

GATE 2019

Civil Engineering

**General Aptitude
(Question with Solution
Set-1 & 2)**



Set-1

1. If $E = 10$; $J = 20$; $O = 30$; and $T = 40$, what will be $P + E + S + T$?
- A. 82 B. 164
C. 120 D. 51

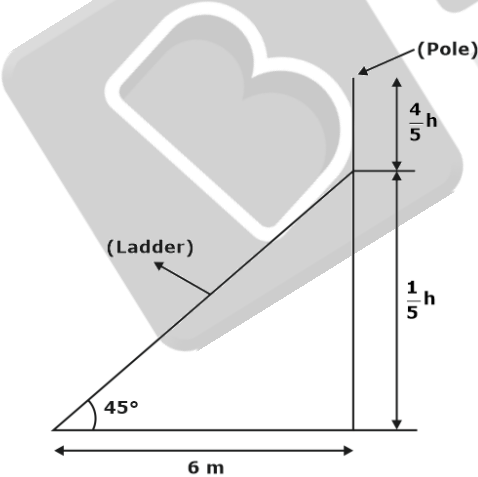
Ans. C

Sol. $P = 16 \times 2 = 32$
 $E = 5 \times 2 = 10$
 $S = 19 \times 2 = 38$
 $T = 20 \times 2 = 40$
 $P + E + S + T = 120$

2. On a horizontal ground, the base of straight ladder is 6m away from the base of a vertical pole. The ladder makes an angle of 45° to the horizontal. If the ladder is resting at a point located at one-fifth of the height of the pole from the bottom, the height of the pole is _____ meter.

Ans. *

Sol.



$$\tan 45^\circ = \frac{h}{6}$$

$$\Rightarrow 1 = \frac{h}{6}$$

$$\Rightarrow h = 6 \text{ m}$$

3. They have come a long way in _____ trust among the users.
- A. created B. creating
C. creation D. create

Ans. B

Sol. "The sentence requires the -ing form of the verb in order to make it correct. We generally use continuous tenses and verbs to be something that happens before and continue after some time.

So the correct sentence: They have come a long way in **creating** trust among the users.

4. The lecture was attended by quite _____ students, so the hall was not very _____.
- A. few, quite B. a few, quite
C. few, quiet D. a few, quiet

Ans. D

Sol. "The lecture was attended by quite a few students, so the hall was not very quiet."

Few and **A few** is a quantifier used with plural countable nouns.

few emphasizes a very small number/quantity of something.(almost zero)

A few means some.

Quite is an adverb used to describe when something is a little or a lot but not completely.

So, after Quite a few should be filled in the question to represent some students.

Quiet is an adjective used to describe something or someone that makes very little noise.

So option D (A few and Quiet) is the correct answer.

5. The CEO's decision to quit was as shocking to the Board as it was to _____.
- A. myself B. me
C. I D. my

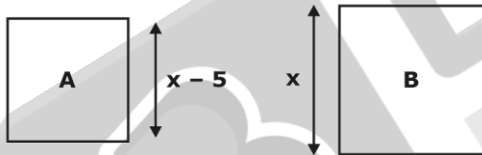
Ans. B

Sol. "Me" is the Objective Case of the Personal Pronoun I and is used after a verb. So the correct sentence: The CEO's decision to quit was as shocking to the Board as it was to me.

6. A square has sides 5cm smaller than the sides of a second square. The area of the larger square is four times the area of the smaller square. The side of the larger square is _____cm.
- A. 15.10 B. 18.50
C. 10.00 D. 8.50

Ans. C

Sol.



Given,

$$(\text{Area})_B = 4 \times (\text{Area})_A$$

$$\Rightarrow x^2 = 4(x - 5)^2$$

$$\Rightarrow x^2 = 4[x^2 + 25 - 10x]$$

$$\Rightarrow x^2 = 4x^2 + 100 - 40x$$

$$\Rightarrow 3x^2 - 40x + 100 = 0$$

$$\Rightarrow 3x^2 - 30x - 10x + 100 = 0$$

$$\Rightarrow 3x(x - 10) - 10(x - 10) = 0$$

$$\Rightarrow x = 10 \text{ or } x = 10/3$$

10/3 is not possible as on subtracting 5 from it, it gives negative value as the side of smaller square.

