384 PU M.Sc Five year Integrated M.Sc Programmed (Mathematics, Computer Science ,Statistics)

146 PU_2016_384_E

If $f(x) = \int_{x^2}^{x^2} \cos\sqrt{t}\ dt$, then $f'(1)$ is equal to

○   2 cos 1

○   π

○   4 cos 1

○   cos1

105 PU_2016_384_E

If $\Delta(x) = \begin{vmatrix} 1 & x & x+1 \\ 2x & x(x-1) & x(x+1) \\ 3x(x-1) & x(x-1)(x-2) & x(x^2-1) \end{vmatrix}$, then $\Delta(100)$ equals

○   0

○   100!

○   100

○   100

150 PU_2016_384_E

The area enclosed between the curves $y^2 = x$ and $y = |x|$ is

○ $\frac{2}{3}$

○   1

○ $\frac{1}{6}$

○ $\frac{1}{3}$

214 PU_2016_384_E
If A, B, C are three mutually exclusive and exhaustive events of a trial such that P(A) = 2 P(B) = 3 P(C). Then P(A) is:-

○   3/8

- 1/3
- 2/5
- 6/11

5 of 100
186 PU_2016_384_E
Let A be a subset of B.

(i) each element of A is an element of B
(ii) if x is not an element of B then x is not an element of A.
then:-

- i is true but ii is not true.
- ii is true but i is not true.
- Both i and ii are true.
- Neither i nor ii is true.

6 of 100
125 PU_2016_384_E

If $nP_r = 840$ and $nC_r = 35$, then n is

- 8
- 6
- 7
- 9

7 of 100
210 PU_2016_384_E
Three wheels make 60, 36 and 24 revolutions per minute respectively. There is a red spot on the rim of all the three wheels. If the red spot was at the bottom most point when they all started, after how much time would they be at the bottom most point again?

- 5 Seconds
- 12 minutes
- 12 seconds
- 5 minutes

8 of 100
170 PU_2016_384_E
Which of the following is not a binary operation on R:-

- $a * b = ab$
- $a * b = a - b$
- $a * b = \sqrt{ab}$

○ $a * b = \sqrt{a^2 + b^2}$

162 PU_2016_384_E

If the normal makes an angle θ with positive x-axis then the slope of the curve at the point where the normal is drawn is:-

○ -cotθ

○ - tanθ

○ cotθ

○ tanθ

153 PU_2016_384_E

The area of the region bounded by the curve $|x| + |y| = 1$ is

○ 3

○ 1

○ 4

○ 2

161 PU_2016_384_E

The gradient of the tangent to the curve $y = 8 + 4x - 2x^2$ at the point where the curve cuts the y- axis is

○ 8

○ 4

○ -4

○ 0

197 PU_2016_384_E

Let a, b be elements of a group G. Then $(a^{-1}b)^{-1}$:-

○ $a^{-1}b$

○ ab^{-1}

○ ba^{-1}

○ $b^{-1}a$

145 PU_2016_384_E

The area of the region bounded by the curves $x = 0, x = \frac{\pi}{2}, f(x) = \sin x$ and

$g(x) = \cos x$ is

- ○ $2(\sqrt{2} - 1)$
- ○ $2(\sqrt{3} - 1)$
- ○ $2(\sqrt{2} + 1)$
- ○ $\sqrt{3} - 1$

201 PU_2016_384_E
A student appears in 5 papers in an exam and the full marks are the same for each paper. The marks obtained by the student in each paper are in the ratio 6:7:8:9:10, respectively. He obtained 60% of the total full marks. The number of papers where he obtained more than 50% are:-

- ○ 5
- ○ 3
- ○ 2
- ○ 4

149 PU_2016_384_E

$\int_0^{\sqrt{2}} [x^2] \, dx$ is

- ○ $\sqrt{2} - 1$
- ○ $2 + \sqrt{2}$
- ○ $\sqrt{2} - 2$
- ○ $2 - \sqrt{2}$

213 PU_2016_384_E
The average of 10 scores is 80. When the highest and lowest scores are dropped, the average is 81. If the highest score is 92 then the lowest score will be:-

