EDUKUL

IIT-JEE Advanced | JEE Mains | Foundation

Entrance Test: 11th (Alpha)

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 10th   :

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 sum of one half, one third and one fourth of a number exceed the number itself by 12. The number is
    (a)   72   (b)   144   (c)   180   (d)   244

Answer :

2. $\sqrt{1+\sqrt{1+\sqrt{1+......}}}$ is
    (a)   Equal 1   (b)   Lies between 0 and 1
    (c)   Lies between 1 and 2   (d)   Is greater than 2

Answer :

3. If D is any point on the side BC of a $\triangle ABC$, then
    (a)   AB + BC + CA > 2AD   (b)   AB + BC + CA < 2AD
    (c)   AB + BC + CA > 3AD   (d)   None

Answer :

4. If a + b = 12, ab = 17 then the value of (4 + a) (4 + b) is
    (a)   61   (b)   64   (c)   81   (d)   74

Answer :

5. Let $x \in Q, y \in Q^c$, Which of the following statement is always WRONG? { Q denotes rational set}
    (a) $xy \in Q^c$ (b)   y/x $\in$ Q, whenever defined
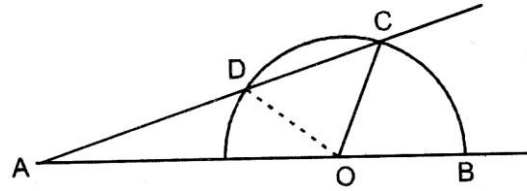   (c) $\sqrt{2}x + y \in Q$ (d) $x/y \in Q^c$, whenever defined

Answer :

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

6. The value of $\dfrac{(4.7)^3 - (2.7)^3}{(4.7)^2 + 4.7 \times 2.7 + (2.7)^2}$ is

(a)   2   (b)   7.4   (c)   5   (d)   84.14

Answer : ☐

7. Let a protractor be laid upon an angle, as pictured. If the measure of $\angle BOC$ is 47°, and measure of $\angle BOD$ is 163°, then the measure of $\angle BAC$ is

(a)   7.5°   (b)   15°   (c)   30°   (d)   36°

Answer : ☐

8. Which of the following is the smallest : $\sqrt[4]{16}, \sqrt[3]{8}, \sqrt[5]{32}, \sqrt{3}$

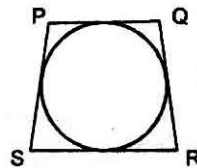(a) $\sqrt[4]{16}$ (b) $\sqrt{3}$ (c) $\sqrt[3]{8}$ (d)   None of these

Answer : ☐

9. Which one of the following is an odd number?

(a) $2001^2 + 3$ (b) $2002^3 + 10$ (c) $2003^2 + 7$ (d) $2004^3 + 1$

Answer : ☐

10. A circle is inscribed in trapezoid PQRS. If PS = QR = 25 cm, PQ = 18 cm and SR = 32 cm, what is the length of the diameter of the circle?

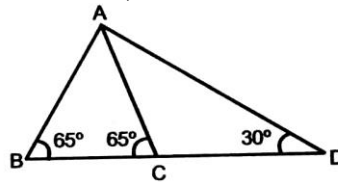(A)   14 cm   (B)   25 cm   (C)   24 cm   (D) $\sqrt{674}$ cm

Answer : ☐

-- **Rough Work** --

11. In the given diagram $\angle B = \angle C = 65^0$ and $\angle D = 30^0$, then the true statement is

(a) BC = CA   (b) CA > CD   (c) BD > AD   (d) AC = AD
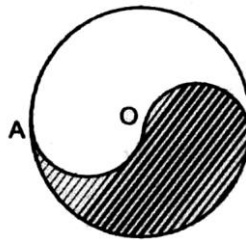
Answer :

12. In the given figure ABCD is a trapezium in which AB ||DC and AB : DC = 3 : 2. The ratio of the areas of $\triangle$AOB and $\triangle$COD is where O is the point of intersection of diagonals

(a) 3 : 2   (b) 2 : 3   (c) 4 : 9   (d) 9 : 4

Answer :

13. In the following figure, if O is the centre of the circle and radius OA = 14 cm, then the area of the shaded portion is

(a) $7p$ cm^2 (b) $49p$ cm^2 (c) $98p$ cm^2 (d) $196p$ cm^2

Answer :

14. The angles of elevations of the top of the tower from two points in the same straight line and at a distance of 9 m. and 16 m. from the base of the tower are complementary. The height of the tower is

(a) 18 m.   (b) 16 m.   (c) 10 m.   (d) 12 m

Answer :

15. If the diameter of a cylinder jar is increased by 25% without alternating the volume then its height must decrease by