Hence, the side of the larger square is 10 cm.

7. The increasing interest in tribal characters might be a mere coincidence, but the timing is of interest. None of this, though, is to say that the tribal hero has arrived in Hindi cinema, or that the new crop of characters represents the acceptance of the tribal character in the industry. The films and characters are too few to be described as a pattern.

Who does the word 'arrived' mean in the paragraph above?

- A. reached a terminus
B. came to a conclusion
C. attained a status
D. went to a place

Ans. C

Sol. The sentence implies that the unrecognized tribal hero in Hindi cinema has now arrived on the big stage. He is now a subject of inquiry, wonder and discussion. Therefore, the correct meaning of 'arrived' here is attained a status".

8. The new cotton technology, Bollgard-II, with herbicide tolerant traits has developed into a thriving business in India. However, the commercial use of this technology is not legal in India. Notwithstanding that, reports indicate that the herbicide tolerant Bt cotton had been purchased by farmers at an average of Rs 200 more than the control price of ordinary cotton, and planted in 15% of the cotton growing area in the 2017 Kharif season.

Which one of the following statements can be inferred from the given passage?

- A. Farmers want to access the new technology for experimental purposes
- B. Farmers want to access the new technology if India benefits from it
- C. Farmers want to access the new technology by paying high price
- D. Farmers want to access the new technology even if it is not legal

Ans. D

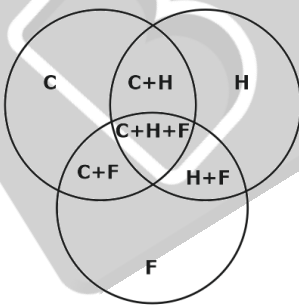
Sol. Option B is correct as the paragraph states that states that New cotton technology is not legal in India and Farmers planeted in 15% of the cotton growing area in the 2017 Kharif season. It means farmers want to access it.

- 9.** In a sports academy of 300 people, 105 play only cricket, 70 play only hockey, 50 play only football, 25 play both cricket and hockey, 15 play both hockey and football and 30 play both cricket and football. The rest of them play all three sports. What is percentage of people who play at least two sports?

- A. 23.30
- B. 50.00
- C. 28.00
- D. 25.00

Ans. D

Sol.



Total $n = 300$

only play cricket $n(C) = 105$

only play hockey $n(H) = 70$

only play football $n(F) = 50$

play both cricket and hockey $n(C + H) = 25$

play both hockey and football $n(H + F) = 15$

paly both cricket and football $n(C + F) = 30$

$n = n(c) + n(H) + n(F) + n(C + H) + n(H + F) + n(C + F) + n(C+H+F)$

$$300 = 105 + 70 + 50 + 25 + 15 + 30 + n(C + H + F)$$

$$n(C + H + F) = 5$$

% of people playing at least 2 sports

$$= \frac{25 + 15 + 30 + 5}{300} \times 100$$

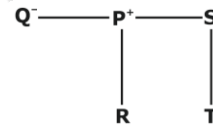
$$= \frac{75}{300} \times 100 = 25\%$$

- 10.** P, Q, R, S and T are related and belong to the same family. P is the brother of S. Q is the wife of P. R and T are the children of the siblings P and S respectively. Which one of the following statements is necessarily FALSE?

- A. S is the sister-in-law of Q
- B. S is the aunt of T
- C. S is the aunt of R
- D. S is the brother of P

Ans. B

Sol.



'T' is a child of 'S'. So 'S' is either father or mother of T, not aunt. Hence, option B is necessarily false.

Let's check for other options too.

We cannot say anything about the gender of 'S'. 'S' is either female or male.

Option A can be true if S is female, as S is the sister in law of Q

Option C can be true If S is female, as S is the aunt of R.