- ○ 48
- ○ 76
- ○ 60
- ○ 78

198 PU_2016_384_E

(Z,*) is a group with a*b = a+b+1 ∀ a,b ∈ Z. The inverse of a is

○ -a-1

○ -a

○ a-2

○ -a-2

157 PU_2016_384_E

If α, β are the roots of the equation $ax^2 + bx + c = 0$, then the roots of the equation $a^3x^2 + abcx + c^3 = 0$ are,

○ α^3, β^3

○ $\alpha^2\beta, \alpha\beta^2$

○ $\alpha\beta, \alpha^2\beta^2$

○ $\alpha\beta, \alpha + \beta$

109 PU_2016_384_E

Sum of the series $S = 1^2 - 2^2 + 3^2 - 4^2 + ... - 2008^2 + 2009^2$ is

○ 2019045

○ 1005004

○ 1000506

○ 2000506

205 PU_2016_384_E

If M and N are positive integers where $\sqrt{MN} = 8$, then which of the following cannot be the value of M + N

○ 16

○ 65

○ 20

○ 35

126 PU_2016_384_E

If $\tan A = \frac{(1-\cos B)}{\sin B}$, then $\tan 2A$ is

○ cot B

○ tan B

○ $\cot \frac{B}{2}$

○ $\tan \frac{B}{2}$

174 PU_2016_384_E
Describe the following sequence in mathematical terms. 144, 72, 36, 18, 9.

○ Ascending arithmetic sequence

○ Descending geometric sequence

○ Descending arithmetic sequence

○ Ascending geometric sequence

100 PU_2016_384_E

Sum of all the values of x satisfying the equation $\log_{17} \log_{11}(\sqrt{x+11} + \sqrt{x}) = 0$ is

○ 36

○ 171

○ 25

○ 0

122 PU_2016_384_E

The domain of the real function $y = \sqrt{4 - x^2}$ is

○ [-2, 2]

○ 2, 3

○ [2, 4]

○ (-2, 2)

217 PU_2016_384_E
A tile is in the shape of a parallelogram of base 5cm and the corresponding height is 3cm. The number of tiles required to cover an area of 45 m^2 is:-

○ 3

○ 30000

○ 3000

○ 300

218 PU_2016_384_E
Adjacent sides of a parallelogram are 36cm and 27 cm in length. The perpendicular distance between the shorter side is 12 cm. Then the distance between the longer side is:-

○ 16

○ 12

○ 18

○ 9

106 PU_2016_384_E

The sum $S = \dfrac{1}{9!} + \dfrac{1}{3!7!} + \dfrac{1}{5!5!} + \dfrac{1}{7!3!} + \dfrac{1}{9!}$ equals

○ $\dfrac{2^{10}}{8!}$

○ $\dfrac{2^{11}}{9!}$

○ $\dfrac{2^{9}}{10!}$

○ $\dfrac{2^{10}}{7!}$

177 PU_2016_384_E
Which of the following expressions is equivalent to $(x-3)^2$?

○ x^2-3x+9

○ x^2-6x+9

○ x^2-6x-9

○ x^2+3x-9

158 PU_2016_384_E

The sum of all the roots of the equation $|x-2|^2 + |x-2| - 2 = 0$ is

○ 4

○ 7

○ 5

○ 1

133 PU_2016_384_E

$\lim_{n \to 0} \frac{\sin n\theta}{\sqrt{n}}$ is

○ -1

○ 1

○ 0

○ ∞

166 PU_2016_384_E

If $u = \log\left(\frac{x^2+y^2}{xy}\right)$ than $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ is

○ u^{-1}

○ u

○ $2u$

○ 0

206 PU_2016_384_E
If N = 1421 x 1423 x 1425, what is the reminder when N is divided by 12?

○ 6

○ 3

○ 9

○ 0

189 PU_2016_384_E
Let A and B are any two subsets of a set X.

(i) The complement of A is contained in the complement or $A \cup B$

(ii) The complement of A is contained in the complement or $A \cap B$
then:-

○ ii is true but i is not true.