(a) 10%   (b) 25 %   (c) 36%   (d) 50 %

Answer :

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

16. Find the sum of all odd natural numbers less than 200
    (a)   1000   (b)   10100   (c)   9900   (d)   10000

Answer :

17. The base of an isosceles triangle is 12 cm and it's perimeter is 32 cm then the area of triangle is
    (a)   30 cm^2 (b)   48 cm^2 (c)   40 cm^2 (d)   20 cm^2

Answer :

18. H.C.F. of $(x^3 - 3x + 2)$ and $(x^2 - 4x + 3)$ is
    (a)   (x – 1)   (b)   (x – 1)^2 (c)   (x – 1) (x + 2)   (d)   (x – 1) (x – 3)

Answer :

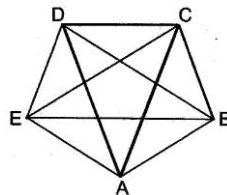**19.** If $\left(x + \dfrac{1}{x}\right)^2 = 9,$ then the value of $x^3 + \dfrac{1}{x^3}$ is
    (a)   18   (b)   12   (c)   24   (d)   6

Answer :

20. The difference between two number is 2. Their product is 84 greater than the square of the smaller number. The sum of the number is
    (a)   164   (b)   86   (c)   84   (d)   42

Answer :

21. ABCDE is a regular pentagon, A star of five points ACEBDA is formed to join their alternate vertices. The sum of all five vertex angles of this star is
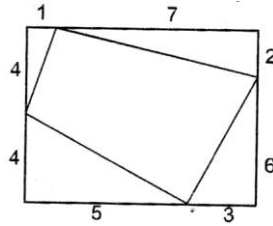

    (a)   Two right angle   (b)   Three right angle   (c)   Four right angle   (d)   Five right angle

Answer :

-- **Rough Work** --

22. The sides of an 8 × 8 square are cut by certain points into pieces of length 1 and 7, 2 and 6, 3 and 5 and 4 and 4 as shown in figure. The area of the quadrilateral determined by these four points are
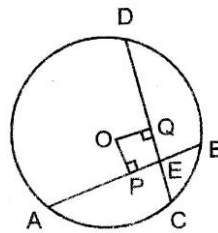

    (a)   28   (b)   36   (c)   48   (d)   8

Answer :

23. Both roots of the quadratic equation $x^2 - 63x + k = 0$ are prime numbers. The number of possible value of k is

    (a)   0   (b)   1   (c)   2   (d)   3

Answer :

24. In the diagram O is the centre of a circle. AE + EB = CE + ED. OP ⊥ AB and OQ ⊥ CD then true relation between OP and OQ is

    (a)   OP > OQ   (b)   OP < OQ

    (c) $OP = \dfrac{1}{2}OQ$ (d)   OP = OQ

Answer :

25. The average age of two brothers is 13. It is increased by 11 years when their mother's age is also included. The age of the mother is

    (a)   45 years   (b)   46 years   (c)   47 years   (d)   48 years
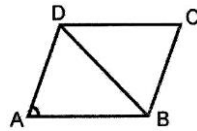
Answer :

-- **Rough Work** --

26. A coin is successively tossed to times. Find the probability of getting :
(1) Exactly one head (2) At least one head

(a) $\dfrac{1}{2}, \dfrac{3}{4}$ (b) $\dfrac{2}{3}, \dfrac{1}{4}$ (c) $\dfrac{1}{4}, \dfrac{4}{5}$ (d) $\dfrac{1}{2}, \dfrac{2}{3}$

Answer :

27. Diagonal DB of a rhombus ABCD id equal to one of its sides

The values of $\angle A$ is
(a) 30° (b) 60° (c) 120° (d) 90°

Answer :

28. $n^2 - 1$ is divisible by 8, if n is
(a) A non integer (b) A natural number (c) An odd integer (d) An even integer

Answer :

29. The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio of 5 : 3. The ratio of their volumes is
(a) 10 : 17 (b) 20 : 27 (c) 17 : 27 (d) None of these

Answer :

30. A solid metallic sphere of radius r is converted into a solid right circular cylinder of radius R. If the height of the cylinder is twice the radius of the sphere then

(a) $R = r$ (b) $R = \dfrac{r\sqrt{2}}{\sqrt{3}}$ (c) $R = \sqrt{\dfrac{2r}{3}}$ (d) $R = \dfrac{\sqrt{3}r}{\sqrt{2}}$

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. A clock which gains 6 minutes every three hours is set at 1.00 P.M. on a certain day. Find the time shown by the watch on next day at 13:50 hours.
(a) 15 hrs 21 min 40 sec   (b) 14 hrs 39 min 40 sec
(c) 13 hrs 0 min 20 sec   (d) None of these

Answer :

Direction: (17 to 18) the following question are based on the following information:
Five men A, B, C, D and E read a newspaper. The one who reads first gives it to C. The one who reads last had taken from A. E was not the first or last to read. There were two readers between B and A.?

