



## Time and Work Questions for SSC CPO set-3 pdf

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### Instructions

For the following questions answer them individually

#### Question 1

A drum of kerosene is  $\frac{3}{4}$  full. When 30 litres of kerosene is drawn from it, it remains  $\frac{1}{2}$  full. The capacity of the drum is

- A 120 litres
- B 135 litres
- C 150 litres
- D 180 litres

**Answer:** A

#### Explanation:

Drum is  $\frac{3}{4}$  full.

When 30 liters are drawn out of it, it becomes  $\frac{1}{2}$  full.

Therefore  $\frac{3}{4} - \frac{1}{2}$  of drum = 30

$\frac{1}{4}$  of drum = 30

Total capacity of drum =  $30 \times 4 = 120$  litres

#### Question 2

By what least number should 675 be multiplied so as to obtain a perfect cube number ?

- A 3
- B 5
- C 24
- D 40

**Answer:** B

#### Explanation:

Factorising 675 we get

$$675 = 5 \times 5 \times 3 \times 3 \times 3$$

There in order to make 675 a perfect cube, it has to be multiplied by 5.

#### Question 3

0.001 is equal to

- A 1/1000
- B 1/999
- C 1/99
- D 1/9

**Answer:** B

#### Explanation:

Let  $x = 0.001$  be the first equation

$$1000x = 1000 \times 0.001$$

$$= 1.001$$

Let  $1000x = 1.001$  be second equation

Subtracting equation 1 from 2

$$999x = 1$$

$$x = \frac{1}{999}$$

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### Question 4

$\frac{4.41 \times 0.16}{2.1 \times 1.6 \times 0.21}$  is equal to

- A 1
- B 0.1
- C 0.01
- D 10

**Answer:** A

### Explanation:

$$\frac{4.41 \times 0.16}{2.1 \times 1.6 \times 0.21}$$
$$= \frac{2.1^2 \times 0.16}{2.1 \times 0.16 \times 10 \times 0.21}$$

$$= \frac{2.1^2 \times 0.16}{2.1 \times 0.16 \times 2.1}$$

$$= \frac{2.1^2 \times 0.16}{2.1^2 \times 0.16}$$

$$= 1$$

### Question 5

If  $a$  and  $b$  are two odd positive integers, by which of the following integers is  $(a^4 - b^4)$  always divisible ?

- A 3
- B 6
- C 8
- D 12

**Answer:** C

### Explanation:

$$(a^4 - b^4) = (a^2 + b^2) \times (a^2 - b^2)$$
$$= (a^2 + b^2) \times (a + b) \times (a - b)$$

Let  $a = 5$ ,  $b = 3$

$$5^4 - 3^4 = (5^2 + 3^2)(5 + 3)(5 - 3) = 34 \times 8 \times 2 \text{ which is divisible by } 8$$

Let  $a = 7$  and  $b = 5$

$$7^4 - 5^4 = (7^2 + 5^2)(7 + 5)(7 - 5) = 74 \times 12 \times 2 \text{ which is also divisible by } 8$$

### Question 6

$\frac{256 \times 256 - 144 \times 144}{112}$  is equal to

- A 420
- B 400
- C 360
- D 320

**Answer:** B

### Explanation:

$$\frac{256 \times 256 - 144 \times 144}{112} = \frac{256^2 - 144^2}{112} = \frac{(256 - 144)(256 + 144)}{112} = \frac{(112)(400)}{112} = 400$$

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### Question 7

Buses start from a bus terminal with a speed of 20 km/hr at intervals of 10 minutes. What is the speed of a man coming from the opposite direction towards the bus terminal if he meets the buses at intervals of 8 minutes ?

- A 3 km/hr
- B 4 km/hr
- C 5 km/hr
- D 7 km/hr

**Answer:** C

### Explanation:

Distance between buses will  $20 \times \frac{10}{60} = \frac{10}{3}$  km.

Now man is travelling this distance in 8 min. with the relative speed of  $(20+x)$  (let's assume speed of man is  $x$  km/hr )

hence  $(20+x) = \frac{\frac{10}{3}}{\frac{8}{60}}$

$$x = 5$$

### Question 8

A and B together can do a piece of work in 9 days. If A does thrice the work of B in a given time, the time A alone will take to finish the work is

- A 4 days
- B 6 days
- C 8 days
- D 12 days

**Answer:** D

### Explanation:

A does thrice the work of B in a given time.

