

Entrance Test: 10th (Neutron)

MM : 180

Time: 1.5 Hours

PLEASE FILL IT IN CAPITAL LETTERS

Enrollment No.

Students Name :

Father's Name :

School :

Previous institute (if any) :

CGPA/% in 9th :

Achievements : (NTSE/OLYMPIAD etc if any)

I hereby admit that all the information given here is true and in case of any discrepancy I shall be liable for any action.

(Invigilator)

(Student's Signature)

PART – I : MATHS

SECTION – I (Single Correct Choice Type)

This Section contains **30 Single choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Marking Scheme:

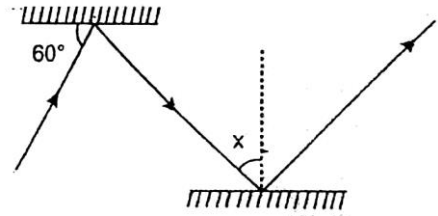
You will be awarded **3 marks** for correct answer, **0** for wrong answer and zero if Question is left un-attempted.

1. The roots of $(x^2 - 3x + 2)(x)(x - 4) = 0$ are
 (A) 4 (B) 0 and 4 (C) 1 and 2 (D) 0, 1, 2 and 4

Answer :

2. The value of x in the following figure is

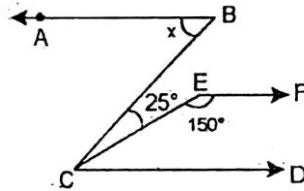
- (A) 30°
 (B) 45°
 (C) 60°
 (D) None of these



Answer :

3. In the adjacent figure the value of x if $AB \parallel CD$ and $EF \parallel CD$, is

- (A) 45° (B) 55° (C) 60° (D) 70°



Answer :

4. If α, β are the roots of the equation $x^2 - 8x + p = 0$ and $a^2 + b^2 = 40$, then p is equal to
 (A) 8 (B) 10 (C) 12 (D) 14

Answer :

Rough Work

5. A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish it in 4 days, then time taken by B to finish the work is
 (A) 2 days (B) 12 days (C) Both (A) and (B) (D) None of these

Answer :

6. If one root of $5x^2 + 13x + k = 0$ is reciprocal of other then
 (A) $k = 0$ (B) $k = 5$ (C) $k = \frac{1}{6}$ (D) $k = 6$

Answer :

7. Three cubes of sides 3 cm, 4 cm and 5 cm respectively are melted and formed into a larger cube. What is the side of the cube formed?
 (A) 7 cm (B) 6 cm (C) 5 cm (D) 4 cm

Answer :

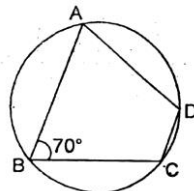
8. A bucket has top and bottom diameters of 40 cm and 20 cm respectively. Find the volume of the bucket if its depth is 12 cm
 (A) 8500 cm^3 (B) 8100 cm^3 (C) 8800 cm^3 (D) 9000 cm^3

Answer :

9. A classroom is 5 m long, 2.5 m broad and 3.6 m high. If each student is given 0.5 m^2 of the floor area, then how many cubic meters of air would each student get?
 (A) 1.4 (B) 1.8 (C) 1.2 (D) 1.6

Answer :

10. $AB \parallel CD$, Find $\angle C + \angle D$

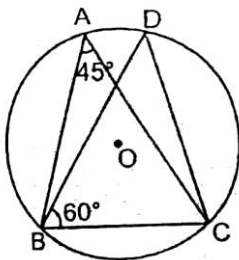


- (A) 200° (B) 220° (C) 250° (D) 270°

Answer :

Rough Work

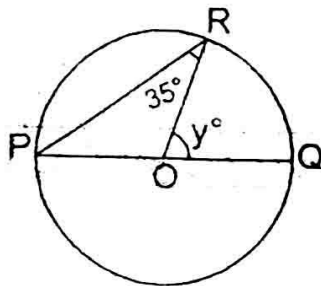
11. In the following figure, O is the centre of the circle. Find the value of $\angle BCD$



- (A) 30° (B) 45° (C) 60° (D) 75°

Answer :

12. PQ is the diameter of given circle and $\angle PRO = 35^\circ$. Then $\angle ROQ$ equals (O being the centre)



- (A) 110° (B) 35°
 (C) 105° (D) 70°

Answer :

