

# National Aptitude Test in Architecture (NATA) 2018

Council of Architecture



Section : Mathematics

**Q.1** An angle which is greater than  $180^\circ$  but less than  $360^\circ$  is known as

- Ans
- 1. an alternate angle
  - 2. a right angle
  - 3. a reflex angle
  - 4. an adjacent angle

Question ID : 833493134

Chosen Option : 3

Marks : 2.00

**Q.2** If  $\tan(A - B) = \frac{1}{\sqrt{3}}$  and  $\tan(A + B) = \sqrt{3}$ , then the values of A and B are respectively

- Ans
- 1.  $30^\circ, 30^\circ$
  - 2.  $45^\circ, 15^\circ$
  - 3.  $40^\circ, 20^\circ$
  - 4.  $30^\circ, 60^\circ$

Question ID : 833493129

Chosen Option : 2

Marks : 2.00

**Q.3** If  $\tan A = 1$  and  $\tan B = \sqrt{3}$ , then  $\cos(A + B)$  is equal to

- Ans
- 1.  $\frac{1 + \sqrt{3}}{2\sqrt{2}}$
  - 2. 1
  - 3.  $\frac{1 - \sqrt{3}}{2\sqrt{2}}$

Question ID : 833493133

Chosen Option : 3

Marks : 2.00

4.  $\frac{\sqrt{3}}{2\sqrt{2}}$

**Q.4** The number of common tangents that can be drawn to two given circles is at the most

- Ans  1. four  
 2. three  
 3. one  
 4. two

Question ID : 833493137

Chosen Option : 4

Marks : 2.00

**Q.5** AB is a straight line and O is a point on the line AB. If one draws a line OC not coinciding with OA or OB, then the  $\angle AOC$  and  $\angle BOC$  are

- Ans  1. together equal to  $130^\circ$   
 2. complementary  
 3. equal  
 4. supplementary

Question ID : 833493135

Chosen Option : 4

Marks : 2.00

**Q.6** If a, b, c are in A.P., as well as in G.P., then

- Ans  1.  $a = b = c$   
 2.  $a \neq b = c$   
 3.  $a \neq b \neq c$   
 4.  $a = b \neq c$

Question ID : 833493125

Chosen Option : 4

Marks : 0.00

**Q.7** If  $A = \begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix}$  and  $B = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$  are matrices, then  $AB + BA$  is

- Ans  1. a diagonal matrix  
 2. a null matrix  
 3. a unit matrix  
 4. an invertible matrix

Question ID : 833493130

Chosen Option : 2

Marks : 2.00

**Q.8** The distance between two parallel lines  $5x - 12y + 2 = 0$  and  $5x - 12y - 3 = 0$  is given by

- Ans  1.  $1/13$   
 2.  $5/13$   
 3.  $1/17$   
 4.  $5/14$

Question ID : 833493142

Chosen Option : 4

Marks : 0.00

Q.9

If  $A = \begin{pmatrix} 1 & 0 & 2 \\ 5 & 1 & x \\ 1 & 1 & 1 \end{pmatrix}$  is a singular matrix, then the value of  $x$  is

Question ID : 833493131

Chosen Option : 1

Marks : 2.00

Ans

✓ 1. 9

✗ 2. 11

✗ 3. -9

✗ 4. -11

Q.10 The tangents of two points A and B on the circle with centre O intersect at a point P. If, in quadrilateral PAOB,  $\angle AOB : \angle APB = 5 : 1$ , then the measure of  $\angle APB$  is given by

Question ID : 833493139

Chosen Option : 3

Marks : 0.00

Ans

✗ 1.  $45^\circ$ ✗ 2.  $15^\circ$ ✗ 3.  $60^\circ$ ✓ 4.  $30^\circ$ 

Q.11 Three vertices of  $\triangle ABC$  are  $A(1, 4)$ ,  $B(-2, 2)$  and  $C(3, 2)$ . Then the area of  $\triangle ABC$  is

Question ID : 833493138

Chosen Option : 3

Marks : 2.00

Ans

✗ 1. 15 sq. units

✗ 2. 6 sq. units

✓ 3. 5 sq. units

✗ 4. 7 sq. units

Q.12 A straight highway leads to the foot of a 50m tall tower. From the top of the tower the angle of depression of the two cars on the highway are  $30^\circ$  and  $60^\circ$ . Then the distance between the two cars is

