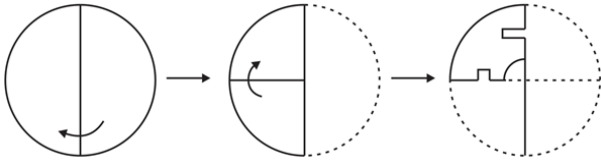# BYJU'S EXAM PREP

GATE 2021
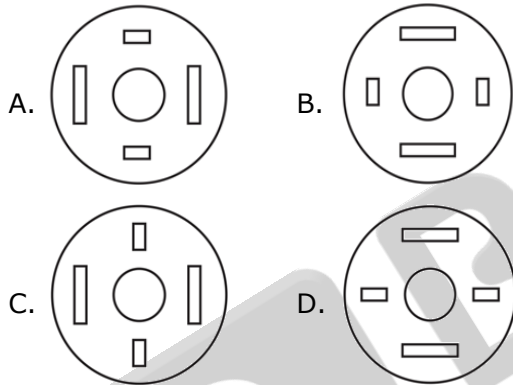
Computer Science & IT

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

SET-1

1.

A circular sheet of paper is folded along the lines in the directions shown. The paper, after being punched in the final folded state as shown and unfolded in the reverse order of folding, will look like _____.

A.   B.

C.   D.

Ans. B

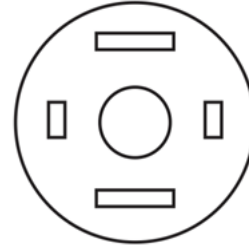**Sol.** If you observe the last image of this question, you can notice that :

Pillar in Y-axis is longer than pillar in X-axis.

The pillar on Y-axis is horizontal and the pillar on X-axis is vertical.

The image is given in option (B) satisfied these conditions.

Hence,

On unfolding the figure, it looks like as the image that is given below

2. There are five bags each containing identical sets of ten distinct chocolates. One chocolate is picked from each bag.

The probability that at least two chocolates are identical is _____.

A. 0.3024   B. 0.4235

C. 0.6976   D. 0.8125

Ans. C

Sol. Finding: At least 2 same

Required probability = Total – All different

Probability for all different:

from 1st bag = 10/10

from 2nd bag = 9/10

from 3rd bag = 8/10

from 4th bag = 7/10

from 5th bag = 6/10

Formula:

P(x) = 1 - P(k)

P (at least 2 same) = 1 – P (all different)

$$= 1 - \frac{10 \times 9 \times 8 \times 7 \times 6}{10 \times 10 \times 10 \times 10 \times 10} = 0.6976$$

3. Some people suggest anti-obesity measure (AOM) such as displaying calorie information in restaurant menus. Such measures sidestep addressing the core problems that cause obesity: poverty and income inequality.

Which one of the following statements summarizes the passage?

A. AOM are addressing the core problems and likely to succeed.

B. The proposed AOM addresses the core problems that cause obesity.

C. If obesity reduces, poverty will naturally reduce, since obesity causes poverty.

D. AOM are addressing the problem superficially

Ans. D

Sol. The problems mentioned are poverty and inequality. But AOMs are not directly addressing the core problems completely or deeply. Only calorie information can address obesity but not poverty or income inequality. This is a kind of site step which has been taken to remove obesity. So AOMs are only addressing the problem of obesity superficially but are not addressing the real problems.

Hence, the correct answer is "AOM are addressing the problem superficially"

4. A polygon is convex if, for every pair of points, P and Q belonging to the polygon, the line segment PQ lies completely inside or on the polygon.

Which one of the following is <u>NOT</u> a convex polygon?

A.

B.

C.

D.
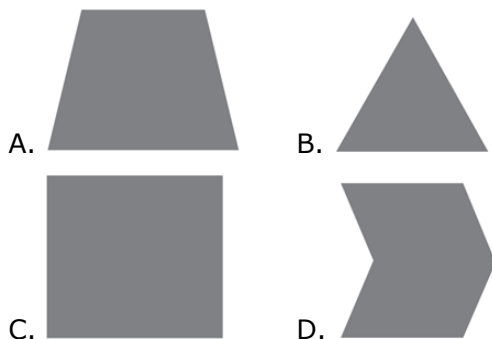
Ans. D

Sol. If any two points are inside the polygon, then the line joining these points will also be inside the same polygon.

