



TELANGANA RESIDENTIAL EDUCATIONAL INSTITUTIONS RECRUITMENT BOARD TREI-RB

Notations :

- 1.Options shown in green color and with  icon are correct.
- 2.Options shown in red color and with  icon are incorrect.

Question Paper Name :	Mathematics 14th Aug 2023 Shift 2
Subject Name :	Mathematics
Creation Date :	2023-08-14 15:52:39
Duration :	120
Total Marks :	100
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Mathematics

Group Number :	1
Group Id :	76469250
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	100

Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	76469265
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	76469298
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 7646924920 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of multiples of 7 between 300 and 600 is

Options :

1. ✘ 41

2. ✘ 42

3. ✔ 43

4. ✘ 44

Question Number : 2 Question Id : 7646924921 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The fraction equivalent to $0.\overline{045}$ is

Options :

1. ✘ $\frac{1}{23}$

2. ✔ $\frac{1}{22}$

3. ✘ $\frac{1}{21}$

4. ✘ $\frac{1}{19}$

Question Number : 3 Question Id : 7646924922 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Decreasing order of the numbers $3 - \sqrt{7}$, $\sqrt{11} - 3$, $\sqrt{5} - \sqrt{3}$ and $\sqrt{7} - \sqrt{5}$ is

Options :

1. ✔ $\sqrt{5} - \sqrt{3}, \sqrt{7} - \sqrt{5}, 3 - \sqrt{7}, \sqrt{11} - 3$

2. ✘ $\sqrt{11} - 3, 3 - \sqrt{7}, \sqrt{7} - \sqrt{5}, \sqrt{5} - \sqrt{3}$

3. ✘ $3 - \sqrt{7}, \sqrt{11} - 3, \sqrt{7} - \sqrt{5}, \sqrt{5} - \sqrt{3}$

4. ✘ $\sqrt{11} - 3, 3 - \sqrt{7}, \sqrt{5} - \sqrt{3}, \sqrt{7} - \sqrt{5}$

Question Number : 4 Question Id : 7646924923 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following can be a leap year?

Options :

1. ✘ 2100

2. ✘ 2200

3. ✘ 2300

4. ✔ 2400

Question Number : 5 Question Id : 7646924924 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $2a89b1$ is a number divisible by 11, then the number of such pairs (a, b) is

Options :

1. ✘ 8

2. ✘ 9

3. ✔ 10

4. ✘ 11

Question Number : 6 Question Id : 7646924925 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If x and y are natural numbers such that $x + y + xy = 34$, then $x^2 + y^2 =$

Options :

1. ✘ 51

2. ✔ 52

3. ✘ 53

4. ✘ 54

Question Number : 7 Question Id : 7646924926 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A misfit among the following sequence of numbers is

31, 43, 57, 73, 91, 111, 133, 157, 196

Options :

1. ✘ 43
2. ✘ 91
3. ✘ 157
4. ✔ 196

Question Number : 8 Question Id : 7646924927 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $abc \neq 0$, $\frac{a}{b} = \frac{b}{a-c} = \frac{a+b}{c}$, then $a : b : c =$

Options :

1. ✔ 4 : 2 : 3
2. ✘ 2 : 4 : 3
3. ✘ 3 : 2 : 4
4. ✘ 4 : 3 : 2

Question Number : 9 Question Id : 7646924928 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of natural numbers n satisfying $3^n + 4^n = 5^n$ is

Options :

1. ✘ 4
2. ✘ 3

3. ✖ 2

4. ✔ 1

Question Number : 10 Question Id : 7646924929 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $\frac{13}{22} = 0.5\bar{k}$, then the block k contains only ____ digits.

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 4

Question Number : 11 Question Id : 7646924930 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In the sequence

1, 6, 15, 28, __, 66, 91, 120, 153, the best fit in the gap is

Options :

1. ✖ 41

2. ✖ 43

3. ✖ 44

4. ✔ 45

Question Number : 12 Question Id : 7646924931 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $t_n = \frac{n(n+1)}{2}$, $n \in \mathbb{N}$, then $t_{n-1}^2 + t_n^2 =$

Options :

1. ✘ $t_{(n+1)^2}$

2. ✘ t_{n+1}^2

3. ✔ t_n^2

4. ✘ t_{2n}

Question Number : 13 Question Id : 7646924932 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $t_k = \frac{2}{k^2 + k}$, $k = 1, 2, \dots$ then $\sum_{k=1}^{2022} t_k = \frac{c}{2023}$, where $c =$

Options :

1. ✘ 2021

2. ✘ 2022

3. ✘ 4042

4. ✔ 4044

Question Number : 14 Question Id : 7646924933 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If (a, b, c) is Pythagorean triplet and a, b, c are consecutive natural numbers, then the number of such triads (a, b, c) is

Options :