13. In a book, the frequency of unit digits of a number on the pages is given below

Units digit	0	1	2	3	4	5	6	7	8	9
Frequency	50	40	10	25	15	80	90	110	120	60

Find the probability of getting 8 in the unit place on the pages

- (A) $\frac{1}{5}$ (B) $\frac{1}{10}$
 (C) $\frac{3}{10}$ (D) $\frac{1}{60}$

Answer :

Rough Work

14. If $7^{x-1} + 7^{x+1} = \frac{50}{7}$ then find x:

- (A) 1 (B) -1
 (C) 0 (D) None of these

Answer :

15. Which of the following number is rational

- (A) $(\sqrt{2} + 2)^2$ (B) $(5 + \sqrt{5})(5 - \sqrt{5})$
 (C) $\frac{6}{2\sqrt{3}}$ (D) $\frac{5\sqrt{6}}{\sqrt{2}}$

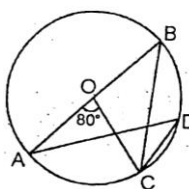
Answer :

16. A solid lead ball of 7 cm radius was melted and then drawn into a wire of 0.2 cm diameter. The length of wire will be

- (A) 458.43 cm (B) 457.33 m
 (C) 468.26 m (D) 437.29 m

Answer :

17. In the given figure, O is centre of a circle, $\angle OCB =$



- (A) 40° (B) 25°
 (C) 35° (D) 45°

Answer :

18. The product of two numbers is 504 and each of the numbers is divisible by 6. Neither of the two numbers is 6. What is the larger of the two numbers

- (A) 48 (B) 42
 (C) 72 (D) None of these

Answer :

Rough Work

19. A paper is in the form of a rectangle in which $AB = 20$ cm and $BC = 14$ cm. Semi circle with BC as diameter is cut off. The area of remaining portion of the triangle is
 (A) 210 cm^2 (B) 203 cm^2 (C) 200 cm^2 (D) None of these

Answer :

20. If α, β are the roots of the equation $x^2 + kx + 12 = 0$ such that $\alpha - \beta = 1$, then value of k is
 (A) 0 (B) ± 5 (C) ± 1 (D) ± 7

Answer :

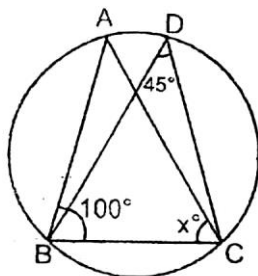
21. The product of Ramu's age (in years) five years ago with his age (in years) 8 years later is 30, then Ramu's present age is
 (A) 5 years (B) 6 years (C) 7 years (D) 8 years

Answer :

22. A cylindrical vessel 32 cm high and 18 cm as the radius of the base, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, the radius of its base is
 (A) 12 cm (B) 24 cm (C) 36 cm (D) 48 cm

Answer :

23. Find the value of x in the following figure



- (A) 45° (B) 35° (C) 60° (D) 55°

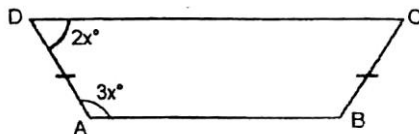
Answer :

Rough Work

24. 10 bags of rice, each bag marked 10 kg, actually contained the following weights of rice (in kg). 10.03, 10.09, 9.97, 9.98, 10.01, 9.94, 10.05, 9.99, 9.95, 10.02. Find the probability that the bag chosen at random contains more than 10 kg.
- (A) $\frac{1}{2}$ (B) $\frac{3}{5}$
 (C) $\frac{5}{8}$ (D) $\frac{2}{5}$

Answer :

25. In the given figure, ABCD is an isosceles trapezium in which $\angle CDA = 2x^\circ$ and $\angle BAD = 3x^\circ$ then $x =$.



- (A) 18° (B) 27° (C) 36° (D) 45°

Answer :

26. The product of $\sqrt{3}$ and $\sqrt[3]{5}$ is

- (A) $\sqrt[6]{375}$ (B) $\sqrt[6]{575}$
 (C) $\sqrt[6]{475}$ (D) $\sqrt[6]{675}$

Answer :

27. If $\left(\frac{3}{5}\right)^x \left(\frac{5}{3}\right)^{2x} = \frac{125}{27}$ then $x =$

- (A) 1 (B) 2 (C) 3 (D) 4

Answer :

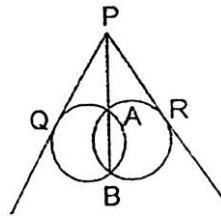
28. Which of the following number is irrational

- (A) $\sqrt{0.0625}$ (B) $\sqrt{0.625}$
 (C) $\sqrt{0.25}$ (D) $\sqrt{0.0144}$

Answer :

Rough Work

29. In the given figure



- (A) $PQ = PR$
- (C) $BQ = BR$

- (B) $QR = AB$
- (D) $AQ = AR$

Answer :

30. An equilateral triangle of side 6 cm is cut into smaller equilateral triangles of side 2 cm. What is the greatest number of the smaller triangles that can be formed ?