So,

The polygon in the last image option is not convex because if you take any two corner points it will not be inside the polygon.

Hence,

Option D is a concave polygon and not a convex polygon.

5. We have 2 rectangular sheets of paper, M and N, of dimension 6 cm × 1 cm each. Sheet M is rolled to form an open cylinder by bringing the short edge of the sheet together. Sheet N is cut into equal square patches and assembled to form the largest possible closed cube. Assuming the ends of the cylinder are closed, the ratio of the volume of the cylinder to that of the cube is _____.
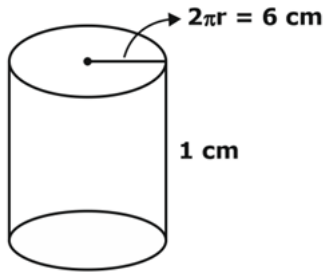
A. $\dfrac{\pi}{2}$

B. $\dfrac{9}{\pi}$

C. 3π

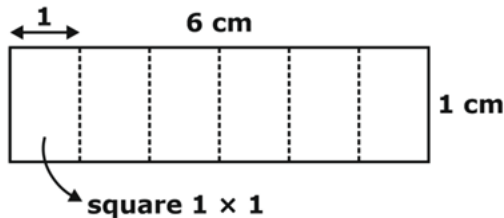D. $\dfrac{3}{\pi}$

Ans. B

Sol.

6 cm

1 cm
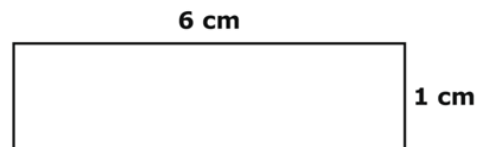
M → Cylinder narrow (1 cm) edges are combined

$$V = \pi r^2 h = \pi \left(\frac{6}{2\pi}\right)^2 \times 1 = \frac{9}{\pi}$$

N → Cube

Volume of cube = 1 × 1 × 1 = 1

$$\frac{V_{cyl}}{V_{cube}} = \frac{9}{\pi} = 2.86$$

6.

Items	Cost (₹)	Profit %	Marked Price (₹)
P	5,400	----	5,860
Q	----	25	10,000

Details of prices of two items P and Q are presented in the above table. The ratio of cost of item P to cost of item Q is 3 : 4 . Discount is calculated as the difference between the marked price and the selling price. The profit percentage is calculated as the ratio of the difference between selling price and cost, to the cost

$$\left(\text{Profit\%} = \frac{\text{Selling} - \text{Cost}}{\text{Cost}} \times 100\right)$$

The discount on item Q, as a percentage of its marked price, is _____.

A. 25   B. 5

C. 12.5   D. 10

Ans. D

Sol. $\dfrac{\text{Cost price of P}}{\text{Cost price of Q}} = \dfrac{3}{4}$

⇒ Cost price of Q = $5400 \times \dfrac{4}{3}$ = ₹ 7200

Profit% = $\dfrac{\text{Selling price of Q} - \text{Cost price of Q}}{\text{Cost price of Q}}$

= 0.25

⇒ Selling price of Q = Cost price of Q * (1 + 0.25)

⇒ Selling price of Q = 1.25 × 7200 = ₹ 9000

Discount of marked price = 10000 – 9000 = ₹ 1000

Discount (%) = $\dfrac{1000}{10000} \times 100 = 10\%$

Hence, the correct answer is 10 %

7. The ratio of boys to girls in a class is 7 to 3 . Among the options below, an acceptable value for the total number of students in class is

A. 50   B. 73

C. 21   D. 37

Ans. A

Sol. Given: Boys : Girls = 7 : 3

Let the total number of boys and girls in a class is 7K and 3K.

B = 7K

G = 3K

Total 10K

So, possible answer is multiple of 10.

Hence, the correct answer is

⇒ 50

8. Consider the following sentences:

(i) Everybody in the class is prepared for the exam.

(ii) Babu invited Danish to his home because he enjoys playing chess.

Which of the following is the Correct observation about the above two sentences?

