

# GATE 2019

Mechanical Engineering

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

## SET-1

1. \_\_\_\_\_ I permitted him to leave, I wouldn't have had any problem with him being absent, \_\_\_\_\_ I?

- A. Have, wouldn't      B. Had, wouldn't  
C. Have, would        D. Had, would

**Ans.** D

**Sol.** Rules for the conditional clause is given below:

<b>Conditional clause</b>	<b>Main clause</b>
If + Present Tense	will + Present / imperative
If + Past Tense	would/could + inf
If + Past Perfect	could/would have + past participle

Here wouldn't have been used in the main clause. So, had should be used in the conditional clause.

Question tags are formed with the helping or modal verb from the given statement and subjects.

A negative question tag follows a positive phrase.

Examples: 1. Julie is from Delhi, isn't she?

A positive question tag follows a negative phrase.

Examples: 1. They aren't funny, are they?

Because the helping verb in the clause containing the question tag is 'wouldn't'. So, the question tag is 'would'.

Therefore, the answer is 'had, would'

2. A worker noticed that the hour hand on the factory clock had moved by 225 degrees during her stay at the factory. For how long did she stay in the factory?

- A. 7.5 hours              B. 4 hours and 15 mins  
C. 3.75 hours          D. 8.5 hours

**Ans.** A

**Sol.** Hour hand moves 360 degrees in 12 hrs

So, when the hour hand has moved 225 degrees that means hrs passed

$$= \frac{12 \times 225}{360} = 7.5$$

3. The minister avoided any mention of the issue of women's reservation in the private sector. He was accused of \_\_\_\_\_ the issue.

- A. skirting              B. tying  
C. belting              D. collaring

**Ans.** A

**Sol.** **Skirting** means to avoid discussing a subject or problem, usually because there are difficulties that you do not want to deal with

**Tying** means to tie something or someone

**Belting** means to beat someone harshly

**Collaring** means to seize someone

So, "skirting" is best fitted in the given context.

4. John Thomas, an \_\_\_\_\_ writer, passed away in 2018.

- A. prominent              B. imminent  
C. eminent                D. dominant

**Ans.** C

**Sol.** **Prominent** means important, famous.

**Imminent** means almost about to happen very soon. (usually used about something unpleasant)

**Eminent** means famous and respected in a particular field.

**Dominant** means having power and influence over others.

Here you can get confused between prominent and Eminent. But the article "an" is used before the blank space. So, eminent is the most suitable word.

5. The sum and product of two integers are 26 and 165 respectively. The difference between these two integers is \_\_\_\_\_.
- A. 2                                      B. 4  
C. 6                                      D. 3

**Ans.** B

**Sol.** Let the two integers be  $x$  and  $y$   
According to the given condition,  
 $x + y = 26$  and  $xy = 165$   
using the identity,

$$(x + y)^2 = (x - y)^2 + 4xy$$

$$26^2 = (x - y)^2 + 4 \times 165$$

$$(x - y) = 4$$

$$\text{Or } x - y = 4$$

$$\text{So, } x = 15 \text{ and } y = 11$$

6. Under a certain legal system, prisoners are allowed to make one statement. If their statement turns out to be true then they are hanged. If the statement turns out to be false then they are shot. One prisoner made a statement and the judge had no option but to set him free. Which one of the following could be that statement?
- A. I will be shot  
B. I did not commit the crime  
C. You committed the crime  
D. I committed the crime

**Ans.** A

**Sol.** If "I will be shot" is believed to be true, then he will be hanged. But if he is hanged, then the statement will go wrong. So, Judge has no option but to set him free.  
Option (A) is the only correct option. In all other cases, the victim would not be set free.