○ i is true but ii is not true.

○ Both i and ii are true.

○ Neither i nor ii is true.

102 PU_2016_384_E

Let $\Delta = \begin{vmatrix} 0 & b-a & c-a \\ a-b & 0 & c-b \\ a-c & b-c & 0 \end{vmatrix}$, then Δ equal to

○ 0

○ abc

○ a+b+c

○ -(a+b+c)

137 PU_2016_384_E

The vector (2i + j - k) is perpendicular to the vector (i - 4j + λ k), if λ is:-

○ 0

○ -2

○ -1

○ -3

181 PU_2016_384_E

. Determinant of a Matrix $\begin{bmatrix} 1 & 2 & 3 \\ 3 & -2 & 1 \\ 1 & -6 & -5 \end{bmatrix}$ is

○ 12

○ 1

○ 2

○ 0

154 PU_2016_384_E

The function $f: (-1,1) \to R$ defined as $f(x) = \frac{x}{1-|x|}$ for all $x \in R$ is

One-one but not onto

Neither one-one nor onto

Onto but not one-one

Both one-one and onto

209 PU_2016_384_E
In a certain town, 1/5th of the housing units are equipped with cable television, 1/10th of the housing units are equipped with video cassette recorders and 1/3 of those having cable television have video cassette recorders. What fraction of the housing units have neither cable television nor video cassette recorder?

1/6

11/15

23/30

7/10

117 PU_2016_384_E

If $xy = e^5, x = e^3 y$ then the value of x and y are

e^{-4}, e^{-1}

4,1

e^4, e

1,4

190 PU_2016_384_E
In a class of 40 students, 12 enrolled for both English and Hindi. 22 enrolled for Hindi. If the students of the class enrolled for at least one of the two subjects, then how many students enrolled for only English and notHindi?

28

30

18

12

113 PU_2016_384_E

The value of $\int \dfrac{e^x (1 + \sin x)}{1 + \cos x} dx$ is

e^x tan (x / 2) + C

log | tan x | C

$e^x \cot (x / 2) + C$

0

138 PU_2016_384_E

If $y = e^{x+y}$, then $\frac{dy}{dx}$ is

$\frac{1}{1-y}$

$\frac{y}{1-y}$

$\frac{1}{y}$

$\frac{y}{x}$

142 PU_2016_384_E

The point of the curve $y = x^2$ that is closest to $(4, \frac{-1}{2})$ is

(1,1)

(2,4)

$\left(\frac{4}{3}, \frac{16}{9}\right)$

$\left(\frac{2}{3}, \frac{4}{9}\right)$

194 PU_2016_384_E
The number of elements in the power set of the set is { a, {b,c}, d} is:-

8

2

6

4

169 PU_2016_384_E
The area bounded by the parabola y^2=x and its latus rectum is:-

$\frac{2}{3}$

$\frac{4}{3}$ ○

$\frac{8}{3}$ ○

$\frac{1}{6}$ ○

202 PU_2016_384_E

A man starts from a point A to a point B in a park. He covers 2/5th of the distance AB at a speed of 2a per hour and the remaining 3/5th of the distance AB at a speed of 3b per hour. In the time that he took to travel from A to B he could have run from A to B and back to A at a speed of 5c. Then:-

○ 2/a +3/b = 5/c

○ 2a + 3b = 5c

○ 1/a + 1/b = 2/c

○ 1/a + 1/b = 1/c

130 PU_2016_384_E

The area of the triangle with vertices (3, -4), (-7, 4) and (10, -2) is:-

○ 48

○ 40

○ 32

○ 38

173 PU_2016_384_E

A box contain 6 red and 4 white balls. If 3 balls are drawn at random, the probability of getting 2 white balls without replacement is:-