A. (i) is grammatically correct and (ii) is ambiguous

B. (i) is grammatically correct and (ii) is unambiguous

C. (i) is grammatically incorrect and (ii) is unambiguous

D. (i) grammatically incorrect and (ii) is ambiguous

Ans. A

Sol. 1st one is grammatically correct and 2nd one is ambiguous.

In 1st statement:

"Everybody" is a singular and takes a singular verb, so the first statement is correct.

In 2nd Statement:

The purpose of the invitation is unclear. There are many possible meanings or derivations of this statement.

For example: Does Danish also enjoy playing chess!

so the second statement is vague and that sounds ambiguous.

9. Given below are two statements 1 and 2, and two conclusions I and II.

Statement 1 : All bacteria are microorganisms.

Statement 2 : All pathogens are microorganisms.

Conclusion I : Some pathogens are bacteria.

Conclusion II : All pathogens are not bacteria.

Based on the above statements and conclusions, which one of the following options is logically Correct?

A. Only conclusion II is correct

B. Neither conclusion I nor II is correct.

C. Only conclusion I is correct

D. Either conclusion I or II is correct.

Ans. B

Sol.
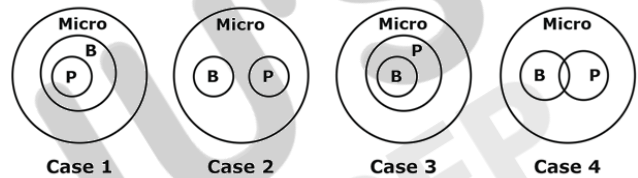
None of the two conclusions will satisfy all the 4 cases.

1st statement means some pathogen is there which is not a bacteria.

2nd statement is also not logically correct as we can draw a Venn diagram satisfying the given statements and having all pathogens as bacteria.

10. _____ is to *surgery* is as *writer* is to _____

Which one of the following options maintains a similar logical relation in the above sentence?

A. Plan, outline   B. Hospital, library

C. Doctor, book   D. Medicine, grammar

Ans. C

Sol. The best fitted answer here is to be "Doctor, Book"

Doctor is to surgery as writer is to Book.

SET-2

---

1. Gauri said that she can play the keyboard _____ her sister.
A. as worse as   B. as better as
C. as nicest as   D. as well as

Ans. D

Sol. In this question, "As well as" best suits the statement.
On the other hand, option A & B i.e, better & worse are comparative so they should be followed by 'than' and option C i.e, nicest is superlative degree which express the highest form of an adjective. Therefore, option D is the correct option.

2. Six students P, Q, R, S, T and U, with distinct heights, compare their heights and make the following observations.
Observation I: S is taller than R.
Observation II: Q is the shortest of all.
Observation III: U is taller than only one student.
Observation IV: T is taller than S but is not the tallest.
The number of students that are taller than R is the same as the number of students shorter than _____ .
A. T   B. P
C. S   D. R

Ans. C

Sol. We will arrange the students in descending order here, where the tallest will come at first and the shortest at last
Observation 1: S > R

Observation 2: Q will be at the last means the shortest among them.
Observation 3: U > Q
Observation 4: T > S but not the tallest and hence cannot be at the first.
It means P is the tallest among them.
So the as per the given observation the only possible arrangement is P > T > S > R > U > Q The number of students that are taller than R (3 as P, T, S) is the same as the number of students shorter than S (3 as R, U, Q).
Hence the correct answer is S.

3. Pen : Write :: Knife : _____
Which one of the following options maintains a similar logical relation in the above?
A. Cut   B. Vegetables
C. Sharp   D. Blunt
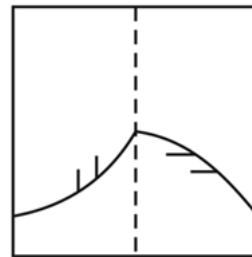
Ans. A

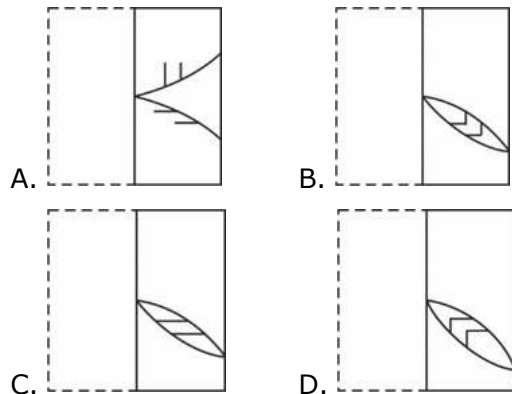**Sol.** From the above analogy:
The pen is used for writing
Similarly,
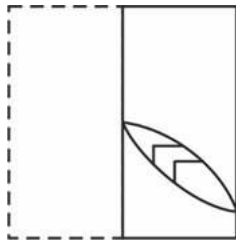The knife is used to cut the things.
Hence, the correct answer is "Cut"

4.