32. B passed the newspaper to whom?
(a) A   (b) C   (c) D   (d) E

Answer :

33. Who read the newspaper last?
(a) A   (b) B   (c) C   (d) D

Answer :

Directions (Questions 19-20): Read the following information carefully and answer the questions below:
A family consists of six members P, Q, R, S, T and U. There are two married couples. Q is a doctor and the father of T. U is the grandfather of R and is a contractor. S is grandmother of T and is a housewife. There is one doctor, one contractor, one nurse, one housewife and two students in the family.

34. Who is the husband of P?
(a) R   (b) U   (c) Q   (d) S

Answer :

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

35. Who is the sister of T?
   (a) R   (b) U   (c) T   (d) Information insufficient

Answer : ☐

Directions (Questions 21-22): Read the following information carefully and answer the
In a class, 70 students passed in Mathematics, 50% of the students passed in English, 25% of the students passed in both and 5% of the students passed in neither Mathematics nor English.

36. How many students are there in the class?
   (a) 93   (b) 145   (c) 100   (d) 140

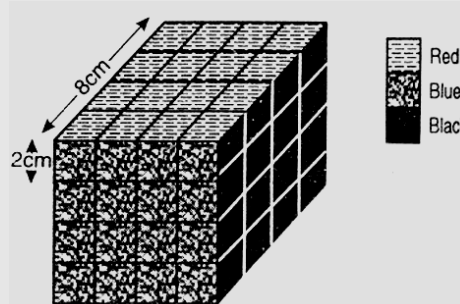Answer : ☐

37. How many students failed in atleast one subject?
   (a) 5   (b) 25   (c) 50   (d) 75

Answer : ☐

Directions (Questions 23-24): Read the following information carefully and answer the
A solid cube each side 8 cm has been painted red, blue and black on pairs of opposite faces. It is then cut into cubical block of each side 2 cm.

38. How many cubes have no face painted?
   (a) 0   (b) 4   (c) 8   (d) 12

Answer : ☐

39. How many cubes have two faces painted black?
   (a) 2   (b) 4   (c) 8   (d) None

Answer : ☐

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

Directions (Questions 25-26): Read the following information carefully and answer the

In a certain code language " in jee loo" means "you did it", "joo ip an" means "how are things", "loo sam" means "you sing" and "an pee joo" means "things are sweet".

40. Which of the following is the code for 'how'?
- (a) joo
- (b) ip
- (c) am
- (d) joo

Answer : [ ]

41. What is the code for "you sing sweet"
- (a) loo sam an
- (b) loo pee joo
- (c) pee sam loo
- (d) loo ip pee

Answer : [ ]

Directions (Questions 27-28): Read the following information carefully and answer the questions given below:

Six boys A, B, C, D, E and F are marching in a line. They are arranged according to their height, the tallest are being at the back and the shortest in front.
F is between B and A
E is shorter than D but taller than C who is taller than A
E and F have two boys between them
A is not the shortest among them all

42. Where is E?
- (a) Between A & B
- (b) Between C & A
- (c) Between D & C
- (d) In front of C

Answer : [ ]

43. Who is the tallest?
- (a) B
- (b) D
- (c) F
- (d) A

Answer : [ ]

Directions (Questions 29-30): Read the following information carefully and answer the

Answer the questions on the basis of the information given below. If '$' represents '+', '' represents ' −', '#' represents 'x' and '@' represents '/' then answer the following questions based on the above given representation.*

44. What is the value of 4#3$10@5$8#2*18?
- (a) 10
- (b) 12
- (c) 6.8
- (d) 11.2

Answer : [ ]

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

45. Which of the following has the value equivalent of 5$ 6# 2$ 8@4?
(a) 4 # 7 * 1 2 $ 2 # 1   (c) 8 # 2 * 3 $ 6 @ 3
(c) 8 @ 2 * 3 $ 6 # 3   (d) 4 $ 7 * 12 $ 2 # 1

Answer : ☐

46. A clock which loses 5 minutes in every hour is set at 10.30 A.M. on a certain day. Next day at 18.00 hours what is the time shown by this watch?
(a) 15 hrs 12 min 30 sec   (b) 20 hrs 47 min 30 sec
(c) 15 hrs 31 min 40 sec   (d) None of these

Answer : ☐

Direction: (17 to 18) the following question are based on the following information:
Five men A, B, C, D and E read a newspaper. The one who reads first gives it to C. The one who reads last had taken from A. E was not the first or last to read. There were two readers between B and A.?