○ $\frac{18}{125}$

○ $\frac{1}{20}$

○ $\frac{3}{10}$

○ $\frac{4}{25}$

141 PU_2016_384_E

The equation of the horizontal tangent to the graph of the function

$f(x) = e^x + e^{-x}$ is

○ y = -1

○ y = 2

○ y = -2

○ x = 2

193 PU_2016_384_E
If an integer n divides a product ab and n does not divide 'a' then which one of the following is correct.

○ n divides b if b is a composite number

○ n divides b if b is a prime number

○ n divides b if n is a prime number

○ n always divides b

110 PU_2016_384_E

$$\int \frac{8x+13}{\sqrt{4x+7}}dx =$$

○ $\frac{1}{6}(8x+11)\sqrt{4x+7}+c$

○ $\frac{1}{6}(8x+9)\sqrt{4x+7}+c$

○ $\frac{1}{6}(8x+13)\sqrt{4x+7}+c$

○ $\frac{1}{6}(8x+15)\sqrt{4x+7}+c$

114 PU_2016_384_E
If A and B are two invertible matrices of the same order, then adj(AB) is not equal to:-

○ $|A||B|(AB)^{-1}$

○ adj(A)adj(B)

○ $|B||A|A^{-1}B^{-1}$

○ $|B||A|B^{-1}A^{-1}$

165 PU_2016_384_E
The point of inflexion of the curve $y = x^4$ is at:-

○ x = 0

○ x = 3

○ x = 12

○ nowhere

54 of 100
178 PU_2016_384_E
Which of the following represents the factors of the expression, x^2-3x-40?

○ (x+6)(x-9)

○ (x-7)(x+4)

○ (x+10)(x-4)

○ (x-8)(x+5)

55 of 100
129 PU_2016_384_E
The point dividing the line joining the two points (1, 7) and (6, -3) in the ratio 2:3 is:-

○ (3, 3)

○ (3, 4)

○ (2, 3)

○ (0, 0)

56 of 100
121 PU_2016_384_E

If $f(x) = \log x$ and $g(x) = x^3$, then $f[g(b)] + f[g(a)]$ is

○ f [g(a) + g(b)]

○ f [g(ab)]

○ g [f(ab)]

○ g [f(a) + f(b)]

57 of 100
118 PU_2016_384_E
The possible number of different orders that a matrix can have when it has 24 elements, is:-

○ 8

○ 16

○ 4

○ 24

58 of 100
185 PU_2016_384_E

In the following collection

(i) the rich peoples in city who use motorbikes for going to office
(ii) the people who traveled at least once in airplane
(iii) the people having annual income less than 40000 rupeesthen which one of the followin

○ Only (ii) and (iii) are well defined sets.

○ All (i) (ii) and (iii) are well defined sets

○ Only (i) and (ii) are well defined sets.

○ none of them are well defined sets.

134 PU_2016_384_E

For any vector x, $(x \times i)^2 + (y \times j)^2 + (x \times k)^2$ is

○ x^2

○ $3x^2$

○ $4x^2$

○ $2x^2$

182 PU_2016_384_E

The vectors $X_1 = (1,2,3)$, $X_2 = (3,-2.1)$ and $X_3 = (1,-6,-5)$ are linearly dependent and their relationship is

○ $2X_1 + X_2 + X_3 = 0$

○ $X_1 = X_2 + 2X_3 = 0$

○ $2X_1 = X_2 + X_3 = 0$

○ $2X_1 + X_2 - X_3 = 0$

224 PU_2016_384_M

If Let $G = \left\{ \begin{pmatrix} x & x \\ x & x \end{pmatrix} \mid x \text{ in } R^* \right\}$. Under the matrix multiplication G is

○ abelian group

○ not a group

○ group with $e = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

○ non abelian group.