A transparent square sheet shown above is folded along the dotted line. The folded sheet will look like _____ .

A.

B.

C.

D.

Ans. D

Sol.

Here, we just need to fold the paper towards the dotted line on the right.

We observe two vertical lines on the left side will remain as it is after folding.

According to the question, it's a transparent square sheet.

Hence, after joining the figures we get the given solution.

5. Listening to music during exercise improves exercise performance and reduces discomfort. Scientists researched whether listening to music while studying can help students learn better and the results were inconclusive. Students who needed external stimulation for studying fared worse while students who did not need any external stimulation benefited from music.

Which one of the following statements is the CORRECT inference of the above passage?

A. Listening to music has a clear positive effect on physical exercise. Music has a positive effect on learning only in some students.

B. Listening to music has no effect on learning and a positive effect on physical exercise.

C. Listening to music has a clear positive effect both on physical exercise and on learning.

D. Listening to music has a clear positive effect on learning in all students. Music has a positive effect only in some students who exercise.

Ans. A

Sol. It is stated that " the results were inconclusive". (about listening to music while studying).

It means scientists are unsure if it does help in studying or not. So the music can help some students, and for some, it didn't.

Here we can't say that listening to music has a clear positive effect on learning. Hence options B, C and D can't be true.

So, the best inference is Option A.

6. If $\left(x - \dfrac{1}{2}\right)^2 - \left(x - \dfrac{3}{2}\right)^2 = x + 2$, then the value of x is :

A. 6   B. 4

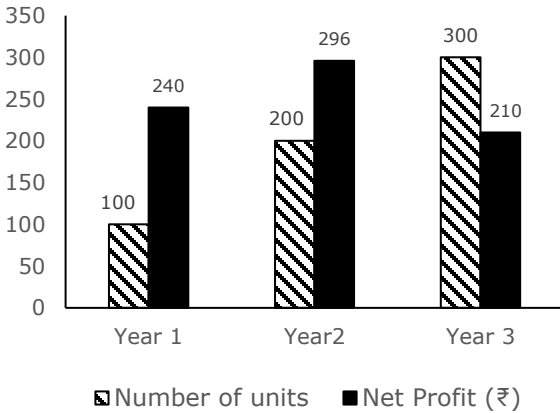C. 2   D. 8

Ans. B

Sol. $\left(x^2 + \dfrac{1}{4} - x\right) - \left(x^2 + \dfrac{9}{4} 3x\right) = x + 2$

$$\Rightarrow x^2 + \frac{1}{4} - x - x^2 - \frac{9}{4} + 3x = x + 2$$

$$\Rightarrow \frac{-8}{4} + 2x = x + 2$$

$$\Rightarrow x = 4$$

7.

Number of units ▨ Net Profit (₹) ■

The number of units of a product sold in three different years and the respective net profits are presented in the figure above. The cost/unit in Year 3 was ₹ 1, which was half the cost/unit in Year 2. The cost/unit in Year 3 was one-third of the cost/unit in Year 1. Taxes were paid on the selling price at 10%, 13% and 15% respectively for the three years. Net profit is calculated as the difference between the selling price and the sum of cost and taxes paid in that year.

The ratio of the selling price in Year 2 to the selling price in Year 3 is _____ .

A. 4 : 3   B. 1 : 1

C. 1 : 2   D. 3 : 4

Ans. A

Sol. Cost per unit of Year 3 = ₹ 1

Cost per unit of Year 2 = ₹ 2

Cost per unit of Year 1 = ₹ 3

Cost Price of 100 units in Year 1 is ₹ 300

Cost Price of 200 units in Year 2 is ₹ 400

Cost Price of 300 units in Year 3 is ₹ 300

Net Profit = Selling price – [Cost Price + (Tax%*Selling Price)]

Now we can calculate the selling price for Year 2 and Year 3.