1. ✓ 1

2. ✗ 2

3. ✗ 3

4. ✗ 4

Question Number : 15 Question Id : 7646924934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The missing number in the following sequence is

22, 35, 51, __, 92, 117

Options :

1. ✗ 69

2. ✓ 70

3. ✗ 71

4. ✗ 72

Question Number : 16 Question Id : 7646924935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If K_n denotes the number $\frac{2 \cdot 6 \cdot 10 \cdots (4n-2)}{(n+1)!}$ For $n \in \mathbb{N}$, then for $n \geq 2$

$$\frac{(2n)!}{(n)!^2} - \frac{(2n)!}{(n-1)!(n+1)!} =$$

Options :

1. ✗ $2 K_n$

2. ✘ K_n^2

3. ✔ K_n

4. ✘ K_{n+1}

Question Number : 17 Question Id : 7646924936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The irrational number $\frac{\sqrt{3+\sqrt{5}}}{\sqrt{2+\sqrt{7+3\sqrt{5}}}}$ =

Options :

1. ✘ $\sqrt{5}$

2. ✔ $\frac{1}{\sqrt{5}}$

3. ✘ $\frac{\sqrt{5}+1}{2}$

4. ✘ $\frac{1}{\sqrt{5}+1}$

Question Number : 18 Question Id : 7646924937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A rectangular computer screen has to be built with screen's diagonal length 10 inches. If the area of the screen has to be 48 sq. inches then the dimensions of the screen are to be

Options :

1. ✘ 4×12

2. ✘ 3×16

3. ✘ 16×3

4. ✓ 6×8

Question Number : 19 Question Id : 7646924938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The Sum

$$\frac{1}{1 \cdot 2 \cdot 3} + \frac{1}{2 \cdot 3 \cdot 4} + \dots + \frac{1}{n(n+1)(n+2)} = \frac{c_n}{4(n+1)(n+2)} \text{ where } c_n =$$

Options :

1. ✗ $n^2 + 2n + 1$

2. ✓ $n^2 + 3n$

3. ✗ $n^2 + n + 2$

4. ✗ $2n^2 + 2$

Question Number : 20 Question Id : 7646924939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

₹8lakh has to be awarded as prize money to 16 teams of players. If the lowest ranked team gets ₹27500 and the award increases by the same amount for each successive ranked teams, then the 1st rank team gets the amount (in rupees)

Options :

1. ✓ 72500

2. ✗ 60000

3. ✗ 75000

4. ✗ 78000

Question Number : 21 Question Id : 7646924940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$\text{If } \frac{a^3+1+3a\sqrt[3]{2}}{a-1+\sqrt[3]{2}} = a^2 + a + 1 - a\sqrt[3]{2} + k, \text{ then } k =$$

Options :

1. ✘ $\sqrt[3]{2} + 2$
2. ✘ $\sqrt[3]{2} + \sqrt[4]{4}$
3. ✔ $\sqrt[3]{2} + \sqrt[3]{4}$
4. ✘ $\sqrt[3]{2} + 1$

Question Number : 22 Question Id : 7646924941 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$\text{Cube root of } 9xy^2 + (y^2 + 24x^2)\sqrt{y^2 - 3x^2} \text{ is}$$

Options :

1. ✘ $6x + \sqrt{y^2 - 3x^2}$
2. ✘ $2x + 3\sqrt{y^2 - 3x^2}$
3. ✘ $-3x + 3\sqrt{y^2 - 3x^2}$
4. ✔ $3x + \sqrt{y^2 - 3x^2}$

Question Number : 23 Question Id : 7646924942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of different permutations that can be formed with the letters of the word ASSASSINATION beginning with the letter T and ending with O is

Options :

1. ✘ 7700
2. ✔ 69300
3. ✘ 166320
4. ✘ 16642

Question Number : 24 Question Id : 7646924943 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A sum of money amounts to ₹133800 in 4 years and to ₹167250 in 5 years on compound interest. Then the rate of interest is

Options :

1. ✘ 20
2. ✔ 25
3. ✘ 30
4. ✘ 21

Question Number : 25 Question Id : 7646924944 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of trailing zeros in the expansion of $345! - 234!$ is

Options :

1. ✘ 84

2. ✘ 82

3. ✘ 83

4. ✔ 56

Question Number : 26 Question Id : 7646924945 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of positive integers ≤ 5000 and divisible by 5, 7 or 11 is

Options :

1. ✘ 1880

2. ✘ 1881

3. ✘ 1882

4. ✔ 1884

Question Number : 27 Question Id : 7646924946 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Let A denotes the set of all real numbers, B the set of all irrationals and C the set of all integers. Then the number which belongs to $A - B - C$ is

Options :

1. ✘ $\frac{\sqrt{3}}{2}$

2. ✘ 5

3. ✘ -7

4. ✔ $\frac{3}{4}$

Question Number : 28 Question Id : 7646924947 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If p and q are any two statements, then $(p \rightarrow q) \vee (p \wedge \bar{q})$ is a