Question ID : 833493132

Chosen Option : 3

Marks : 2.00

Ans

✗ 1.  $100/\sqrt{3}$  m✗ 2.  $10\sqrt{3}$  m✓ 3.  $100\sqrt{3}$  m✗ 4.  $\sqrt{3}/10$  m

Q.13 If  $\log_{\sqrt{5}}(x) + \log_{\sqrt[3]{5}}(x) + \log_{\sqrt[4]{5}}(x) + \dots$  up to 7 terms = 35, then the value of  $x$  is

Question ID : 833493128

Chosen Option : 3

Marks : 2.00

Ans

✗ 1. 25

✗ 2. 75

✓ 3. 5

4. 125

Q.14 The sum of the 24 terms of the series  $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$  is

Ans  1.  $200\sqrt{2}$

2.  $500\sqrt{2}$

3.  $300\sqrt{2}$

4.  $100\sqrt{2}$

Question ID : 833493126

Chosen Option : 3

Marks : 2.00

Q.15 The equation of the normal to the circle  $x^2 + y^2 = 2x$  which is parallel to the straight line  $x + 2y = 3$  is given by

Ans  1.  $x + 2y - 1 = 0$

2.  $x - 2y + 1 = 0$

3.  $x + 2y + 1 = 0$

4.  $2x - y + 1 = 0$

Question ID : 833493143

Chosen Option : 3

Marks : 0.00

Q.16 Two girls and four boys are to be seated in a row in such a way that the girls do not sit together. In how many different ways can it be done?

Ans  1. 360

2. 240

3. 480

4. 720

Question ID : 833493144

Chosen Option : 3

Marks : 2.00

Q.17 The logarithm of  $\frac{1}{256}$  to the base  $2\sqrt{2}$  is

Ans  1.  $-\frac{8}{3}$

2.  $\frac{8}{3}$

3.  $-\frac{16}{3}$

4.  $-\frac{14}{3}$

Question ID : 833493127

Chosen Option : 1

Marks : 0.00

**Q.18** The equation of the plane passing through the point (1, -1, 2) and parallel to the plane  $3x + 4y - 5z = 0$  is

- Ans
- 1.  $3x + 4y - 5z - 1 = 0$
  - 2.  $3x + 4y - 5z + 11 = 0$
  - 3.  $3x + 4y - 5z + 1 = 0$
  - 4.  $3x + 4y - 5z - 11 = 0$

Question ID : 833493140

Chosen Option : 2

Marks : 2.00

**Q.19** In a circle of radius 17cm, two parallel chords are drawn on opposite side of a diameter. The distance between the chords is 23cm. If the length of one chord is 16cm, then the length of the other chord is