Option D can be true If s is male, as S is the brother of P.

SO, we choose option B which is necessarily false.

Set-2

1. Suresh wanted to lay a new carpet in his new mansion with an area of 70×55 sq. mts. However an area of 550 sq. mts had to be left out for flower pots. If the cost of carpet is Rs. 50 per sq. mts, how much money (in Rs.) will be spent by Suresh for the carpet now?
- A. Rs. 1,65,000 B. Rs. 1,92,500
C. Rs. 1,27,500 D. Rs. 2,75,000

Ans. A

Sol. Area of mansion = $70 \times 55 = 3850 \text{ m}^2$
Area for flower pots = 550 m^2
 \therefore Area left for carpet = $3850 - 550 = 3300 \text{ m}^2$
 \therefore Cost = $3300 \times 50 = 165000$

2. Daytime temperature in Delhi can _____ 40°C
- A. Peak B. reach
C. get D. stand

Ans. B

Sol. The correct option to be used here is 'reach'. The sentence is talking about a kind of progression, and hence Daytime temperature in Delhi can reach 40°C is the correct sentence.
So, option B is the correct answer.

3. A retaining wall with measurements $30 \text{ m} \times 12 \text{ m} \times 6 \text{ m}$ was constructed with bricks of dimensions $8 \text{ cm} \times 6 \text{ cm} \times 6 \text{ cm}$. If 60% of the wall consists of bricks, total no of bricks used for the construction is _____ lakhs.
- A. 45 B. 30
C. 40 D. 75

Ans. A

Sol. Volume of wall = $30 \times 12 \times 6 = 2160 \text{ m}^3 = 2160 \times 10^6 \text{ cm}^3$

Total volume of bricks required = $2160 \times 10^6 \times 0.6 \text{ cm}^3 = 1296 \times 10^6 \text{ cm}^3$

Volume of one brick = $8 \times 6 \times 6 = 288 \text{ cm}^3$

\therefore No. of bricks required = $\frac{1296 \times 10^6}{288}$

= $4.5 \times 10^6 = 45$ lakhs

4. Hima Das was _____ only Indian athlete to win _____ gold for India.
- A. the, many B. an, the
C. an, a D. the, a

Ans. D

Sol. Hima Das is a famous personality known for her unique achievement; therefore, "The" article is filled in the first blank.

Here Gold is a noun, and pronunciation starts as a consonant sound; therefore, "A" article is filled in the second blank.

Hima Das was the only Indian athlete to win a gold for India.

Thus, option D is the correct answer.

5. The Newspaper report that over 500 hectares of tribal land spread across 28 tribal settlements in Mohinitampuram forest division have already been "alienated". A top forest official said, "First the tribals are duped out of their land holdings. Second, the families thus rendered landless are often forced to encroach further into the forests". On the basis of the information available in the paragraph, _____ is/are responsible for duping the tribals.
- A. The newspaper
B. Landless families
C. forest officials
D. it cannot be inferred who

Ans. D

Sol. A passage says that A top forest official said, "First the tribals are duped by their holdings. Second, thus landless families are often forced to make further encroachments into the forests."

It means the passage only says that tribals are duped but does not mention who duped them.

Therefore option D "it cannot be inferred who" is the correct answer.

- 6.** The growth rate of ABC Motors in 2017 was the same _____ XYZ Motors in 2016 .
- A. As those of B. As that off
C. As that of D. As off

Ans. C

Sol. When two things are compared for similar characteristics, qualities, or attributes, instead of repeating the name of a feature, 'as that of' is used.

Correct Sentence: The growth rate of ABC Motors in 2017 was the same as that of XYZ Motors in 2016.

So, the option C is correct.

- 7.** Mohan, the manager, wants his four workers to work in pairs. No pair should work for more than 5 hours. Ram and John have worked together for 5 hours. Krishna and Amir have worked as a team for 2 hours. Krishna does not want to work with Ram. Whom should Mohan allot to work with John if he wants all the workers to continue working?
- A. Amir B. Krishna
C. Ram D. None of the three

Ans. B

Sol. Given that No pair should work for more than 5 hours. Ram and John have worked together for 5 hours, so they needed to change their partner.