Options :

1. ✘ converse
2. ✘ inverse
3. ✔ tautology
4. ✘ contradiction

Question Number : 29 Question Id : 7646924948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A shopkeeper marks his goods $x\%$ higher and allows a discount of $x\%$. Then the shopkeeper gets

Options :

1. ✘ Profit percent $\frac{x^2}{100}$
2. ✔ Loss percent $\frac{x^2}{100}$
3. ✘ Profit percent $\frac{x}{100}$
4. ✘ Loss percent $\frac{x}{100}$

Question Number : 30 Question Id : 7646924949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Each of the 100 students in a class plays atleast one of the three sports: Cricket(C) or Hockey (H) or Football (F). It is given that 65 play C, 45 play H, 42 play F, 20 play C and H, 25 play C and F, 15 play F and H. Then the number of students who play all the three games is

Options :

1. 8
2. 9
3. 10
4. 11

Question Number : 31 Question Id : 7646924950 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A store, which sells two kinds of 40" and 60" colour TVs, has total inventory worth ₹300lakhs. The profit on a 40" CTV is 20% while profit on a 60" CTV is 25%. The profit for total stock is 24%. Then how much was invested on 40" CTVs?

Options :

1. ₹50 lakhs
2. ₹60 lakhs
3. ₹45 lakhs
4. ₹72 lakhs

Question Number : 32 Question Id : 7646924951 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If the roots of $x^2 + ax + b = 0$ are α and β , then one of the roots of $x^2 + (a + 4\alpha)x + 4\alpha^2 + 4\alpha a + b = 0$ is

Options :

1. ✘ $-\beta$

2. ✘ $\beta - \alpha$

3. ✘ $\beta + 2\alpha$

4. ✔ -3α

Question Number : 33 Question Id : 7646924952 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The set $\{ x \in \mathbb{R} : 9^{\frac{-1}{x}} < 3^{x+2} \} =$

Options :

1. ✘ $(-2, \infty)$

2. ✘ $(1, \infty)$

3. ✔ $(0, \infty)$

4. ✘ $(2, \infty)$

Question Number : 34 Question Id : 7646924953 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

For $x \in \mathbb{R}$, the fraction $\frac{x^2 + 3x + 4}{x^2 + 3x - 5}$ lies in

Options :

1. ✔ $(-\infty, -\frac{7}{29}) \cup (1, \infty)$

2. ✘ $(-\infty, \frac{7}{29}) \cup (1, \infty)$

3. ✘ $(-\infty, -\frac{1}{4}) \cup (1, \infty)$

4. ✘ $(-\infty, \frac{1}{4}) \cup (1, \infty)$

Question Number : 35 Question Id : 7646924954 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If a, b, c are lengths of sides of a ΔABC and $2s = a + b + c$, then $8(s - a)(s - b)(s - c)$ is

Options :

1. ✘ $\leq a + b + c$

2. ✘ $> abc$

3. ✔ $\leq abc$

4. ✘ $> 2abc$

Question Number : 36 Question Id : 7646924955 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$3 + \sum_{r=1}^{2022} \frac{(2r-1)}{r^2+r} \times 3^r =$$

Options :

1. ✘ $\frac{3^{2023}}{2022}$

2. ✔ $\frac{3^{2023}}{2023}$

3. ✘ $\frac{3^{2022}}{2022}$

3²⁰²³

4. ✘ 2024

Question Number : 37 Question Id : 7646924956 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $a_1 = 1 = a_2$, $a_n = a_{n-1} + a_{n-2}$ for $n \geq 3$, then $a_{n+2}^2 - a_{n+1}^2 =$

Options :

1. ✔ $a_{n+3} a_n$

2. ✘ $2a_{n+3} a_n - 1$

3. ✘ $2a_{n+3} a_n$

4. ✘ $a_{n+3} a_n - 1$

Question Number : 38 Question Id : 7646924957 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The determinant $\begin{vmatrix} a - b - c & 2a & 2a \\ 2b & b - c - a & 2b \\ 2c & 2c & c - a - b \end{vmatrix} =$

Options :

1. ✘ $4(a + b + c)^3$

2. ✘ $8(a + b + c)^3$

3. ✔ $(a + b + c)^3$

4. ✘ $abc(a + b + c)^2$

Question Number : 39 Question Id : 7646924958 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Let S_1 , S_2 and S_3 denote the sums of first n , $2n$ and $3n$ terms of an arithmetic progression.
Then $3(S_1 - S_2) =$

Options :

1. ✘ S_3

2. ✔ $-S_3$

3. ✘ $2S_3$

4. ✘ $-2S_3$

Question Number : 40 Question Id : 7646924959 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If a , b , c are in harmonic progression, then $\log(a + c) + \log(a - 2b + c) =$

Options :