- Ans
- 1. 15cm
  - 2. 23cm
  - 3. 30cm
  - 4. 34cm

Question ID : 833493136

Chosen Option : 1

Marks : 0.00

**Q.20**  $\lim_{x \rightarrow \infty} \left( \sqrt{x + \sqrt{x + \sqrt{x}}} - \sqrt{x} \right)$  is equal to

- Ans
- 1. 2
  - 2. 0
  - 3.  $\log_e(2)$
  - 4. 0.5

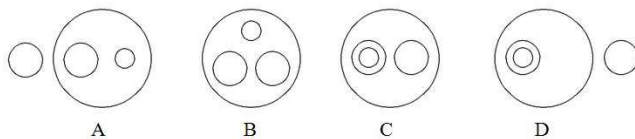
Question ID : 833493141

Chosen Option : 3

Marks : 0.00

Section : General Aptitude

**Q.1** Which of the following diagrams indicates the best relation between Paris, France, Italy and World?



- Ans
- 1. D
  - 2. A
  - 3. B
  - 4. C

Question ID : 833493182

Chosen Option : 3

Marks : 0.00

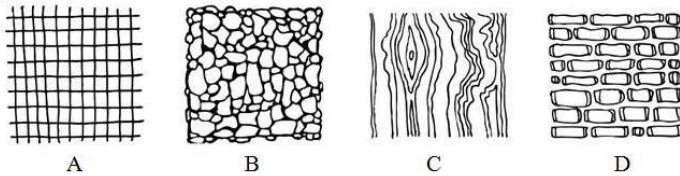
Q.2

Question ID : 833493180

Chosen Option : 2

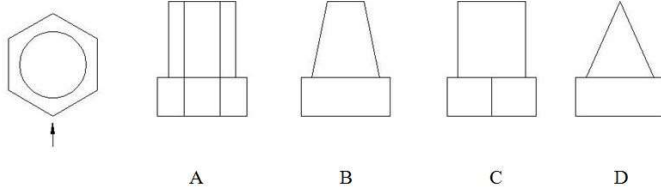
Marks : 2.00

Which of the following best represents wood?



- Ans
- 1. D
  - 2. C
  - 3. A
  - 4. B

Q.3 Answer the correct FRONT view for the given top view:



- Ans
- 1. B
  - 2. A
  - 3. C
  - 4. D

Question ID : 833493151

Chosen Option : 3

Marks : 2.00

Q.4 The substitute for River sand in building construction is

- Ans
- 1. Manufactured sand
  - 2. Pit sand
  - 3. Sea sand
  - 4. Brick sand

Question ID : 833493169

Chosen Option : 1

Marks : 2.00

Q.5 The internal angle formed by the edges of a cube in isometric projection is?

- Ans
- 1. 45 degree
  - 2. 60 degree
  - 3. 90 degree
  - 4. 120 degree

Question ID : 833493175

Chosen Option : 2

Marks : 0.00

Q.6 Geodesic domes are strong and rigid due to its \_\_\_\_\_ structural elements.

- Ans
- 1. Triangular
  - 2. Trapezoidal
  - 3. Square
  - 4. Pentagonal

Question ID : 833493176

Chosen Option : 4

Marks : 0.00

Q.7 Haveli's are traditional buildings found in

- Ans
- 1. Karnataka
  - 2. Tamil Nadu
  - 3. Andhra Pradesh
  - 4. Rajasthan

Question ID : 833493166

Chosen Option : 4

Marks : 2.00

Q.8 Paris Summit discusses which of the following issues?

- Ans
- 1. Migration
  - 2. Natural conservation
  - 3. Built Heritage
  - 4. Climate change

Question ID : 833493174

Chosen Option : 3

Marks : 0.00

Q.9 Which of the following composition best fits Hierarchy?



A

B

C

D

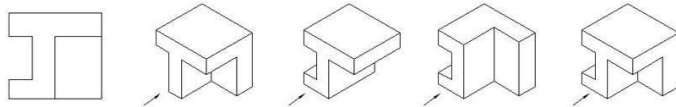
- Ans
- 1. A
  - 2. B
  - 3. C
  - 4. D

Question ID : 833493146

Chosen Option : 3

Marks : 0.00

Q.10 Answer the correct 3D view for the given elevation:



A

B

C

D

- Ans
- 1. C
  - 2. D
  - 3. A
  - 4. B

Question ID : 833493155

Chosen Option : 2

Marks : 2.00

Q.11

Question ID : 833493161

Chosen Option : 2

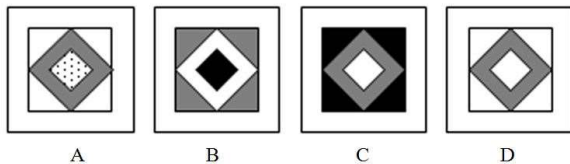
Marks : 2.00

Which letter replaces the question mark?



- Ans
- 1. K
  - 2. M
  - 3. Y
  - 4. N

Q.12 Choose logical sequence which replaces the question mark.



- Ans
- 1. A
  - 2. C
  - 3. D
  - 4. B

Question ID : 833493162

Chosen Option : 3

Marks : 2.00

Q.13 Ganesh is older than her cousin Malavika. Malavika's brother Bharat is older than Ganesh. When Malavika and Bharat are visiting with Ganesh, all three like to play a game of Monopoly. Malavika wins more often than Ganesh does.