Year 2:

296 = SP – [400 + 0.13 SP]

⇒ 296 = 0.87 SP – 400

⇒ 0.87 SP = 696

⇒ SP = ₹ 800

Year 3:

210 = SP – [300 + 0.15 SP]

⇒ 210 = 0.85 SP – 300

⇒ 0.85 SP = 510

⇒ SP = ₹ 600

Hence the ratio of SP of Year 2 and Year 3 = 800 : 600 = 8 : 6 = 4 : 3

8. The number of students in three classes is in the ratio 3:13:6 . If 18 students are added to each class, the ratio changes to 15:35:21. The total number of students in all the three classes in the beginning was:

A. 88

B. 110

C. 22

D. 66

Ans. A

Sol. 3 : 13 : 6

Let   3k + 13k+ 6k=n

Now   +18 + 18   + 18

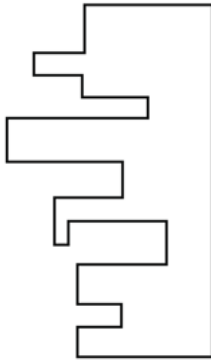   15 : 35 : 20

15y + 35y + 21 y = 22 k + 54

71y = 22k + 54
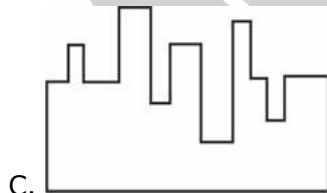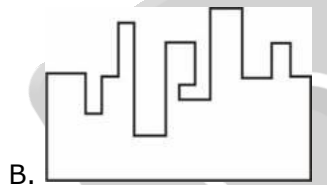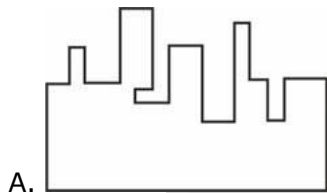
Put value of k and satisfy

Here for k = 4

On putting k = 4 in equation (1)

n = 88

9.

A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options for the missing piece when assembled will form a rectangle? The piece can be moved, rotated or flipped to assemble with the above piece.
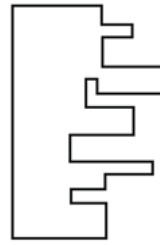

A.

B.

C.

D. None of the above

Ans. A

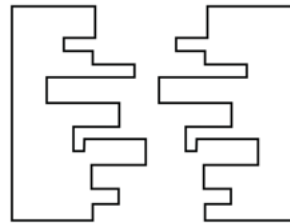**Sol.** In this question, Option "A" will be the correct answer.

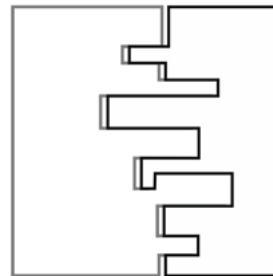**Demonstrating with the option A:**

First we will rotates this figure to right at the angle of 90°

then, we need to flip the figure vertically.

After joining both it will look like this.

10. If θ is the angle, in degrees, between the longest diagonal of the cube and any one of the edges of the cube, then, cos θ =
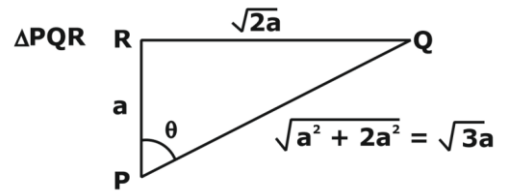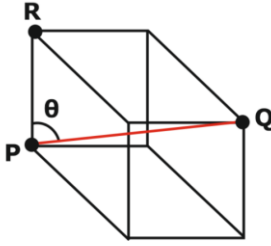
A. $\dfrac{1}{\sqrt{3}}$ B. $\dfrac{1}{2}$

C. $\dfrac{1}{\sqrt{2}}$ D. $\dfrac{\sqrt{3}}{2}$

Ans. A

Sol.

ΔPQR

$$\cos\theta = \frac{a}{\sqrt{3}a} = \frac{1}{\sqrt{3}}$$

****