7. A person divided an amount of Rs. 100,000 into two parts and invested in two different schemes. In one he got 10% profit and in the other he got 12%. If the profit percentages are interchanged with these investments he would have got Rs. 120 less. Find the ratio between his investments in the two schemes.
- A. 47 : 53                                      B. 9 : 16  
C. 37 : 63                                      D. 11 : 14

**Ans.** A

**Sol.** Let the two portions be  $x$  and  $100000 - x$   
According to first condition, profit =  $0.1x + 0.12(100000 - x)$   
According to second condition, profit =  $0.12x + 0.1(100000 - x)$   
Then,  $0.1x + 0.12(100000 - x) - [0.12x + 0.1(100000 - x)] = 120$   
On solving this,  $x = 47000$ , and  $100000 - x = 53000$   
Hence, ratio = 47:53

8. Congo was named by Europeans. Congo's dictator Mobuto later changed the name of the country and the river to Zaire with the objective of Africanising names of persons and spaces. However, the name Zaire was a Portuguese alteration of Nzadi o Nzere, a local African term meaning 'River that swallows Rivers'. Zaire was the Portuguese name for the Congo river in the 16th and 17th centuries.

Which one of the following statements can be inferred from the paragraph above?

- A. Mobuto was not entirely successful in Africanising the name of his country  
B. The term Nzadi o Nzere was of Portuguese origin

- C. As a dictator Mobuto ordered the Portuguese to alter the name of the river to Zaire
- D. Mobuto's desire to Africanise names was prevented by the Portuguese

**Ans. A**

**Sol.** According to the Paragraph, Congo's dictator Mobuto later changed the name of the country and the river to Zaire, which was a Portuguese alteration of Nzadi o Nzere.

It refers that Mobuto was not entirely successful in Africanising the name of his country. So, option (A) is correct.

Option (B) is wrong as "Nzadi o Nzere" is an African word, whereas "Zaire" is a Portuguese word, as per the passage.

There is no detail about "Mobuto ordered the Portuguese to alter the name" and "the name prevented by Portuguese" in the passage. So, options C and D are wrong.

- 9.** M and N had four children P, Q, R and S. Of them, only P and R were married. They had children X and Y respectively. If Y is a legitimate child of W, which one of the following statements is necessarily FALSE?
- A. W is the wife of R
  - B. W is the wife of P
  - C. M is the grandmother of Y
  - D. R is the father of Y

**Ans. B**

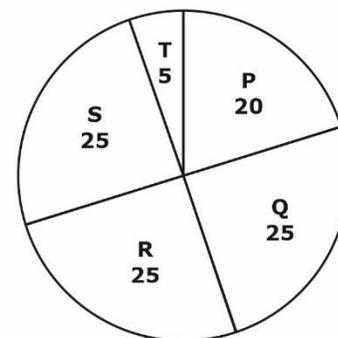
**Sol.**

M and N are two persons  
 P, Q, R and S are children of M and N  
 X is the child of P and Y is the child of R  
 And it is also mentioned that Y is the legitimate child of W that means R and W are spouses.

Now checking the statements one by one  
 Option A says W is the wife of R which is possible  
 Option C says M is the grandmother of Y which is also possible  
 Option D says R is the father of Y which is also possible  
 Option B says W is the wife of P which is the only statement which is not possible and necessarily false

- 10.** A firm hires employees at five different skill levels P, Q, R, S, T. The shares of employment at these skill levels of total employment in 2010 is given in the pie chart as shown. There were a total of 600 employees in 2010 and the total employment increased by 15% from 2010 to 2016. The total employment at skill levels P, Q and R remained unchanged during this period. If the employment at skill level S increased by 40% from 2010 to 2016, how many employees were there at skill level T in 2016?

Percentage share of skills in 2010



- A. 30
- B. 72
- C. 60
- D. 35

**Ans. C**

**Sol.**

In 2010,  
 Total employees = 600

$$P = 0.2 \times 600 = 120$$

$$Q = 0.25 \times 600 = 150$$

$$R = 0.25 \times 600 = 150$$

$$S = 0.25 \times 600 = 150$$

$$T = 0.05 \times 600 = 30$$

$$\text{Employees increased in 2016} = 15\% = 90$$

$$\text{Total employees in 2016} = 600 + 90 = 690$$

P, Q and R remained unchanged, so total of P,

$$\text{Q and R in 2016} = 120 + 150 + 150 = 420$$

$$\text{S increased by 40\%} = 0.4 \times 150 = 60$$

$$\text{Total S employees in 2016} = 150 + 60 = 210$$

$$\text{Therefore, T in 2016} = 690 - (420 + 210) = 60$$



## SET-2

1. The product of three integers X, Y and Z is 192. Z is equal to 4 and P is equal to the average of X and Y. What is the minimum possible value of P?

