventions and treaties to protect the rights of migrants and refugees over the years, major intervention by international agencies in managing migration occurred during the neo-liberal era, where short-term mobility of labour is important for global capital to thrive. To match the demand for low- and semi-skilled workers, agencies like the World Trade Organization (WTO) and the World Bank promoted business-friendly migration management approaches, while snubbing worker and migrant rights.

40. Which of the following is the most logical and critical inference that can be drawn from the passage?
(a) WTO and World Bank have taken several steps to fix the situation with respect to migrant rights
(b) Global treaties related to protect the rights of migrants have served mostly the interest of capital
(c) ILO has failed to take adequate steps to protect the rights of migrants
(d) None of the above

Answer: B.
The passage mentions that major intervention by international agencies in managing migration occurred during the neo-liberal era, where short-term mobility of labour is important for global capital to thrive. This suggests that option B is correct.
41. A started a business with a capital of 10,000 rupees and four months later B joined him with a capital of Rs 5000. How much A gets more than B in the profit, if the total profit at the end of the year is Rs 2000.

(a) Rs 1500
(b) Rs 1000
(c) Rs 500
(d) Rs 666.67

Solution: B

The ratio of the profits will be according to their investment X duration

- Ratio of profits of A to B = \( \frac{10000 \times 12}{5000 \times 8} \)
- Ratio = 3:1
- Total profit = 2000
- Hence, profit of A = 1500
- Profit of B = 500
- Therefore, profit of A is Rs. 1000 more than profit of B.

42. A zoo consists of only Tigers and Lions. The number of tigers in a zoo is three times the number of lions. Which one of the following numbers cannot represent the total number of animals in the zoo?

(a) 48
(b) 42
(c) 44
(d) 40

Solution: B

- Let the number of lions = \( x \)
- We know that the number of tigers in a zoo is three times the number of lions. Hence, the number of tigers = 3x.
- Then, \( x + 3x = 4x \) = total number of animals.
- Thus the total number of animals is a number that must be divisible by 4.
- Here, 42 is the only number which is not divisible by 4.
43. If Rahul played 25 singles badminton matches and won 17 out of these. If there were no tied or drawn matches, then what is the ratio of the number of matches won by Rahul to the number of matches he lost?

(a) 25:17  
(b) 17:25  
(c) 8:17  
(d) 17:8

Solution: D

- Total matches played = 25  
- Matches won = 17  
- Therefore, Matches lost = 25 – 17 = 8  
- Required Ratio = Matches won : Matches lost = 17 : 8

44. Present ages of Sameer and Anand are in the ratio of 5:4 respectively. Three years hence, the ratio to their ages will become 11:9 respectively. What is Anand’s present age in years?

(a) 24  
(b) 27  
(c) 40  
(d) cannot be determined

Solution: A

Let the present ages of Sameer and Anand be 5x years and 4x years respectively.

- Then \((5x +3)/(4x+3)= 11/9\)  
- By solving the equation, we get \(x=6\).  
- Therefore, Anand’s present age = \(4x = 24\).

**Directions for the following (one) item:**

*Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.*

Individuals, groups and leaders who promote human development operate under strong institutional, structural and political constraints that affect policy options. But experience suggests broad principles for shaping an appropriate agenda for human
development. One important finding from several decades of human development experience is that focusing exclusively on economic growth is problematic. While we have good knowledge about how to advance health and education, the causes of growth are much less certain and growth is often elusive. Further, an unbalanced emphasis on growth is often associated with negative environmental consequences and adverse distributional effects. The experience of China, with its impressive growth record, reflects these broader concerns and underlines the importance of balanced approaches that emphasize investments in the non-income aspects of human development.

45. With reference to the above passage, consider the following statements:
1. In developing countries, a strong institutional framework is the only requirement for human development and policy options
2. Human development and economic growth are not always positively inter-related.
3. Focusing only on human development should be the goal of economic growth

Which of the above statements is/are correct?
(a) 1 and 3 only
(b) 2 and 3 only
(c) 1 and 2 only
(d) 2 only

Solution: D.
- Statement 3 is wrong as the passage states that focusing solely on economic growth is problematic. The corollary of this is not that the focus should only be on human development.
- Statement 1 is wrong as there are structural and political constraints as well that need to be taken into account.
- Hence D is the most accurate answer.

