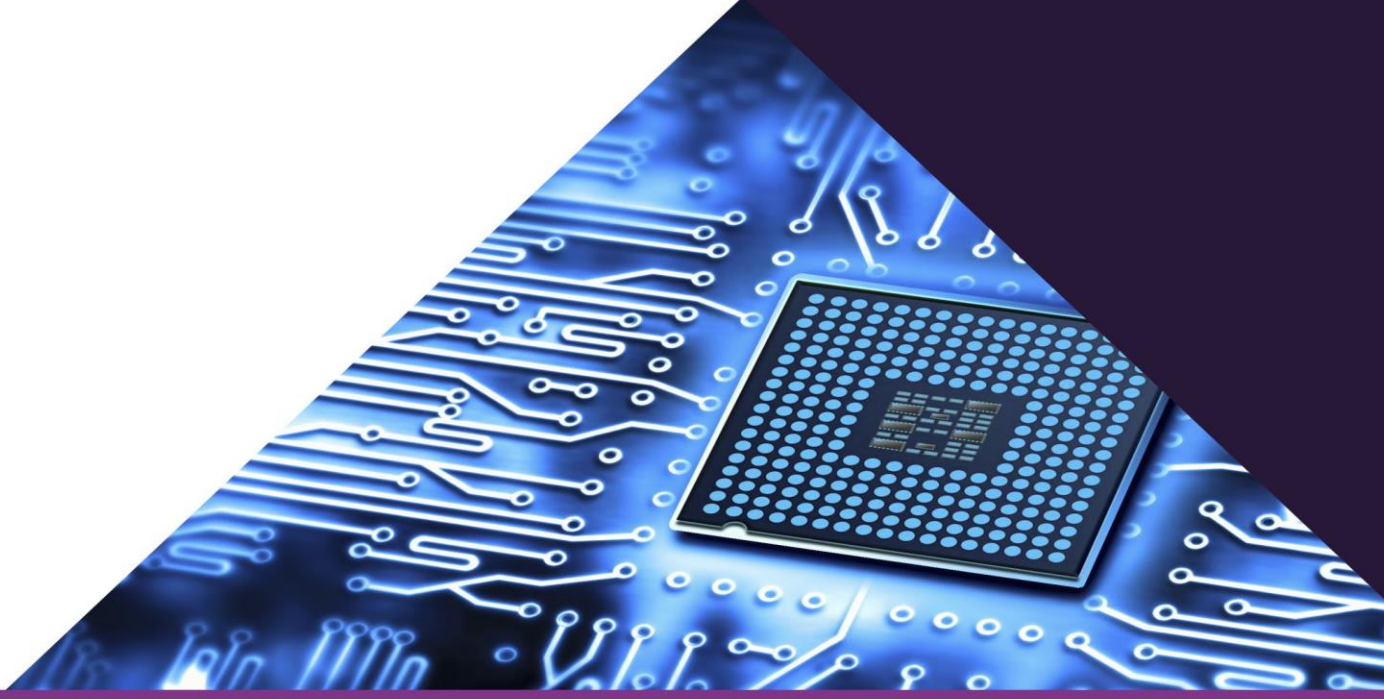
BYJU'S EXAM PREP

GATE 2022

Electronics & Communication Engineering

General Aptitude

Questions & Solutions



1. Mr. X speaks _____ Japanese _____ Chinese.

A. neither/or B. either/nor

C. neither/nor D. also/but

Ans. C

Sol. Conjunctions are:

— Neither-nor

— Either-or

— Not only-but also

— Whether-or

— Both-and

2. A sum of money is to be distributed among P, Q, R, and S in the proportion 5 : 2 : 4 : 3, respectively. If R gets ₹ 1000 more than S, what is the share of Q (in ₹)?

A. 500 B. 1000

C. 1500 D. 2000

Ans. D

Sol. P : Q : R : S = 5 : 2 : 4 : 3

Money of P = 5x

Money of Q = 2x

Money of R = 4x

Money of S = 3x

Money of R = 1000 + Money of S

i.e. 4x = 1000 + 3x

x = 1000

Now, Money of Q = 2x

= 2000

3. A trapezium has vertices marked as P, Q, R and S (in that order anticlockwise). The side PQ is parallel to side SR. Further, it is given that, PQ = 11 cm, QR = 4 cm, RS = 6 cm and SP = 3 cm. What is the shortest distance between PQ and SR (in cm)?