- Ans
- 1. When he plays Monopoly with Malavika and Ganesh, Bharat often loses.
  - 2. Of the three, Ganesh is the oldest.
  - 3. Ganesh hates to lose at Monopoly.
  - 4. Of the three, Malavika is the youngest.

Question ID : 833493158

Chosen Option : 4

Marks : 2.00

Q.14 2018 Pritzker prize was awarded to which architect?

- Ans
- 1. Philip Johnson

Question ID : 833493163

Chosen Option : 4

Marks : 2.00



2. I.M.Pei

3. Tadao Ando

4. B.V. Doshi

**Q.15** A rectangular park 60m long and 40 m wide has two pathways of equal width running in the longitudinal and transverse direction and crossing each other at right angles in the middle of the park. The rest of the park is used as lawn. If the area of the lawn is 2109 sq.m, then what is the width of the pathway?

Ans  1. 2.5m

2. 3m

3. 4.5m

4. 6m

Question ID : 833493181

Chosen Option : 3

Marks : 0.00

**Q.16** Let Z denote the set of all integers. If a relation R is defined on Z as follows:  $(x, y) \in R$  if and only if x is multiple of y, then R is

Ans  1.

neither reflexive nor transitive but symmetric

2. symmetric, transitive but not reflexive

3. reflexive, symmetric but not transitive

4. reflexive, transitive but not symmetric

Question ID : 833493184

Chosen Option : 2

Marks : 0.00

**Q.17** Which of these is not a structural part of a building?

Ans  1. Doors and windows

2. Roof Framing structure

3. Column & Beam

4. Foundation

Question ID : 833493171

Chosen Option : 4

Marks : 0.00

**Q.18** Which of the following compound propositions are tautologies?

(i)  $(P \wedge \neg P) \rightarrow \neg P$

(ii)  $(\neg Q \rightarrow P) \wedge Q$

(iii)  $(Q \rightarrow P) \wedge (\neg P \wedge Q)$

(iv)  $P \rightarrow (P \vee Q)$

Ans  1.

(ii) and (iii) but not (i) and (iv)

2.

(i) and (ii) but not (iii) and (iv)

3.

(i) and (iv) but not (ii) and (i)

Question ID : 833493183

Chosen Option : 4

Marks : 0.00

~~X~~ 4.

(ii) and (iv) but not (i) and (iii)

Q.19 Which plantation helps in preventing erosion and protecting the coastal shoreline ?

Ans ~~X~~ 1. Mango

~~X~~ 2. Coconut

✓ 3. Mangrove

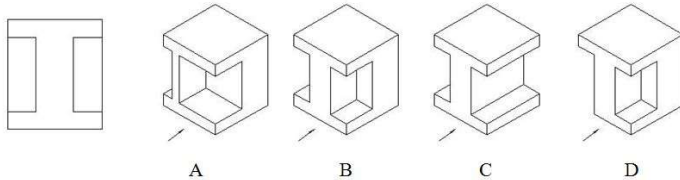
~~X~~ 4. Palm

Question ID : 833493167

Chosen Option : 2

Marks : 0.00

Q.20 Answer the correct 3D view for the given elevation:



Ans ~~X~~ 1. D

✓ 2. B

~~X~~ 3. C

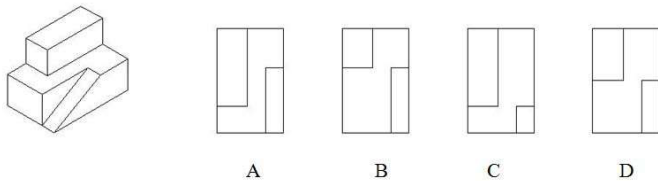
~~X~~ 4. A

Question ID : 833493156

Chosen Option : 2

Marks : 2.00

Q.21 Answer the correct TOP view for the given 3D object:



Ans ~~X~~ 1. C

~~X~~ 2. B

✓ 3. A

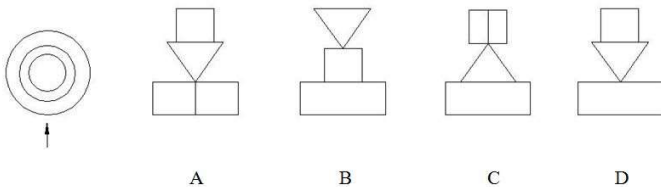
~~X~~ 4. D

Question ID : 833493153

Chosen Option : 3

Marks : 2.00

Q.22 Answer the correct FRONT view for the given top view:



Ans ~~X~~ 1. B

~~X~~ 2. C

~~X~~ 3. A

Question ID : 833493152

Chosen Option : 4

Marks : 2.00

✓ 4. **D**

Q.23 Franco Indian architecture is found in which Indian city?