46. A mixture of 150 liters of wine and water contains 20% water. How much more water should be added so that water becomes 25% of the new mixture?
(a) 10 litres
(b) 12 litres
(c) 15 litres
(d) 8 litres

Solution: A
Number of liters of water in 150 liters of the mixture = 20% of 150 = 20/100 * 150 = 30 liters.
P liters of water added to the mixture to make water 25% of the new mixture.
Total amount of water becomes (30 + P) and total volume of mixture is (150 + P).

\[(30 + P) = \frac{25}{100} \times (150 + P)\]
\[120 + 4P = 150 + P \Rightarrow P = 10 \text{ liters.}\]

47. Two equal vessels A and B contain 60% of sugar and 40% of sugar respectively and the remaining Rava. In which 40 litres of mixture is taken out from vessel A and replaced into vessel B. Find the initial quantity of vessel if the final ratio of sugar and Rava in vessel B is 16 : 19?
(a) 80 litres
(b) 100 litres
(c) 120 litres
(d) 90 litres

Solution: B
Vessel A Sugar and Rava ratio = 3 : 2
Vessel B sugar and Rava ratio = 2 : 3
Given,
- \(\frac{2x + 24}{3x + 16} = \frac{16}{19}\)
- \(38x + 456 = 48x + 256\)
- \(10x = 200\)
- \(x = 20 \text{ litres}\)
- Initial quantity = \(x^5 = 100 \text{ litres}\)

48. In what ratio should two varieties of sugar of Rs.18 per kg and Rs.24 kg be mixed together to get a mixture whose cost is Rs.20 per kg?
(a) 1:3
(b) 1:2
(c) 2:1
(d) 3:1

Solution: C
49. There are two containers P and Q. P contains 56 kg of salt and Q contains 36 kg of sugar. From P 24 kg of salt is taken out and poured into Q. Then 20 kg of the mixture from Q is taken out and poured into P. Find the ratio of final quantity of salt to sugar in container P.

(a) 5/3
(b) 8/3
(c) 4/3
(d) 10/3

Solution: D

- Initially, the Amount of sugar in Q = 36 kg
- Now, 24 kg of salt is poured in Q,
- Total quantity in Q becomes = 36 kg (sugar) + 24 kg (salt) = 60 kg (mixture)
- The ratio of salt to sugar in Q becomes = 24 : 36 = 2 : 3
- Now, the Amount of salt in P = 56 – 24 = 32 kg
- Again, 20 kg of the mixture is taken out from Q and poured into P

Therefore, quantity of salt and sugar in P becomes

= [32 + 20 * (2/5)] kg of salt + 20 * (3/5) kg of sugar
= (32 + 8) kg of salt + 12 kg of sugar
= 40 kg of salt + 12 kg of sugar

Required ratio = (40/12) = (10/3)
Directions for the following (one) item:

Read the following passage and answer the item that follow. Your answer to this item should be based on the passage only.

Many people in India feel that if we cut our defence expenditure on weapon-building, we can create a climate of peace with our neighbours, subsequently reducing the conflict or creating a no-war situation. People who proclaim such ideas are either the victims of war or the propagators of false argument.

50. With reference to the above passage, which of the following is the most valid assumption?

(a) Building of weapons systems by us has instigated our neighbours to wage wars against us.

(b) The greater spending on weapon-building by us would lessen the possibility of armed conflict with our neighbours.

(c) It is necessary to have state of the art weapons systems for national security.

(d) Many people in India believe that we are wasting our resources on weapon-building.

Solution: B.

The underlying assumption in the first part of the passage is captured by B. The passage states that curtailing defence expenditure would reduce the threat of war. Hence B is the correct answer.
TESTIMONIALS

INSTA 75 Days REVISION PLAN for Prelims 2020 - InstaTests

Yashik Mishra - 3 days ago

One point from my side...
Which I learn from insights.
Insta/test realise your weak area.
Know them.
Make strong them
And
Fight back.
We are in war zone.
Your weakness will through you out
Get up and fight.
Final is on 31 st may.

http://disq.us/p/282pbo8

Srirupa - 3 days ago
Thank you insights for inspiring and holding our hand in this great journey...hope we make use of your effort and last till the end as a matter of gratitude...plz keep going with your work and inspiring us :) 

http://disq.us/p/282palg

Friday - 2 days ago
I have devoted everything to insights. revision plan, tests, modules, CA etc. This was much needed.

http://disq.us/p/2839b2u

Warrior Sanamya - an hour ago
Coret 17/25
time 23 min
I usually donot post much but here i m today for u @Insights.
When i was in colg i got to know about ur website during extra m/s am toppers talk. She has all d praise for u. Not frm den nd till today i am a daily visitor of ur website. I had been following it since approx 2016 when i started my preparation. Ur selfless, upto mark quality content nor made me feel to go to delhi regarded as hub of upsc preparation i m frm agra. U made me a bit person today. Ur consistency, discipline inspire me to work more hard to achieve my dream.
Thank u is a vry small word.