- (A) 9
- (B) 6
- (C) 12
- (D) 15

Answer :

Rough Work

PART – II : APTITUDE

SECTION – I (Single Correct Choice Type)

This Section contains **30 Single choice questions**. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

Marking Scheme:

You will be awarded **3 marks** for correct answer, **0** for wrong answer and zero if Question is left un-attempted.

31. Mohini went to the movie nine days ago. She goes to the movie only on Thursday. What day of the week is today?
 (A) Thursday (B) Saturday
 (C) Sunday (D) Tuesday

Answer :

32. In a certain code, **MONKEY** is written as **XDJMNL**. How is **TIGER** written in that code?
 (A) QDFHS (B) SDFHS
 (C) SHFDQ (D) UJHFS

Answer :

33. If **cloud** is called **white**, **white** is called **rain**, **rain** is called **green**, **green** is called **air**, **air** is called **blue**, and **blue** is called **water**, where do the birds fly is ?
 (A) Air (B) Cloud
 (C) White (D) Blue

Answer :

34. Aakash said to Mohit, "That boy in blue shirt is younger of the two brothers of the daughter of my father's wife". How is the boy in blue shirt related to Aakash?
 (A) Father (B) Uncle (C) Brother (D) Nephew

Answer :

35. Pointing to a girl in the photograph, Ramesh said "Her mother's brother is the only son of my mother's father." How is the girl's mother related to Ramesh?
 (A) Mother (B) Sister (C) Aunt (D) Grandmother

Answer :

Rough Work

36. If \times stands for **addition**, $<$ for **subtraction**, \div stands for **division**, $>$ for **multiplication**, $-$ stands for **equal to**, \div for **greater than** and $=$ stands for **less than** state which of the following is true ?

- (A) $3 \times 2 < 4 \div 16 > 2 + 4$
 (B) $5 > 2 + 2 = 10 < 4 \times 2$
 (C) $3 \times 4 > 2 - 9 + 3 < 3$
 (D) $5 \times 3 < 7 \div 8 + 4 \div 1$

Answer :

37. If $+$ means \times , \times means $+$, $-$ means \div and \div means $-$, then—

$$16 \times 2 \div 4 + 7 - 8 = ?$$

- (A) 31 (B) $29/2$
 (C) $43/2$ (D) 15

Answer :

Directions: (38 to 39)

$A + B$ means 'A is father of B'

$A - B$ means 'A is wife of B'

$A \times B$ means 'A is brother of B'

$A \div B$ means 'A is daughter of B'

38. $P \times R \div Q$, which of the following is true?

- (A) P is uncle of Q
 (B) P is father of Q
 (C) P is brother of Q
 (D) P is son of Q

Answer :

39. If $P \times R - Q$, which of the following is true.

- (A) P is brother in law of Q
 (B) P is brother of Q
 (C) P is uncle of Q
 (D) P is father of Q

Answer :

Rough Work

Directions : (40) In the following questions the symbols \$, @, \subset , \supset and \neq are used with the following meaning.

$A \$ B$ means A is greater than B

$A @ B$ means A is either greater than or equal to B

$A \subset B$ means A is equal to B

$A \supset B$ means A is smaller than B

$A \neq B$ means A is either smaller than or equal to B

Now in each of the following questions assuming the given statements to be true, find which of the two conclusion I and II given below them is / are definitely true ?

Given answer

(A) If only conclusion I is true

(B) If only conclusion II is true

(C) If neither I nor II is true

(D) If both I and II are true.

40. **Statements :** $D \geq X$, $F @ Y$, $D \$ F$

Conclusion : (I). $X @ Y$

(II). $Y \neq D$

Answer :

Direction : (41 to 42) Study the given information carefully and answer the questions that follow.