A. 7                                      B. 6  
C. 8                                      D. 9.5

**Ans.** A

**Sol.**  $XYZ = 192$  and  $Z = 4$

So,  $XY = 48$

$$P = \frac{X+Y}{2}$$

For finding the minimum possible of P,  $X + Y$  should be minimum

Now, the possible values of X and Y are as follows

X	Y
48	1
24	2
16	3
12	4
8	6

So, from this we can clearly see that  $X + Y$  will be minimum only when  $X = 8$  and  $Y = 6$  or vice-versa

$$\text{So minimum value of } P = \frac{8+6}{2} = 7$$

2. Once the team of analysts identify the problem, we \_\_\_\_\_ in a better position to comment on the issue.

Which one of the following choices CANNOT fill the given blank?

A. might be                              B. are going to be  
C. will be                                  D. were to be

**Ans.** D

**Sol.** The first clause "Once the team of analysts identify the problem", is in the present tense.

Hence, in the second clause, we use a verb of present or future tense. (might be, will be, are going to be) 'were to be' can not fit the sentence, because it is a verb of past tense.

3. Are there enough seats here? There are \_\_\_\_\_ people here than I expected.

A. many                                      B. most  
C. more                                      D. least

**Ans.** C

**Sol.** "Than" is used in the sentence. It means the Comparison is made here between the number of people and number of seats, hence, **more** is the most appropriate word

4. If IMHO = JNIP; IDK = JEL; and SO = TP, then IDC = \_\_\_\_\_.

A. JDC                                      B. JCD  
C. JDE                                      D. JED

**Ans.** D

**Sol.**  $I + 1 = J$ ,  $M + 1 = N$ ,  $H + 1 = I$ ,  $O + 1 = P$ ;  $I + 1 = J$ ,  $D + 1 = E$ ,  $K + 1 = L$ ;  $S + 1 = T$ ,  $O + 1 = P$

Hence, IDC will be written as JED

$$I + 1 = J, D + 1 = E, C + 1 = D$$

5. A final examination is the \_\_\_\_\_ of a series of evaluations that a student has to go through.

A. desperation                              B. insinuation  
C. consultation                              D. culmination

**Ans.** D

**Sol.** A final examination is the **culmination** of a series of evaluations that a student has to go through.

Culmination: to reach the highest or decisive point.

Hence, it is the most appropriate word. other option's meanings are given below:

Desperation: a situation of hopelessness leading to rashness.

Insinuation: an indirect or shrewd suggestion.  
 Consultation: advice taken before making a decision.

Culmination: to reach the highest or decisive point.

6. Mola is a digital platform for taxi in a city. It offers three types of rides – Pool, Mini and Prime. The Table below presents the number of rides for the past four months. The platform earns one US dollar per ride. What is the percentage share of revenue contributed by Prime to the total revenues of Mola, for the entire duration?

Type	Month			
	January	February	March	April
Pool	170	320	215	190
Mini	110	220	180	70
Prime	75	180	120	90

- A. 38.74                      B. 23.97  
 C. 25.86                      D. 16.24

**Ans.** B

**Sol.** Revenue contributed by Pool =  $170 + 320 + 215 + 190 = 895$

Revenue contributed by Mini =  $110 + 220 + 180 + 70 = 580$

Revenue contributed by Prime =  $75 + 180 + 120 + 90 = 465$

Total revenue of Mola =  $895 + 580 + 465 = 1940$

So, the percentage share

$$= \frac{465}{1940} \times 100 = 23.97\%$$

7. While teaching a creative writing class in India, I was surprised at receiving stories from the students that were all set in distant places: in the American West with cowboys and in Manhattam penthouses with clinking ice cubes. This was, till an eminent cAribbean

writer gave the writers in the once-colonised countries the confidence to see the shabby lives around them as worthy of being "told". The writer of this passage is surprised by the creative writing assignments of his students, because \_\_\_\_\_.