A. 1.80

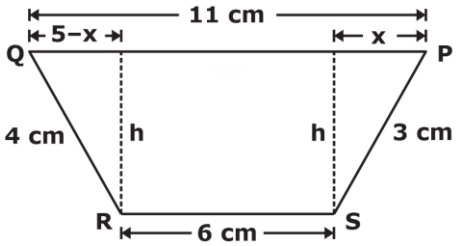
B. 2.40

C. 4.20

D. 5.76

Ans. B

Sol.



There, h = h

$\sqrt{4^2-(5-x)^2} = \sqrt{3^2-x^2}$

$\sqrt{16-(5-x)^2} = \sqrt{9-x^2}$

$16-(5-x)^2 = 9-x^2$

$16-25+10x-x^2 = 9-x^2$

10x = 18

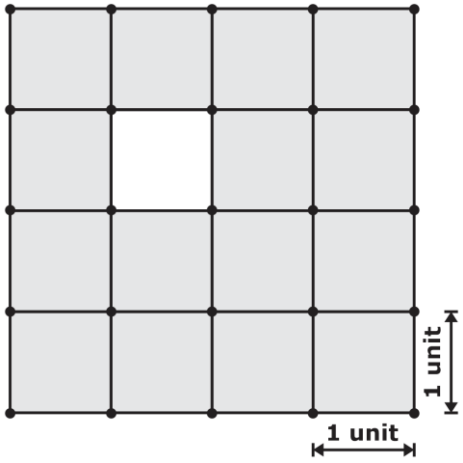
x = 1.8 cm

Now, $h = \sqrt{3^2-1.8^2}$

$h = \sqrt{9-3.24}$

h = 2.4 cm

4. The figure shows a grid formed by a collection of unit squares. The unshaded unit square in the grid represents a hole.



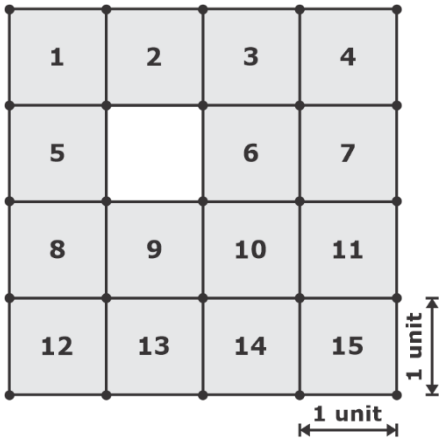
What is the maximum number of squares without a "hole in the interior" that can be formed within the 4 × 4 grid using the unit squares as building blocks?

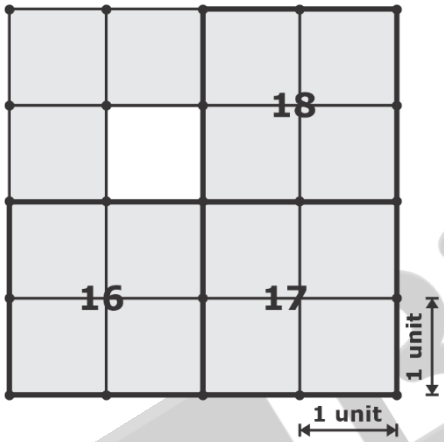
A. 15 B. 20

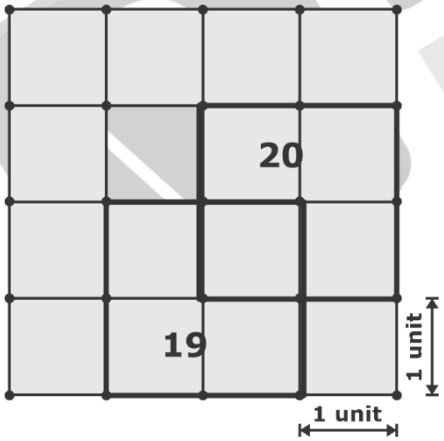
C. 21 D. 26

Ans. B

Sol.