There are four people sitting in a row : one each from India, Japan, USA and Germany, but not in that order,

I. They are wearing caps of different colours - green, yellow, red and white, not necessarily in that order.

II. One is wearing a kurta and one a T-shirt

III. The Indian is wearing a green cap and a jacket.

IV. The American is not seated at either end.

V. The persons with kurta and T-shirt are sitting next to each other.

VI. The person with kurta wears a red cap and sits next to the Japanese.

VII. The Japanese wears a shirt and is not seated at either end.

VIII. The man with white cap wears T-shirt and is seated at one end.

41. Who is wearing a kurta?

(A) Indian

(B) Japanese

(C) American

(D) German

Answer :

42. What is the colour of the cap worn by the Japanese?

(A) Red

(B) Green

(C) Yellow

(D) White

Answer :

-----**Rough Work**-----

Direction: (43 to 44)

- (i) There is a group of six persons P, Q, R, S, T and U from a family. They are Psychologist, Manager, Lawyer, Jeweller, Doctor and Engineer.
- (ii) The Doctor is grandfather of U, who is a Psychologist.
- (iii) The Manager S is married to P.
- (iv) R, the Jeweller is married to the Lawyer.
- (v) Q is the mother of U and T.
- (vi) There are two married couples in the family.

43. What is the profession of P?

- (A) Doctor (B) Lawyer (C) Jeweller (D) Manager

Answer :

44. Which of the following is one of the pairs of couples in the family?

- (A) PQ (B) PR (C) PS (D) Cannot be determined

Answer :

Directions (45 to 46) : There are four trees – tamarind, coconut, mango, and neem – each at a different corner of a rectangular plot. A well is located at one corner and a cabin at another adjacent corner. Tamarind and coconut trees are on either side of the gate which is located at the centre of the side opposite to the side at whose extremes, the well and the cabin are located. The mango tree is not a corner where the cabin is located.

45. Which of the following is correct?

- (A) Cabin and well are not at adjacent corners.
- (B) Cabin and coconut tree cannot be at the adjacent corners.
- (C) Neem tree and well are at adjacent corners.
- (D) Neem tree is diagonally opposite to well

Answer :

46. Tree is located at corner where cabin is located

- (A) Tamarind (B) Coconut
- (C) Neem (D) Mango

Answer :

-----**Rough Work**-----

Directions: (47 to 48) Study the given information and answer the questions that following:

- (i) P, Q, R, S, T, U and V are sitting in a row facing East.
- (ii) R is on the immediate right of S.
- (iii) Q is at an extreme end and has T as his neighbour.
- (iv) V is between T and U.
- (v) S is sitting third from the south end.

47. Who is sitting to the right of T?

- (A) P
- (B) U
- (C) Q
- (D) U

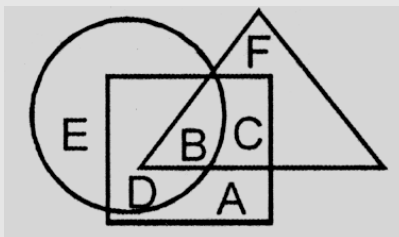
Answer :

48. Immediately between which of the following pairs of people is S sitting ?

- (A) PR
- (B) PU
- (C) RT
- (D) RU

Answer :

Directions: (49 to 50) In the following diagram, three classes of populations are represented by three figures. The triangle represents the school teachers, the square represents the married persons and the circle represents the persons living in joint families.



49. Married persons living in joint families but not working as school teachers are represented by

- (A) C
- (B) F
- (C) D
- (D) A

Answer :

Rough Work

50. Persons who live in joint families, are unmarried and who do into work school teachers are represented by
 (A) C (B) B
 (C) E (D) D

Answer :

Directions: (51 to 52) A cube is coloured orange on one face, pink on the opposite face, brown on one face and silver on a face adjacent to the brown face. The other two faces are left uncoloured. It is then cut into 125 smaller cubes of equal size. Now answer the following questions based on the above statements

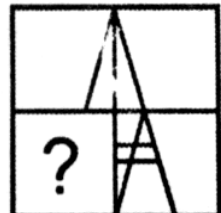
51. How many cubes have at least one face coloured pink?
 (A) 1 (B) 9
 (C) 16 (D) 25

Answer :