1. ✘ $\log(a + c)$

2. ✘ $2\log(a + c)$

3. ✘ $\log(a - c)$

4. ✔ $2\log(a - c)$

Question Number : 41 Question Id : 7646924960 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If a , b , c are in arithmetic progression; b , c , d are in geometric progression and c , d , e are in harmonic progression, then a , c , e are in

Options :

1. ✘ arithmetic progression
2. ✔ geometric progression
3. ✘ arithmetic geometric progression
4. ✘ harmonic progression

Question Number : 42 Question Id : 7646924961 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If z is a complex number lying in the first quadrant such that $\operatorname{Re} z + \operatorname{Im} z = 1$, then the maximum value of $\operatorname{Re} z (\operatorname{Im} z)^2$ is

Options :

1. ✔ $\frac{4}{27}$
2. ✘ $\frac{-4}{27}$
3. ✘ $\frac{1}{9}$
4. ✘ $\frac{-1}{9}$

Question Number : 43 Question Id : 7646924962 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If A and B are two non-singular square matrices such that $AB = BA$, then $(A(A+B)^{-1}B)^{-1}AB =$

Options :

1. ✘ $A^{-1} + B^{-1}$
2. ✘ AB

3. ✓ $A + B$

4. ✗ $A - B$

Question Number : 44 Question Id : 7646924963 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In a ΔABC , $\tan \frac{B}{2} = \frac{5}{6}$, $\tan \frac{C}{2} = \frac{1}{5}$. Then $5(b + c) =$

Options :

1. ✗ $6a$

2. ✓ $7a$

3. ✗ $8a$

4. ✗ $9a$

Question Number : 45 Question Id : 7646924964 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If in a ΔABC , $a : b : c = 2 : 3 : 4$, then $R : r =$

Options :

1. ✗ $9 : 4$

2. ✗ $16 : 7$

3. ✗ $4 : 1$

4. ✓ $16 : 5$

Question Number : 46 Question Id : 7646924965 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If in a ΔABC , $\cos A + \cos B = 4\sin^2 \frac{C}{2}$, then $a + b + c =$

Options :

1. ✓ $3c$

2. ✗ $2c$

3. ✗ $5a$

4. ✗ $3a$

Question Number : 47 Question Id : 7646924966 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The period of the function $f(x) = 2\sin\left(\frac{\pi x}{8}\right) + 5\cos\left(\frac{\pi x}{4}\right)$ is

Options :

1. ✗ 4

2. ✗ 8

3. ✓ 16

4. ✗ 32

Question Number : 48 Question Id : 7646924967 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $\cot A + \cos A = p$ and $\cot A - \cos A = q$, then $p^2 - q^2 =$

Options :

1. ✗ $2\cot A \operatorname{cosec} A$

2. ✓ $4\cot A \cos A$

3. ✗ $4\tan A \sec A$

4. ✖ $2\tan A \sec A$

Question Number : 49 Question Id : 7646924968 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$\cos^{-1} \frac{1}{\sqrt{2}} - \cos^{-1} \sqrt{\frac{2}{x}} = \frac{\pi}{6} \Rightarrow x =$$

Options :

1. ✖ $8 + 4\sqrt{3}$

2. ✖ $8 - 4\sqrt{3}$

3. ✖ $16 + 8\sqrt{3}$

4. ✔ $16 - 8\sqrt{3}$

Question Number : 50 Question Id : 7646924969 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The sum of solutions of $2\cos^2 x = 3\sin x$ in the interval $[0, \pi]$ is

Options :

1. ✖ 2π

2. ✔ π

3. ✖ $\frac{\pi}{2}$

4. ✖ 3π

Question Number : 51 Question Id : 7646924970 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$\sum_{r=0}^n 2^r {}^n C_r =$$

Options :

1. ✘ 3^{2n}

2. ✘ $3^n + 1$

3. ✘ $3^n - 1$

4. ✔ 3^n

Question Number : 52 Question Id : 7646924971 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The probability that an year chosen at random has 53 Mondays is

Options :

1. ✔ $\frac{5}{28}$

2. ✘ $\frac{2}{7}$

3. ✘ $\frac{1}{4}$

4. ✘ $\frac{4}{7}$

Question Number : 53 Question Id : 7646924972 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Two numbers x and y are chosen at random from 1, 2, 3, 4, 5, 6,, 25. Then the probability that the equation $5x-3y = 0$ is satisfied is

Options :

1. ✘ $\frac{1}{20}$

2. ✘ $\frac{1}{30}$

3. ✔ $\frac{1}{60}$

4. ✘ $\frac{1}{120}$

Question Number : 54 Question Id : 7646924973 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Let E_1 , E_2 and E_3 be three independent events with $P(E_1) = \frac{1}{2}$, $P(E_2) = \frac{1}{3}$ and $P(E_3) = \frac{1}{4}$. Then the probability that exactly any two of the three events occurring is