Since Krishna doesn't want to work with Ram, so Ram can only partner with Amir.

So the remaining two people, John and Krishna, will form a pair.

So, option B is the correct answer.

- 8.** "Popular Hindi fiction, despite – or perhaps because of – its wide reach, often does not appear in our cinema. As ideals that viewers are meant to look up to rather than identify with, Hindi film protagonists usually read books of aspirational value: textbooks, English books, or high value literature".

Which one of the following CANNOT be inferred from the paragraph above?

- A. Textbooks, English books or high literature have aspirational value, but not popular Hindi fiction
B. People do not look up to writers of textbooks, English book or high value literature
C. Though popular hindi fiction was wide readh, it often does not appear in the movies
D. Protagonists in Hindi movies, being ideals for viewers, read usually books of aspirational value.

Ans. B

Sol. As the passage states that "Hindi film protagonists usually read books of aspirational value: textbooks, English books, or high-value literature".From this, Option A can be inferred, but we can't infer option B from this.

Option C can be inferred as the passage clearly says that "Despite – or perhaps because of – its wide reach, Popular Hindi fiction often does not appear in our cinema."

-- makes Option true

"Hindi film protagonists usually read books of aspirational value", So, option D can be inferred from the passage.

So, only Options B can't infer from the passage.

9. Population of state X increased by x% and the population of state Y increased by y% from 2001 to 2011. Assume that x is greater than y. Let P be the ratio of the population of state X to state Y in a given year. The percentage increase in P from 2001 to 2011 is _____

- A. $x - y$ B. $\frac{100(x - y)}{100 + x}$
C. $\frac{100(x - y)}{100 + y}$ D. $\frac{x}{y}$

Ans. C

Sol. Let population of X is 'A' in 2001 and Population of Y is 'B' in 2001

$$\therefore \text{Population of A in 2011} = A \left(1 + \frac{x}{100} \right)$$

$$\& \text{Population of B in 2011} = B \left(1 + \frac{y}{100} \right)$$

Given, $\frac{A}{B} = P$

$$\% \text{ increase in P} = \frac{\frac{A \left(1 + \frac{x}{100} \right)}{B \left(1 + \frac{y}{100} \right)} - \frac{A}{B}}{\frac{A}{B}} \times 100$$

$$= \left[\frac{P \left(1 + \frac{x}{100} \right) - P}{\left(1 + \frac{y}{100} \right)} \right] \times 100$$

$$= \left[\frac{1 + \frac{x}{100}}{1 + \frac{y}{100}} - 1 \right] \times 100 = \frac{(x - y)100}{100 + y}$$

10. An oil tank can be filled by pipe X in 5 hours and pipe Y in 4 hours, each pump working on its own. When the oil tank is full and the drainage hole is open, the oil is drained in 20 hours. If initially the tank was empty and someone started the two pumps together but left the drainage hole open, how many hours will it take for the tank to be filled? (Assume that the rate of drainage is independent of the head)

- A. 2.50 B. 1.50
C. 2.00 D. 4.00

Ans. A

Sol. In one hour Pipe X will fill the oil = $\frac{1}{5}$ of the tank

In one hour Pipe Y will fill the oil = $\frac{1}{4}$ of the tank

In one-hour Drainage, hole will drain out the oil = $\frac{1}{20}$ of the tank

\therefore Total tank filled in one hour

$$= \left(\frac{1}{5} + \frac{1}{4} - \frac{1}{20} \right) \text{ tank} = \frac{2}{5} \text{ tank}$$

$\frac{2}{5}$ tank gets filled by oil in = 1 hour

\therefore Whole tank gets filled by oil in = $\frac{1}{\left(\frac{2}{5} \right)} \times 1$

$$= \frac{5}{2} = 2.5 \text{ hr}$$