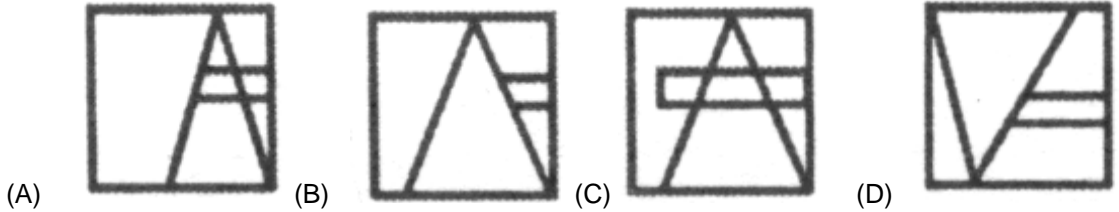
52. How many cubes have all the faces uncoloured?
 (A) 24 (B) 36
 (C) 48 (D) 64

Answer :

Directions: (53) Select a figure form the alternative which when placed in the blank space of (x) would complete the pattern?



53.

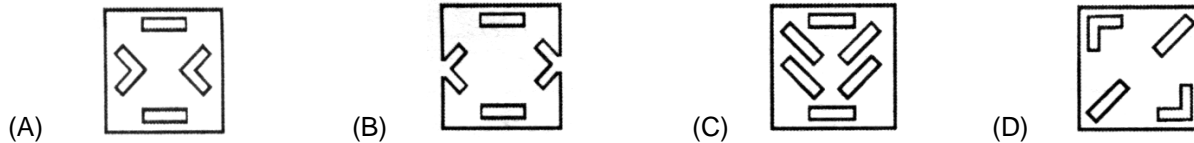
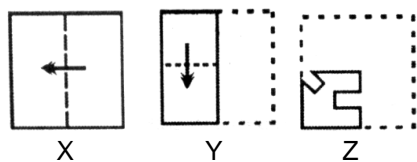


Answer :

Rough Work

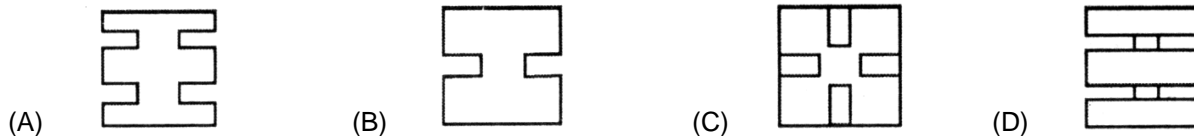
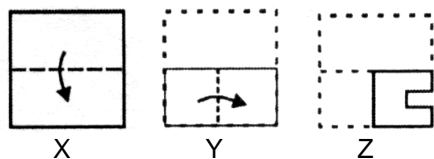
Directions : (54 to 55) A sheet has been folded in the manner as shown in X, Y and Z respectively and punched. You have to choose from the alternatives how it will look when unfolded.

54.



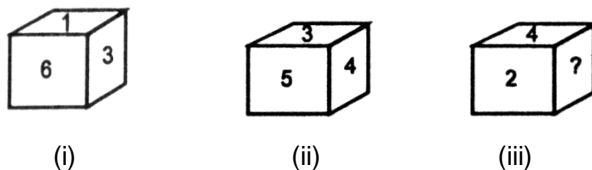
Answer :

55.



Answer :

56. Three positions of the same dice are given below. Observe the figures carefully and tell which number will come in place of '?'



- (A) 1 (B) 6 (C) 3 (D) 5

Answer :

Rough Work

57. Introducing Priyanka, Saroj says that her mother is the only daughter of my mother. How is Saroj related to Priyanka ?
(A) Mother (B) Sister (C) Daughter (D) Aunt

Answer :

58. Pointing to a lady in the photograph Kaushal said, "She is the daughter of the daughter of the only son of my grand father." How is the lady related to Kaushal ?
(A) Sister (B) Maternal aunt (C) Niece (D) Cousin

Answer :

DIRECTION (59 to 60) In the following each question there are two statements and two conclusions I and II thereafter are given. Accept the given statements as true even if they are inconsistent with known facts and ignoring the universally known facts find out which conclusion follows logically from the given statements.

Give answer (A) if only the conclusion I follows.

Give answer (B) if only the conclusion II follows.

Give answer (C) if either the conclusion I or the II follows.

Give answer (D) if neither the conclusion I nor the II follows.

59. **Statements** : Some elephants are horses.
All horses are crocodiles.

Conclusions: (I) No crocodile is elephant.

(II) Some elephants are crocodiles.

Answer :

60. **Statements:** All utensils are fruits.
All fruits are sweets.

Conclusions: (I) Some sweets are utensils.

(II) All sweets are utensils.

Answer :

Rough Work