Let B's efficiency =  $x$  units/day

=> A's efficiency =  $3x$  units/day

Thus, (A+B)'s 1 day's work =  $x + 3x = 4x$  units/day

=> Total work done by them in 9 days =  $4x \times 9 = 36x$  units

∴ Time taken by A alone to finish the work =  $\frac{36x}{3x} = 12$  days

=> Ans - (D)

### Question 9

If  $a^3 + \frac{1}{a^3} = 2$ , then value of  $\frac{a^2+1}{a}$  is (a is a positive number)

A 1

B 2

C 3

D 4

Answer: B

### Explanation:

Given :  $a^3 + \frac{1}{a^3} = 2$

To find :  $\frac{a^2+1}{a} = (a + \frac{1}{a}) = x = ?$

We know that,  $(a + \frac{1}{a})^3 = a^3 + \frac{1}{a^3} + 3(a)(\frac{1}{a})(a + \frac{1}{a})$

=>  $(a + \frac{1}{a})^3 = 2 + 3(a + \frac{1}{a})$

=>  $x^3 = 2 + 3x$

=>  $x^3 - 3x = 2$

=>  $x(x^2 - 3) = 2 \times 1$

Thus, the only value that satisfy above equation is  $x = 2$

=> Ans - (B)

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### Question 10

The mean of 100 observations was calculated as 40. It was found later on that one of the observations was misread as 83 instead of 53. The correct mean is:

A 39

B 39.7

C 40.3

D 42.7

Answer: B

### Explanation:

Mean of 100 observations = 40

=> Sum of 100 observations =  $100 \times 40 = 4000$

Now, replacing 53 instead of 83

=> Correct sum =  $4000 - 83 + 53 = 3970$

∴ Correct mean =  $\frac{3970}{100} = 39.7$

=> Ans - (B)

**Question 11**

The time taken by a train 160 m long, running at 72 km/hr, in crossing an electric pole is

- A 8 sec
- B 9 sec
- C 6 sec
- D 4 sec

**Answer:** A

**Explanation:**

Speed of train = 72 km/hr

=  $(72 \times \frac{5}{18})$  m/s = 20 m/s

Length of train = 160 m

Using, time = distance/speed

=> Time taken =  $\frac{160}{20} = 8$  sec

=> Ans - (A)

**Question 12**

A and B start running at the same time and from the same point around a circle. If A can complete one round in 40 seconds and B in 50 seconds, how many seconds will they take to reach the starting point simultaneously?

- A 10
- B 200
- C 90
- D 2000

**Answer:** B

**Explanation:**

Time taken by A to complete 1 round = 40 seconds and by B = 50 seconds

=> Time taken by them to reach the starting point simultaneously = L.C.M.(40,50)

= 200 seconds

=> Ans - (B)

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**Question 13**

In what time will a 100 metre long train running with a speed of 50 km/hr cross a pillar

- A 7.0 sec
- B 72 sec

C 7.2 sec

D 70 sec

**Answer: C**

**Explanation:**

Speed of train = 50 km/hr

$$= (50 \times \frac{5}{18}) \text{ m/s} = \frac{125}{9} \text{ m/s}$$

Length of train = 100 m

Using, time = distance/speed

$$\Rightarrow \text{Time taken} = 100 \div \frac{125}{9}$$

$$= 100 \times \frac{9}{125}$$

$$= \frac{36}{5} = 7.2 \text{ sec}$$

$\Rightarrow$  Ans - (C)

**Question 14**

**A gun is fired at a distance of 6.64 km away from Ram. He hears the sound 20 seconds later. Then the speed of sound is**

A 664 m/s

B 664 km/s

C 332 m/s

D 332 km/s

**Answer: C**

**Explanation:**

Distance of gun from Ram = 6.64 km = 6640 m

Time = 20 seconds

$\Rightarrow$  Speed of sound = distance/time

$$= \frac{6640}{20} = 332 \text{ m/s}$$

$\Rightarrow$  Ans - (C)

**Question 15**

**A train leaves a station A at 7 am and reaches another station B at 11 am. Another train leaves B at 8 am and reaches A at 11.30 am. The two trains cross one another at**

A 8:36 am

B 8:56 am

C 9:00 am

D 9:24 am

**Answer: D**

**Explanation:**

Time taken by 1st train to travel from A to B = 11-7 = 4 hours

Time taken by 2nd train to travel from B to A = 11:30-8 = 3.5 hours

=> ratio of time taken by 1st train to 2nd train =  $4 : \frac{7}{2} = 8 : 7$

Since, speed is inversely proportion to time

=> Ratio of speeds of 1st train to 2nd train =  $7 : 8$

Let the speed of 1st train =  $7x$  and 2nd train =  $8x$  km/hr

Distance between the two stations = time \* speed =  $7x * 4 = 28x$  km

We know that, 1st train starts one hour early, thus it will cover  $7x$  distance till the time 2nd train starts.