245 PU_2016_384_M

If $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ then $adj\ A$

○ $\begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix}$

○ $\begin{pmatrix} 4 & 3 \\ 2 & 1 \end{pmatrix}$

○ $\begin{pmatrix} 4 & 2 \\ 3 & 1 \end{pmatrix}$

○ $\begin{pmatrix} 4 & -2 \\ -3 & 1 \end{pmatrix}$

228 PU_2016_384_M

The rank of the matrix $\begin{pmatrix} 1 & 0 & 2 & 1 \\ 0 & 2 & 4 & 2 \\ 0 & 2 & 2 & 1 \end{pmatrix}$ is

○ 2

○ 1

○ 3

○ 0

225 PU_2016_384_M
In the group (Q,+) the inverse of 0 is:-

○ -1

○ 1

○ ∞

○ 0

236 PU_2016_384_M

The order of $[4]$ in $(Z_7, +_7)$ is

○ 6

○ 5

○ 7

○ 4

257 PU_2016_384_M

A person is having 4 pants and 4 shirts in the colours of Green, Red, Blue and white. What is the chance that the random chosen dress becomes a uniform?

○ 1/32

○ 1/16

○ 1/8

○ 1/4.

220 PU_2016_384_M

The function $f: R \to R$ given by $f(x) = x^2 - 4$ is

○ One-one

○ One-one and Onto

○ Onto

○ None

244 PU_2016_384_M

Let $f: A \to B$ and $g: B \to C$ be two functions such that $f \circ g: A \to C$ is

bijection then

○ f and g are bijections

○ f is 1-1 and g is onto

○ f is bijection

○ g is bijection

233 PU_2016_384_M

The values of x satisfying the equation $(x \ 1)\begin{pmatrix} 1 & 2 \\ -1 & 1 \end{pmatrix}\begin{pmatrix} x \\ 2 \end{pmatrix} = 0$

○ 1,-2

○ -1,2

○ 1,2

○ -1,-2

232 PU_2016_384_M

Pick out false statement. In the set of even integers E define $a * b = \dfrac{ab}{2}$

○ * is associative

○ * is commutative

○ * is a binary operation

○ E has identity 1

229 PU_2016_384_M

If $A = \begin{pmatrix} 1 & 2 \\ 3 & n \end{pmatrix}$ and $B = \begin{pmatrix} m & 2 \\ n & 4 \end{pmatrix}$ are singular matrices then the value of mn is

○ 18

○ 3

○ 6

○ 2

253 PU_2016_384_M
The probability of getting the sum on three dice is 3 when three fair dice are thrown simultaneously is:-

○ 3/216

○ 4/216

○ 2/216

○ 1/216

221 PU_2016_384_M
A binary operation on a set A is a function from:-

○ $A \rightarrow A \times A$

○ $A \times A \rightarrow A \times A$

○ $A \times A \rightarrow A$

○ $A \rightarrow A$

252 PU_2016_384_M
If P(A) = 1/3, P(B) = 1/2 and P(A|B) = 1/4 then P(B|A^c) is equal to:-

○ 3/16

○ 9/16

6/16

7/16

256 PU_2016_384_M
A class consists of 9 students, two of them are from Commerce, three are from science and four from Arts disciplines. If Three students are selected at random from the composition, what is the probability that they are all from the same discipline:-

7/17

6/84

5/84

3/9

249 PU_2016_384_M
If A and B are any two matrices such that AB=0 and A is nonsingular, then:-

B is non singular

B = A

B = 0

B is nonzero singular

237 PU_2016_384_M

Let A and B be sets such that $|A| = m$ and $|B| = n$. The set of all functions from A to B is denoted by B^A. Then $|B^A| =$

m^n

mn

m+n

n^m

241 PU_2016_384_M

If $f: R \rightarrow R$ is given by $f(x) = 2x - 1$ and $g: R \rightarrow R$ is given by $g(x) = 3x + 1$ then the composition $(f \circ g)(x) = g(f(x))$ is