Options :

1. ✘ $\frac{1}{3}$

2. ✔ $\frac{1}{4}$

3. ✘ $\frac{2}{5}$

4. ✘ $\frac{3}{8}$

Question Number : 55 Question Id : 7646924974 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Four numbers are chosen at random from the set $\{1, 2, 3, 4, \dots, 30\}$. Then the probability that they are consecutive is

Options :

1. ✔ $\frac{1}{1015}$

2. ✘ $\frac{1}{1050}$

3. ✘ $\frac{1}{875}$

4. ✘ $\frac{1}{1030}$

Question Number : 56 Question Id : 7646924975 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A four digit number is formed using 1, 2, 3 and 4 with no digit being repeated. Then the probability that the number is divisible by 4 is

Options :

1. ✘ $\frac{2}{5}$

2. ✘ $\frac{1}{3}$

3. ✔ $\frac{1}{4}$

4. ✘ $\frac{1}{8}$

Question Number : 57 Question Id : 7646924976 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The probability that a number chosen randomly from 1, 2, 3,....., 80 to be divisible by 4 or 6 is

Options :

1. ✘ $\frac{29}{80}$

2. ✘ $\frac{1}{4}$

3. ✘ $\frac{1}{3}$

4. ✔ $\frac{27}{80}$

Question Number : 58 Question Id : 7646924977 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The standard deviation of the numbers 1, 3, 5, 7, 9,, 99 is

Options :

1. ✘ 35

2. ✔ $7\sqrt{17}$

3. ✘ 40

4. ✘ $17\sqrt{7}$

Question Number : 59 Question Id : 7646924978 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Two numbers are chosen at random from the set $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$. Then the probability that the smaller among them to be less than 5 is

Options :

1. ✘ $\frac{1}{3}$

2. ✘ $\frac{5}{9}$

3. ✔ $\frac{2}{3}$

4. ✘ $\frac{4}{5}$

Question Number : 60 Question Id : 7646924979 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Four unbiased coins are flipped. If the outcomes are independent, then the probability that equal number of heads and tails are obtained is

Options :

1. ✓ $\frac{3}{8}$

2. ✗ $\frac{5}{8}$

3. ✗ $\frac{1}{8}$

4. ✗ $\frac{1}{4}$

Question Number : 61 Question Id : 7646924980 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If the radius of a circle increased by 10%, then its area increases by

Options :

1. ✗ 20%

2. ✓ 21%

3. ✗ 22%

4. ✗ 25%

Question Number : 62 Question Id : 7646924981 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A circle is inscribed in an equilateral triangle of side 12cm. Then the area (in sq.cms) of the circle is

Options :

1. ✘ 9π

2. ✘ 10π

3. ✘ 11π

4. ✔ 12π

Question Number : 63 Question Id : 7646924982 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Let f be a polynomial function such that $f(x^2+1) = x^4 + 5x^2 + 6, \forall x \in \mathbb{R}$. Then $f(x^2-1) =$

Options :

1. ✘ $x^4 + x^2 + 1$

2. ✔ $x^4 + x^2$

3. ✘ $x^4 - x^2$

4. ✘ $x^4 + x^2 - 1$

Question Number : 64 Question Id : 7646924983 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of non-congruent right angled triangles such that the perimeter in centimeters and area in square centimeters are numerically equal is

Options :

1. ✘ 1

2. ✘ 2

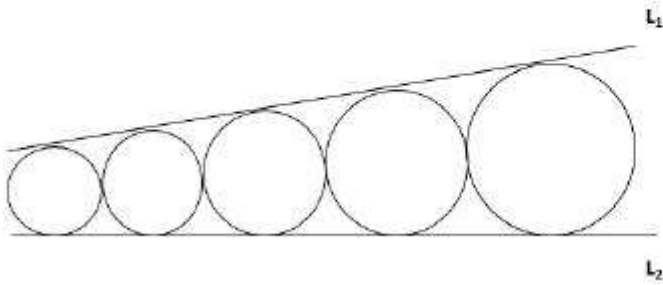
3. ✘ 3

4. ✓ ∞

Question Number : 65 Question Id : 7646924984 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In the following figure largest circle has radius 18cm and the smallest circle has radius 8cm. Then the radius (in cm) of the middle circle is



Options :

1. ✘ 10

2. ✘ 11

3. ✓ 12

4. ✘ 15

Question Number : 66 Question Id : 7646924985 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The number of diagonals of a regular decagon is

Options :

1. ✘ 50

2. ✘ 37

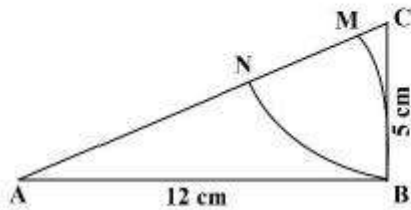
3. ✘ 36

4. ✓ 35

Question Number : 67 Question Id : 7646924986 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In the following $\triangle ABC$, $\angle B = 90^\circ$, BM is the arc with centre A and BN is the arc with centre C. M and N are points on AC. Then the length of the line segment MN (in cm) is