- A. Some of the students had written about ice cubes and cowboys  
 B. None of the students had written about ice cubes and cowboys  
 C. Some of the students had written stories set in foreign places  
 D. None of the students had written stories set in India

**Ans.** D

**Sol.** As per the paragraph "While teaching a **creative writing class in India**, I was **surprised** at receiving stories from the students that were all **set in distant places.**"

option D is the most appropriate solution because he gets surprised that most of the students have given the stories from distant places but None of them had written stories set in India.

8. Two pipes P and Q can fill a tank in 6 hours and 9 hours respectively, while a third pipe R can empty the tank in 12 hours. Initially, P and R are open for 4 hours. Then P is closed and Q is opened. After 6 more hours R is closed. The total time taken to fill the tank (in hours) is \_\_\_\_\_.

- A. 16.50                      B. 14.50  
 C. 15.50                      D. 13.50

**Ans.** B

**Sol.** 1 hour work of P =  $1/6$

1 hour work of Q =  $1/9$

1 hour work of R =  $-1/12$  (negative sign indicates that its emptying the tank)

Tank filled when P and R works initially for 4

$$\text{hours} = 4 \left( \frac{1}{6} - \frac{1}{12} \right) = \frac{1}{3}$$

Tank filled by when Q and R works for another

$$6 \text{ hours} = 6 \left( \frac{1}{9} - \frac{1}{12} \right) = \frac{1}{6}$$

Total tank filled in these 10 hours

$$= \frac{1}{3} + \frac{1}{6} = 0.5$$

So, the remaining half tank will be filled by Q alone in 4.5 hours (Since Q can fill the tank completely in 9 hours)

Therefore, total time required to fill the tank  
 $= 4 + 6 + 4.5 = 14.5$  hours

9. Fiscal deficit was 4% of the GDP in 2015 and that increased to 5% in 2016. If the GDP increased by 10% from 2015 to 2016, the percentage increase in the actual fiscal deficit is \_\_\_\_\_.

- A. 35.70                      B. 10.00  
 C. 37.50                      D. 25.00

**Ans. C**

**Sol.** Let the GDP in 2015 = x

Then, the GDP in 2016 will be = 1.1x (Given that If the GDP increased by 10% from 2015 to 2016)

So, fiscal deficit in 2015 =  $0.04 \times x = 0.04x$

And the fiscal deficit in 2016 =  $0.05 \times 1.1x = 0.055x$

Increase in fiscal deficit =  $0.055x - 0.04x = 0.015x$

So, the percentage increase in fiscal deficit

$$= \frac{0.015x}{0.04x} \times 100 = 37.5\%$$

10. X is an online media provider. By offering unlimited and exclusive online content at attractive prices for a loyalty membership, X is almost forcing its customers towards its loyalty membership. If its loyalty membership continues to grow at its current rate, within the next eight years more households will be watching X than cable television.

Which one of the following statements can be inferred from the above paragraph?

- A. Most households that subscribe to X's loyalty membership discontinue watching cable television  
 B. Non-members prefer to watch cable television  
 C. The X is cancelling accounts of non-members  
 D. Cable television operators don't subscribe to X's loyalty membership

**Ans. A**

**Sol.**

As per the paragraph, the X (media provider) is giving excellent and attractive offers to the customers, and its loyalty membership is also increasing. Also stated that if this current subscribing rate is growing, more households will be watching X within the next eight years than cable television.

It means that more households that subscribe to X's loyalty membership will discontinue watching cable television.

Hence option A is the most suitable one that can be inferred from paragraph.

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