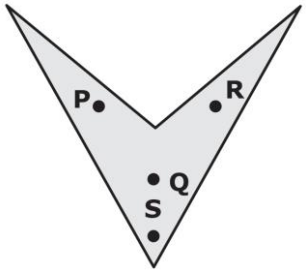






Now total number of square without hole = 20

5. An art gallery engages a security guard to ensure that the items displayed are protected. The diagram below represents the plan of the gallery where the boundary walls are opaque. The location the security guard posted is identified such that all the inner space (shaded region in the plan) of the gallery is within the line of sight of the security guard. If the security guard does not move around the posted location and has a 360º view, which one of the following correctly represents the set of ALL possible locations among the locations P, Q, R and S, where the security guard can be posted to watch over the entire inner space of the gallery.



A. P and Q

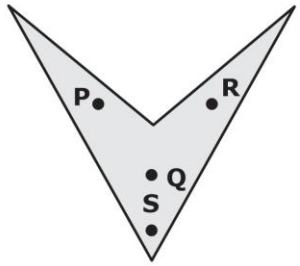
B. Q

C. Q and S

D. R and S

Ans. C

Sol.



At the position P guard can't visible R.

Similarly the position R guard can't visible P. but at the position Q and S, the security guard can posted to watch over the entire inner space of the gallery.

6. Mosquitoes pose a threat to human health. Controlling mosquitoes using chemicals may have undesired consequences. In Florida, authorities have used genetically modified mosquitoes to control the overall mosquito population. It remains to be seen if this novel approach has unforeseen consequences.

Which one of the following is the correct logical inference based on the information in the above passage?

A. Using chemicals to kill mosquitoes is better than using genetically modified mosquitoes because genetic engineering is dangerous

B. Using genetically modified mosquitoes is better than using chemicals to kill mosquitoes because they do not have any side effects

C. Both using genetically modified mosquitoes and chemicals have undesired consequences and can be dangerous

D. Using chemicals to kill mosquitoes may have undesired consequences but it is not clear if using genetically modified mosquitoes has any negative consequence

Ans. D

Sol. On the following information this statement is correct.

Using chemicals to kill mosquitoes may have undesired consequences but it is not clear if using genetically modified mosquitoes has any negative consequence

7. Consider the following inequalities.

(i) $2x - 1 > 7$

(ii) $2x - 9 < 1$

Which one of the following expressions below satisfies the above two inequalities?

A. $x \leq -4$

B. $-4 < x \leq 4$

C. $4 < x < 4$

D. $x \geq 5$

Ans. C

Sol. (i) $2x - 1 > 7$

$x > 4$ ...(i)

(ii) $2x - 9 < 1$

$x < 5$ ...(ii)

From (i) and (ii)

$4 < x < 5$

8. Four points P(0, 1), Q(0, – 3), R(– 2, – 1), and S(2, – 1) represent the vertices of a quadrilateral. What is the area enclosed by the quadrilateral?

A. 4

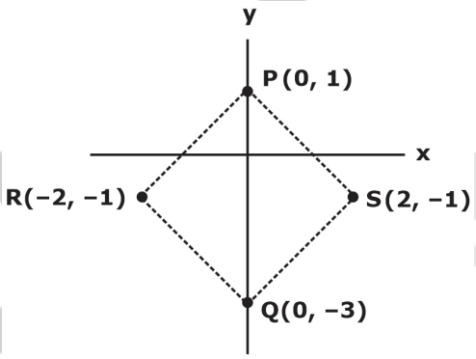
B. $4\sqrt{2}$

C. 8

D. $8\sqrt{2}$

Ans. C

Sol.