Options :

1. ✓ 4

2. ✗ 3

3. ✗ 2

4. ✗ 5

Question Number : 68 Question Id : 7646924987 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $\log_{16} p = \log_{20} q = \log_{25} (p + q)$, then $\frac{q}{p} =$

Options :

1. ✗ $\frac{2+\sqrt{5}}{2}$

2. ✓ $\frac{1+\sqrt{5}}{2}$

3. ✗ $\frac{\sqrt{5}-1}{2}$

4. ✗ $\frac{\sqrt{5}-2}{2}$

Question Number : 69 Question Id : 7646924988 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $|p| + p + q = 10$ and $p + |q| - q = 12$, $p, q \in \mathbb{R}$ then $p + q =$

Options :

1. ✘ 4

2. ✔ $\frac{18}{5}$

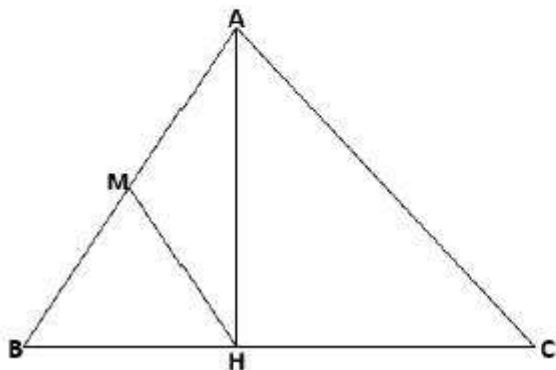
3. ✘ $\frac{17}{5}$

4. ✘ 5

Question Number : 70 Question Id : 7646924989 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In the following $\triangle ABC$, $AB = 14$, $BC = 15$, $CA = 16$, M is the midpoint of AB , H is the foot of the perpendicular from A onto BC . Then the length of HM is



Options :

1. ✘ 5

2. ✘ 6

3. ✔ 7

4. ✖ 8

Question Number : 71 Question Id : 7646924990 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $f: \mathbb{Z} \rightarrow \mathbb{R}$ is a function defined by $f(x) = \begin{cases} x - 3 & \text{if } x \geq 1000 \\ f(f(x + 5)) & \text{if } x < 1000 \end{cases}$, then $f(84) =$

Options :

1. ✖ 1000

2. ✖ 991

3. ✖ 994

4. ✔ 997

Question Number : 72 Question Id : 7646924991 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The minimum value of $f(x) = \frac{9x^2 \sin^2 x + 4}{x \sin x}$, $\forall x \in (0, \pi)$, is

Options :

1. ✖ 10

2. ✖ 11

3. ✔ 12

4. ✖ 6

Question Number : 73 Question Id : 7646924992 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

$$\frac{2(\sqrt{2} + \sqrt{6})}{3\sqrt{2+\sqrt{3}}} =$$

Options :

1. $\frac{4}{3}$

2. $\frac{5}{3}$

3. 2

4. 3

Question Number : 74 Question Id : 7646924993 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Length and breadth of a rectangular sheet of paper are 25cm and 15cm respectively. A square piece of side 5cm is cut from a corner of that rectangular sheet of paper. With regard to the resulting sheet of paper R which of the following is true when compared to the original sheet of paper?

Options :

1. Perimeter of R changes, area of R remains same.

2. Perimeter of R changes, area of R also changes.

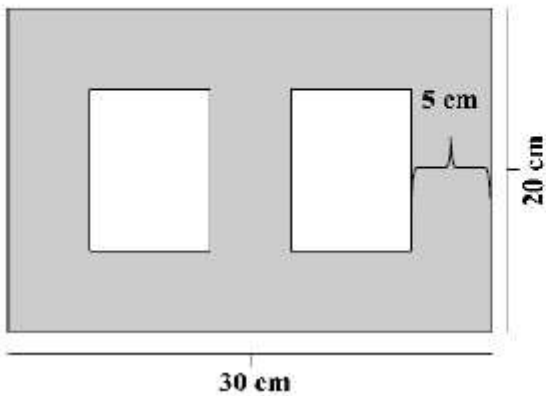
3. Perimeter of R remains same, area of R changes.