So, at 8.00 a.m., remaining distance between two trains =  $28x - 7x = 21x$  km

Also, the two trains are moving in opposite directions, => relative speed of two trains =  $8x + 7x = 15$  km/hr

Now, time taken to meet =  $\frac{21x}{15x} = \frac{7}{5}$  hours

=>  $\frac{7}{5} * 60 = 84$  minutes after 8.00 a.m.

=> Time when they meet = 8.00 a.m. + 84 min = **9:24 a.m.**

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### Question 16

**A can do a piece of work in 4 days and B can do it in 12 days. In how many days will they finish the work, both working together ?**

- A 4 days
- B 6 days
- C 2 days
- D 3 days

**Answer: D**

### Explanation:

A's 1 day's work =  $\frac{1}{4}$

B's 1 day's work =  $\frac{1}{12}$

(A+B)'s 1 day's work =  $\frac{1}{4} + \frac{1}{12}$

=  $\frac{3+1}{12}$

=  $\frac{4}{12}$

=  $\frac{1}{3}$

∴ A and B together does the work in 3 days.

Hence, Option D is correct.

### Question 17

**A can do  $\frac{1}{4}$  of a work in 10 days. B can do  $\frac{1}{3}$  of the work in 20 days. In how many days can both A and B together do the work ?**

- A 30 days
- B 32 days
- C 24 days
- D 25 days

**Answer: C**



**Explanation:**

A does  $\frac{1}{4}$  work in 10 days.

$\therefore$  A will complete the work in  $10 \times 4 = 40$  days.

Similarly, B will complete the work in  $20 \times 3 = 60$  days.

(A+B)'s 1 day's work =  $\frac{1}{40} + \frac{1}{60}$

$$= \frac{3+2}{120}$$

$$= \frac{1}{24}$$

$\therefore$  time taken by A and B together to complete the work = 24 days.

Hence, Correct option is C.

**Question 18**

**A and B can together finish a work in 30 days. They worked at it for 20 days and then B left. The remaining work was done by A alone in 20 more days. A alone can finish the work in**

**A** 60 days

**B** 54 days

**C** 48 days

**D** 50 days

**Answer:** A

**Explanation:**

(A+B) together do the work in 30 days.

$\therefore$  (A+B)'s 1 day's work =  $\frac{1}{30}$

$\therefore$  (A+B)'s 20 days' work =  $\frac{20}{30} = \frac{2}{3}$

Remaining Work =  $1 - \frac{2}{3}$

$$= \frac{1}{3}$$

$\therefore$  Time taken by A in doing  $\frac{1}{3}$  work = 20 days

$\therefore$  Time taken by A to complete the work =  $20 \times 3$

= 60 days

Hence, Option A is correct.

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**Question 19**

**P can do a piece of work in 9 days. Q is 50% more efficient than P. The number of days it takes for Q to do the same piece of work is**

**A** 3

**B**  $13\frac{1}{2}$

**C**  $4\frac{1}{2}$

**D** 6

**Answer:** D

**Explanation:**

P can do a piece of work in 9 days.

let efficiency of p is 100%

then efficiency of Q will be 150%

let Q can do the same piece of work in x days.

work is constant. so

efficiency\*no of days = constant

$$100*9 = 150*x$$

$$x = 6.$$

answer is option D.

**Question 20**

**Sixteen men can complete a work in fifteen days, twenty-four children can do the same work in twenty days. In how many days will eight men and eight children, complete the same work ?**

**A** 18 days

**B** 16days

**C**  $13\frac{1}{3}$  days

**D** 20 days

**Answer:** D

**Explanation:**

16 men can complete a work in 15 days

1 man can complete the work in (16\*15) days

24 children can do the same work in 20 days

1 child can complete the work in (24\*20) days

let x be the no.of days taken by 8 men and 8 children to complete the work, then

$$1/x = 8/(16*15) + 8/(24*20)$$

$$1/x = 1/30 + 1/60$$

$$1/x = 3/60$$

$$x = 20$$

answer is option D.

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