http://disq.us/p/28595xc

Suresh dhaval - 50 mins ago
Thank you insights for this 10 days...Due to your 75 days plan i cleared upsc prelim 2019 with around 130+ marks in my second attempt...Right now i am selected as a police inspector in 2019 through state psc and my training is going...and i am getting less hours for reading but with your consistent support and motivation stories, I am still fighting for my ultimate dream...and i am getting the results too...Thank you insights!!!

http://disq.us/p/2857k0t

Veena - 3 mins ago
All the 10 tests prepared by INSIGHTS are really worthy...even though my marks range is from 10-18 i didn't get discouraged because of the timely motivation and the feel that INSIGHTS is guiding me on the right track for my destination.your all free initiatives really needs much appreciation. thanks a lot INSIGHTS

http://disq.us/p/2857hhg

Shefali Kayasth ➤ V Mohan Kumar - an hour ago
great buddy...when i started this journey(2016) i was 20...now going to be 24...so insights ka hi sahara hai...after my family and some of my close friends...insights hi hai jinko me apna sahil manthi hai...
shukriya @Insights

http://disq.us/p/2856dp

Shubham Bhardwaj - 16 mins ago
@Insights, This best part i feel about INSTA test is - It has set a great momentum which is increasing day by day.
I had started my preparation roughly Sep/Oct 2019. Finishing syllabus for the 1st time along with job, took almost 4 months.
Thereafter, when I had started with Subject wise test (with my 1st revision) in Feb, I was performing consistently very low and wasn't exactly sure how to fix those efficiently since the exam is approaching very fast.
Since, we have 75 days plan at hand, it has set a proper structure to my revisions. Also, the MITRA sheet and noting down the mistakes i do, have come into pictures. Now, I am able to realize, how can i fix-pace the resolution of my mistakes.
Hence, Accuracy seems to be increasing slowly day by day. I am learning new things, getting better at making guesses.
I will follow this to the last day. Hope, My accuracy and learning will reach a level to make me qualify for the exam.
Thank you Insights.
I will be working hard. :) 

http://disq.us/p/2858me1

Aashi singh ➤ Insights - 15 mins ago
@Insights
THANK YOU SO MUCH
what you are doing is beyond words one thing i will say that because of you people like us who do not know much who come from different background could dream and may achieve them thank you so much god bless you AND TEAM HOPE IF GOD GIVE ME CHANCE I CAN DO SOMETHING IN RETURN
thank you so much

http://disq.us/p/28592b1
Saikat > Insights • an hour ago

Thank you @insights for this initiative. I was looking forward to it and after 10 days, I am feeling much more confident. I have uploaded MITRA sheets for 8 days as I did not attempt day 4 and day 5 due to the reason which is known to your team. It's your words and regular feedback that gave me strength to come back and now, come what may, I will continue this journey. We are now under a state of complete lock down now and we can use this time either by panicking or by preparing ourselves to be the officers this nation needs. Our choice will shape the future.

1 ^ | v • Reply • Share

http://disq.us/p/2855z70

Rohit verma • an hour ago

sir my experience is too good, i used to analyse myself on a daily basis as u can see in screenshot. Along with i used to note down elimination skills and try to recall them by revising all of them at one place & through your revision plan i'm getting a push day by day that i have committed to insights to make them proud so it keeps me going.

got good observation slowly and will trying them day by day to applying it in every test and insta revision plan and i take these 30 questions as an edge over others because i'm not following any PT365 or any compilations apart from your resources so i take these questions as a learning opportunity and add these in my notes that's it insta

http://disq.us/p/2855yka

Ezhil • 2 hours ago

8 of 15 questions answered correctly

Your time: 00:25:11, little progress, thank you @insights, I believe that you are the only reason for keeping me busy whatever happened around me, I am preparing from last one year but I could not keep to my plans, because of so many issues, now I am happy and get confident that surely I will land safely. Now I am realizing that "Nobody can go back and start a new beginning, but anyone can start today and make a new end", I started on 15.03.2020, to make a new end, thank you Insights.

2 ^ | v • Reply • Share

http://disq.us/p/2854jny

Alok yadav • an hour ago

@insight i have been using this type of MITRA
Analysis shows too much changes b/w first day and 10th day
i am enjoying this journey breaking and making mine better tomorrow due to covid-19 in days of grief it's feeling very mental pressure but in guidance of ur team moving gradually THANKS A LOT team @INSIGHT for precious contribution in our journey

2 ^ | v • Reply • Share

http://disq.us/p/2856vij