4. Perimeter of R and area of R remains same.

Question Number : 75 Question Id : 7646924994 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The area (in sq. units) of the shaded region in the following figure is (given that shaded part is of uniform width)



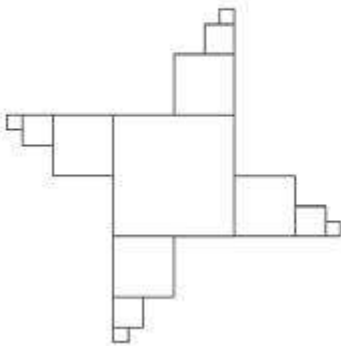
Options :

1. ✘ 300
2. ✘ 100
3. ✘ 400
4. ✔ 450

Question Number : 76 Question Id : 7646924995 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In the following figure largest square has side 1cm. Then the area of the figure (in sq. cm) is



Options :

1. ✘ $\frac{9}{4}$

2. ✓ $\frac{37}{16}$

3. ✗ $\frac{19}{8}$

4. ✗ 3

Question Number : 77 Question Id : 7646924996 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Two parallel sides of a trapezium are 30cm and 16cm and its non-parallel sides are equal and each equal to 18cm. Then its area (in sq. cm) is

Options :

1. ✗ $118\sqrt{11}$

2. ✗ $112\sqrt{11}$

3. ✗ $110\sqrt{11}$

4. ✓ $115\sqrt{11}$

Question Number : 78 Question Id : 7646924997 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Four horses are tethered with equal ropes at four corners of a square field of side 56meters so that they just can reach one another. Then the area of the field which is left ungrazed by the horses (in sq. m.) is

Options :

1. ✗ 2688

2. ✗ 2668

3. ✓ 672

4. ✘ 2678

Question Number : 79 Question Id : 7646924998 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In a village with population 1000 requires 60 litres of water per head per day. The village has a overhead water tank of dimensions $10\text{m} \times 20\text{m} \times 15\text{m}$. If the tank is full with water, for how many days will the water of this tank last?

Options :

1. ✘ 40

2. ✔ 50

3. ✘ 60

4. ✘ 30

Question Number : 80 Question Id : 7646924999 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The condition for concurrency of the straight lines $ax + y + 1 = 0$, $x + by + 1 = 0$ and $x + y + c = 0$ is

Options :

1. ✔ $(1 - a)^{-1} + (1 - b)^{-1} + (1 - c)^{-1} = 1$

2. ✘ $(1 - a)^{-1} + (1 - b)^{-1} + (1 - c)^{-1} = 2$

3. ✘ $(1 - a)^{-1} + (1 - b)^{-1} + (1 - c)^{-1} = 3$

4. ✘ $(1 - a)^{-1} + (1 - b)^{-1} + (1 - c)^{-1} = -1$

Question Number : 81 Question Id : 7646925000 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A hollow cube of internal edge 33cm is filled with spherical marbles of diameter $\frac{1}{2}$ cm and its assumed that $\frac{1}{9}$ th space of the cube left unfilled. Then the number of marbles that the cube can accommodate is

Options :

1. ✘ 487784
2. ✘ 487870
3. ✘ 487874
4. ✔ 487872

Question Number : 82 Question Id : 7646925001 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

ΔABC is a right angled triangle with $\angle B = 90^\circ$, $AB = BC$, $B = (2, 2)$. If the equation of AC is $3x + 4y = 4$, then the equations of the remaining two sides are

Options :

1. ✘ $6x + y = 14, 6y - x = 10$
2. ✔ $7x + y = 16, 7y - x - 12 = 0$
3. ✘ $5x + y = 12, 5y - x = 8$
4. ✘ $8x + y = 18, 8y - x = 14$

Question Number : 83 Question Id : 7646925002 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Given three non collinear points in a plane, the number of straight lines that can be drawn which are equidistant from all the three points is

Options :

1. ✓ 3

2. ✗ 6

3. ✗ 4

4. ✗ 5

Question Number : 84 Question Id : 7646925003 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The point (x, y) is given by $x + iy = \frac{2+3i}{1+i}$. Then the point among the following that lies on the same side of the line $x + y - 6 = 0$ as (x, y) is

Options :

1. ✗ $(6, 7)$

2. ✗ $(5, 6)$

3. ✓ $(-6, 7)$

4. ✗ $(3, 3)$

Question Number : 85 Question Id : 7646925004 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The equation of the circle through the intersection of $x^2 + y^2 + 2y = 0$ and $x + y = 0$ having minimum radius is

Options :

1. ✗ $x^2 + y^2 = x + y$

2. ✓ $x^2 + y^2 = x - y$

3. ✘ $x^2 + y^2 = y - x$

4. ✘ $x^2 + y^2 = x + 2y$

Question Number : 86 Question Id : 7646925005 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Tangents are drawn to the circle $x^2 + y^2 = 15$ from a point P lying on the x-axis. These tangents meet y-axis at the points Q and R. Then the point P such that ΔPQR has minimum area is

Options :

1. ✘ $(\sqrt{2}, 0)$

2. ✘ $(3\sqrt{2}, 0)$

3. ✘ $(4\sqrt{2}, 0)$

4. ✔ $(5\sqrt{2}, 0)$

Question Number : 87 Question Id : 7646925006 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The area of the triangle formed by the line passing through (2, 3), (4, 5) with the coordinate axes is