Length of PS = $\sqrt{(2-0)^2 + (-1-1)^2} = \sqrt{8}$

Length of SQ = $\sqrt{4+4} = \sqrt{8}$

Length of QR = $\sqrt{4+4} = \sqrt{8}$

Length of RP = $\sqrt{4+4} = \sqrt{8}$

Length of RS = $\sqrt{16+0} = 4$

Length of PQ = $\sqrt{0+16} = 4$

Here, Length of PQ= Length of RS

Hence, PQRS is square

Area under PQRS = $(\sqrt{8})^2$

Area under PQRS = 8

9. In a class of five students P, Q, R, S and T, only one student is known to have copied in the exam. The disciplinary committee has investigated the situation and recorded the statements from the students as given below.

Statement of P: R has copied in the exam.

Statement of Q: S has copied in the exam.

Statement of R: P did not copy in the exam.

Statement of S: Only one of us is telling the truth.

Statement of T: R is telling the truth.

The investigating team had authentic information that S never lies.

Based on the information given above, the person who has copied in the exam is

A. R B. P

C. Q D. T

Ans. B

Sol. **Statement of P:** R has copied in the exam.

Statement of Q: S has copied in the exam.

Statement of R: P did not copy in the exam.

Statement of S: only one of us is telling the truth.

Statement of T: R is telling the truth.

The investigating team had authentic intronization that S never lies.

On the following intronization.

If S never lies so only one of us is telling truth. statement of T is true so, statement of P, Q and R is telling false. So, only P copy in the exam.

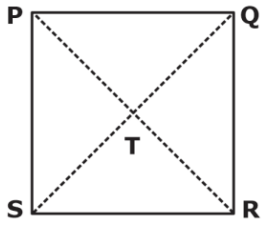
10. Consider the following square with the four corners and the center marked as P, Q, R, S and T respectively.

Let X, Y and Z represent the following operations:

X: rotation of the square by 180 degree with respect to the S-Q axis.

Y: rotation of the square by 180 degree with respect to the P-R axis.

Z: rotation of the square by 90 degree clockwise with respect to the axis perpendicular, going into the screen and passing through the point T.



Consider the following three distinct sequences of operation (which are applied in the left to right order).

(1) XYZZ

(2) XY

(3) ZZZZ

Which one of the following statements is correct as per the information provided above?

A. The sequence of operations (1) and (2) are equivalent

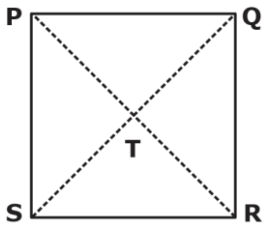
B. The sequence of operations (1) and (3) are equivalent

C. The sequence of operations (2) and (3) are equivalent

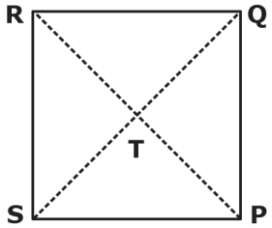
D. The sequence of operations (1), (2) and (3) are equivalent

Ans. B

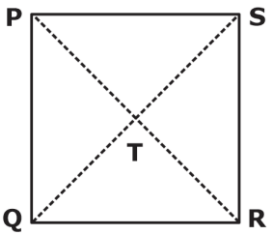
Sol.



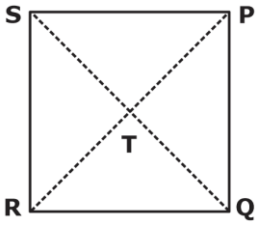
x ⇒ S – Q axis (180°)



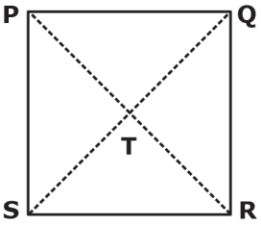
y ⇒ P – R axis (180°)



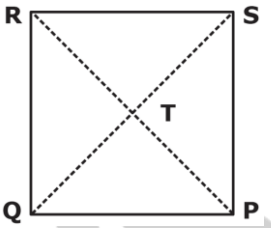
z ⇒ 90° clockwise at point T



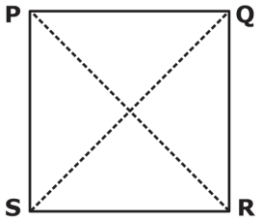
1. XYZZ



2. XY



3. ZZZZ



Hence on the following the sequence of operation (1) and (2) are equivalent.

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