- Ans
- ✗ 1. Ahmednagar
  - ✗ 2. New Delhi
  - ✗ 3. Kolkata
  - ✓ 4. Pondicherry

Question ID : 833493173

Chosen Option : 4

Marks : 2.00

Q.24 Which of the following countries is below sea level

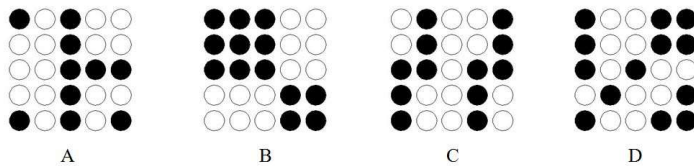
- Ans
- ✗ 1. Maldives
  - ✓ 2. Netherlands
  - ✗ 3. Costa Rica
  - ✗ 4. Spain

Question ID : 833493172

Chosen Option : 1

Marks : 0.00

Q.25



A

B

C

D

Ans

- 1. **D**
- 2. **C**
- 3. **A**
- 4. **B**

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Question ID : 833493145

Chosen Option : 3

Marks : 2.00

Q.26 Jodhpur is referred as

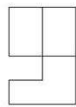
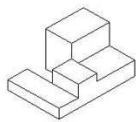
- Ans
- ✓ 1. Blue city
  - ✗ 2. Golden city
  - ✗ 3. White city
  - ✗ 4. Pink city

Question ID : 833493170

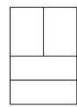
Chosen Option : 1

Marks : 2.00

Q.27 Answer the correct TOP view for the given 3D object:



A



B



C



D

Ans

- ✓ 1. **C**
- ✗ 2. **B**

Question ID : 833493154

Chosen Option : 1

Marks : 2.00

3. A

4. D

Q.28 The Indian state which is called as “Bamboo Queen” is

Ans  1. West Bengal

2. Kerala

3. Assam

4. Mizoram

Question ID : 833493168

Chosen Option : 3

Marks : 0.00

Q.29 Adobe is associated with \_\_\_\_\_ construction.

Ans  1. Metal

2. Masonry

3. Earthen

4. Wooden

Question ID : 833493177

Chosen Option : 2

Marks : 0.00

Q.30 Which number replaces the question mark?

Ans  1. 29

2. 32

3. 27

4. 31

Question ID : 833493159

Chosen Option : 3

Marks : 0.00

Q.31 Which Indian city ranks in UNESCO World Heritage list 2017?

Ans  1. Kanchipuram

2. Chandigarh

3. Ahmedabad

4. Kolkata

Question ID : 833493165

Chosen Option : 3

Marks : 2.00

Q.32 On weekends, Mr. Sanjay spends many hours working in his vegetable and flower gardens. Mrs. Sanjay spends her free time reading and listening to classical music. Both Mr. Sanjay and Mrs. Sanjay like to cook.

Ans  1.

Mrs. Sanjay enjoys reading nineteenth century novels.

2.

Mr. Sanjay does not like classical music.

3.

Mr. Sanjay enjoys planting and growing vegetables.

4.

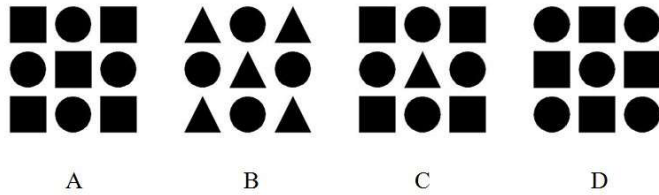
Question ID : 833493157

Chosen Option : 3

Marks : 2.00

Mrs. Sanjay cooks the vegetables that Mr. Sanjay grows.