Options :

1. ✔ $\frac{1}{2}$

2. ✘ $\frac{1}{4}$

3. ✘ $\frac{1}{8}$

4. ✘ $\frac{1}{16}$

Question Number : 88 Question Id : 7646925007 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The area enclosed by $3|x| + 4|y| \leq 12$ is

Options :

1. ✘ 18

2. ✘ 21

3. ✔ 24

4. ✘ 27

Question Number : 89 Question Id : 7646925008 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $c = \frac{1}{a} + \frac{1}{b}$ is a non-zero constant, then the straight line $bx + ay = ab$ passes through the point

Options :

1. ✘ (c, c)

2. ✔ $(\frac{1}{c}, \frac{1}{c})$

3. ✘ $(2c, 2c)$

4. ✘ $(\frac{2}{c}, \frac{2}{c})$

Question Number : 90 Question Id : 7646925009 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The locus of midpoints of the chords of contact of $x^2 + y^2 = 1$ from the points on the line $3x + 5y = 10$ is a circle with centre

Options :

1. ✘ $(\frac{1}{10}, \frac{1}{4})$

2. ✔ $(\frac{3}{20}, \frac{1}{4})$

3. ✘ $(\frac{1}{5}, \frac{1}{4})$

4. ✘ $(\frac{7}{20}, \frac{1}{4})$

Question Number : 91 Question Id : 7646925010 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The direction cosines of a line parallel to z-axis are

Options :

1. ✘ $(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0)$

2. ✘ $(0, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}})$

3. ✘ $(1, 0, 0)$

4. ✔ $(0, 0, 1)$

Question Number : 92 Question Id : 7646925011 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If $[3, 3, k]$ and $[7, 5, 4]$ are the direction ratios of two perpendicular lines, then $k =$

Options :

1. ✘ -8

2. ✘ -7

3. ✔ -9

4. ✘ 9

Question Number : 93 Question Id : 7646925012 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The distance of the point P $(-5, 5, 12)$ from the x-axis is

Options :

1. ✘ 11

2. ✘ 12

3. ✘ 14

4. ✔ 13

Question Number : 94 Question Id : 7646925013 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The area of the triangle whose vertices are $(1, 2, 3)$, $(-2, 1, 3)$ and $(1, 0, 0)$ is

Options :

1. ✔ $\frac{3\sqrt{14}}{2}$

2. ✘ $\frac{3\sqrt{14}}{4}$

3. ✘ $3\sqrt{14}$

4. ✘ $6\sqrt{14}$

Question Number : 95 Question Id : 7646925014 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The direction cosines of the line passing through (1, 2, 3) and (4, 6, 3) are

Options :

1. ✘ $(\frac{4}{5}, \frac{3}{5}, 0)$

2. ✔ $(\frac{3}{5}, \frac{4}{5}, 0)$

3. ✘ $(0, \frac{3}{5}, \frac{4}{5})$

4. ✘ $(\frac{3}{5}, 0, \frac{4}{5})$

Question Number : 96 Question Id : 7646925015 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The angle between the lines whose direction cosines are connected by the relations $5lm - 2mn - 3nl = 0$ and $l + m + n = 0$ is

Options :

1. ✘ 30°

2. ✘ 60°

3. ✔ 90°

4. ✘ 45°

Question Number : 97 Question Id : 7646925016 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The angle between the planes $x = 2$, $x + y = 1$ is

Options :

1. ✘ $\frac{\pi}{2}$

2. ✘ $\frac{\pi}{3}$

3. ✔ $\frac{\pi}{4}$

4. ✘ $\frac{\pi}{6}$

Question Number : 98 Question Id : 7646925017 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Let P (x_1, y_1, z_1) be a point on the plane $x - 2y + 3z = 4$. Then the distance from P to the plane $3x - 6y + 9z - 1 = 0$ is

Options :

1. ✘ $\frac{10}{\sqrt{126}}$

2. ✘ $\frac{8}{\sqrt{126}}$

3. ✘ $\frac{9}{\sqrt{126}}$

4. ✔ $\frac{11}{\sqrt{126}}$

Question Number : 99 Question Id : 7646925018 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A plane π passes through the point $(2, -3, 4)$ and a normal to π makes equal inclinations with the coordinate axes. Then the equation of π is

Options :

1. ✓ $x + y + z = 3$

2. ✗ $2x + y + z = -3$

3. ✗ $x + y + 2z = 7$

4. ✗ $x + 2y + z = 0$

Question Number : 100 Question Id : 7646925019 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The equation of a plane parallel to z -axis and passing through the points $(1, 2, 3)$ and $(2, 3, 4)$ is

Options :

1. ✗ $z - x = 2$

2. ✓ $x - y + 1 = 0$

3. ✗ $z + x - 2y = 0$

4. ✗ $y - z + 1 = 0$