47. E passed the newspaper to whom?
(a) A   (b) C   (c) D   (d) B

Answer : ☐

48. Who read the newspaper first?
(a) A   (b) B   (c) C   (d) D

Answer : ☐

Directions (Questions 19-20): Read the following information carefully and answer the questions below:
A family consists of six members P, Q, R, S, T and U. There are two married couples. Q is a doctor and the father of T. U is the grandfather of R and is a contractor. S is grandmother of T and is a housewife. There is one doctor, one contractor, one nurse, one housewife and two students in the family.

49. What is the profession of P?
(a) Doctor   (b) Nurse   (c) Doctor   (d) Housewife

Answer : ☐

50. Which of the following are two married couple?
(a) US, QT   (b) US, QP   (c) TS, RU   (d) US, RP

Answer : ☐

-- **Rough Work** --

Directions (Questions 21-22): Read the following information carefully and answer the questions below:

In a class, 70 students passed in Mathematics, 50% of the students passed in English, 25% of the students passed in both and 5% of the students passed in neither Mathematics nor English.

51. How many students passed in only one subject?
    (a)   75   (b)   53   (c)   80   (d)   70
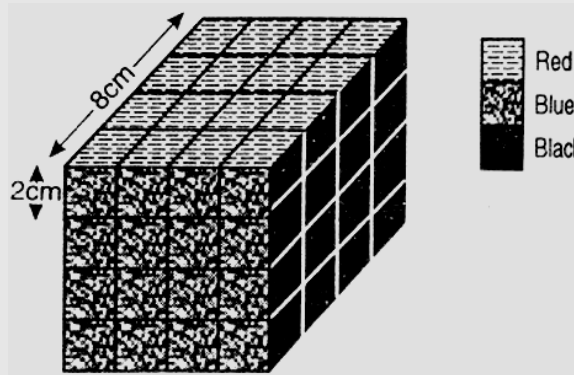
Answer :

52. What is the ratio of the number of students who passed in English to that in Mathematics?
    (a)   1 : 1   (b)   2 : 3   (c)   5 : 7   (d)   5 : 9

Answer :

Directions (Questions 19-20): Read the following information carefully and answer the questions below:

A solid cube each side 8 cm has been painted red, blue and black on pairs of opposite faces. It is then cut into cubical block of each side 2 cm.

53. How many cubes have only one face painted?
    (a)   8   (b)   16   (c)   24   (d)   28

Answer :

54. How many cubes have only two faces painted?
    (a)   8   (b)   16   (c)   20   (d)   24

Answer :

- **Rough Work** -

Directions (Questions 25-26): Read the following information carefully and answer the questions below:

In a certain code language " in jee loo" means "you did it", "joo ip an" means "how are things", "loo sam" means "you sing" and "an pee joo" means "things are sweet".

55. Which of the following is the code for "you"?
    (a)   in
    (b)   jee
    (c)   loo
    (d)   Can"t be determined

Answer :

56. What is the code for "sing sweet things"
    (a)   loo sam an
    (b)   sam pee loo
    (c)   pee sam loo
    (d)   sam pee joo

Answer :

Directions (Questions 27-28): Read the following information carefully and answer the questions given below:

Six boys A, B, C, D, E and F are marching in a line. They are arranged according to their height, the tallest are being at the back and the shortest in front.
F is between B and A
E is shorter than D but taller than C who is taller than A
E and F have two boys between them
A is not the shortest among them all

57. If we start from the shortest which boy is fourth one in the line?
    (a)   E
    (b)   A
    (c)   D
    (d)   C

Answer :

58. Who is the shortest?
    (a)   C
    (b)   D
    (c)   B
    (d)   F

Answer :

Directions (Questions 29-30): Read the following information carefully and answer the questions below:

Answer the questions on the basis of the information given below. If '$' represents '+', '' represents '−', '#' represents 'x' and '@' represents '/' then answer the following questions based on the above given representation.*

59. What is the value of 4#3$10*5#8@2*2?
    (a)   10
    (b)   12
    (c)   0
    (d)   None of these

Answer :

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

60. Which of the given values is greater than 7 $ 3 * 2 $ 12 @ 4 = ?
 (a)   4 # 3 $ 6 @ 3 * 4   (b)   5 # 2 * 8 @ 4 $ 3 # 3 * 7
 (c)   6 # 3 * 18 @ 2 $ 1 # 2   (d)   9 @ 3 $ 6 # 2 * 2 # 1

Answer : ☐

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