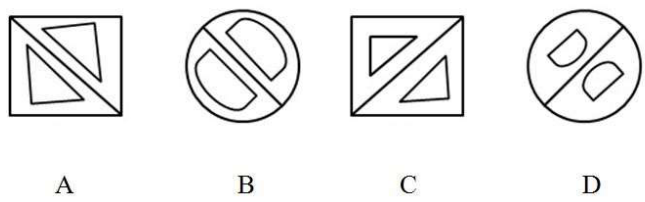
Q.33 Which composition best fits variety?



Question ID : 833493147  
Chosen Option : 2  
Marks : 2.00

- Ans
- 1. B
  - 2. C
  - 3. A
  - 4. D

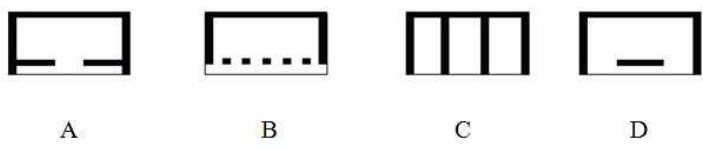
Q.34 Find the odd figure in the problem



Question ID : 833493149  
Chosen Option : 2  
Marks : 2.00

- Ans
- 1. B
  - 2. D
  - 3. A
  - 4. C

Q.35 Which of the following best illustrates a colonnade?



Question ID : 833493179  
Chosen Option : 1  
Marks : 2.00

- Ans
- 1. B
  - 2. A
  - 3. D
  - 4. C

Q.36

Question ID : 833493148  
Chosen Option : 2  
Marks : 0.00

Find the odd figure in the problem



A



B



C



D

Ans

✓ 1. B

✗ 2. D

✗ 3. A

✗ 4. C

Q.37 When was the Earth Day 2018 celebrated?

Ans

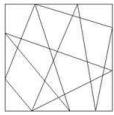
✓ 1. 22<sup>nd</sup> April, 2018✗ 2. 25<sup>nd</sup> March, 2018✗ 3. 23<sup>rd</sup> February, 2018✗ 4. 12<sup>th</sup> January, 2018

Question ID : 833493164

Chosen Option : 1

Marks : 2.00

Q.38 One of the following answer figure is hidden in the given problem figure, in the same size and direction. Select which one is correct?



A



B



C



D

Ans

✗ 1. D

✗ 2. B

✗ 3. C

✓ 4. A

Question ID : 833493150

Chosen Option : 4

Marks : 2.00

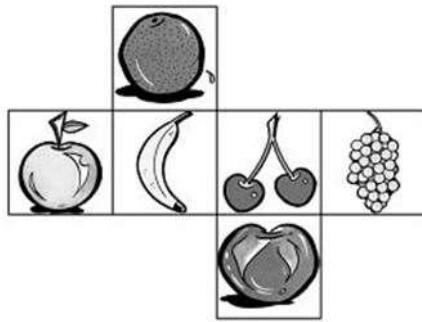
Q.39

Question ID : 833493160

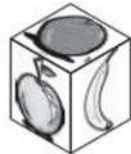
Chosen Option : 4

Marks : 0.00

Which picture cube does the unfolded shape make?



A



B



C



D

- Ans
- 1. D
  - 2. B
  - 3. C
  - 4. A

Q.40 The predominant material used in the construction of Eiffel tower is?

- Ans
- 1. Aluminium
  - 2. Cast Iron
  - 3. Stainless steel
  - 4. Wrought Iron

Question ID : 833493178

Chosen Option : 4

Marks : 2.00

Section : Drawing Test

- Q.1 You are sitting at a table in front of a tea stall in the early morning sipping a hot cup of tea while your companion is reading a newspaper. The tea stall is located in a park and you are observing a man walking his dog and the beautiful garden landscape around you. Sketch the scenario described above and render light and shade using drawing pencils.

Question ID : 833493185

Marks : 0.00

- Q.2 Using all the three shapes given below, create a visually pleasing composition. The shapes are to be used in the same size as illustrated below and they can be repeated, rotated, overlapped, interlocked and mirrored to create the composition. Use not more than 20 nos. of the shapes (all put together) and colour the composition using not more than 3 colours from analogous colour scheme.



Question ID : 833493186

Marks : 0.00