$6x + 1$

$5x$

○ $6x^2 - x - 1$

○ $6x - 2$

240 PU_2016_384_M

If $A = \begin{pmatrix} 2 & 0 \\ 0 & 3 \end{pmatrix}$, then det $(A^5 A^{-1})$ is

○ 7776

○ 1296

○ 0

○ 216

248 PU_2016_384_M
59% of 3654 ÷ 126 = ?

○ 171.1

○ 1.711

○ 0.1711

○ 17.11

265 PU_2016_384_D
If two independent random variables X and Y have Poisson distribution with parameters 3 and 4 respectively, then P(X+Y=0) is:-

○ e^{-7}

○ e^{-3}

○ e^{-12}

○ e^{-4}

268 PU_2016_384_D
What is the range of random variable of Binomial Distribution:-

○ 0 to n

○ (-∞ to 0)

○ (0 to +∞)

○ (-∞ to +∞)

292 PU_2016_384_D
If $V(X) = \sigma^2$, then V(Y) where Y = (ax + b)/ c is:-

$$\frac{a\sigma^2 + b}{c}$$

○

$$\frac{a}{c}\sigma^2$$

○

$$\frac{a^2}{c}\sigma^2$$

○

$$\frac{a^2}{c^2}\sigma^2$$

○

84 of 100
289 PU_2016_384_D
A frequency distribution having two modes is said to be:-

○ Binomial

○ Trinomial

○ Unimodal

○ Bimodal

85 of 100
277 PU_2016_384_D
The mean of 5 observations is 4.4 and their variance is 8.24. If three of the observations are 1, 2 and 6, then the other two observations are:-

○ (3, 10)

○ (8, 5)

○ (4, 9)

○ (7, 6)

86 of 100
260 PU_2016_384_D
Let a lot of 10 items contains 3 defective items. If a sample (without replacement) of 4 items is drawn at random. Then the probability of getting at the most one defective item is:-

○ 1/2

○ 1/3.

○ 2/3

○ 3/10

87 of 100
293 PU_2016_384_D
The sum of squares of the deviations is minimum when the deviations are taken from:-

○ Median

Mean

An Arbitrary value

Mode

281 PU_2016_384_D
What is the mean of the following distribution?

$$x: \quad 1 \quad 2 \quad 3 \,...\, n$$
$$f_x: \quad 1 \quad 2 \quad 3 \,...\, n$$

○ $\dfrac{n(n+1)(2n+1)}{6}$

○ $\dfrac{2n+1}{3}$

○ $\dfrac{n(n+1)}{2}$

○ 1

272 PU_2016_384_D

If X is a random variable having the probability density function

$$f(x) = \begin{cases} \dfrac{1}{3} e^{-\frac{x}{3}} & ; x > 0 \\ 0 & otherwise \end{cases}$$

then $P(X > 3)$ is

○ 1/e

○ $1/e^2$

○ 0.75

○ 1/3.

276 PU_2016_384_D
If a random variable X assumes values -1, 0 and 1 with probabilities 1/3, 1/3 and 1/3 respectively, then the standard deviation of 5X + 1 is:-

○ 2.08

○ 1.08

○ 4.08

○ 3.08

296 PU_2016_384_D
Which one of the following is a relative measure of dispersion?

- coefficient of variation
- variance
- standard deviation
- Mean

284 PU_2016_384_D
The empirical relation between the measures of dispersion is:-

- $M.D.=\dfrac{4}{5}(S.D.)$

- $M.D.=\dfrac{4}{3}(S.D.)$

- $M.D.=\dfrac{3}{4}(S.D.)$

- $M.D.=\dfrac{5}{4}(S.D.)$

261 PU_2016_384_D
If a fair coin is tossed 100 times and X is the number of heads obtained, then the mean and variance of X are:-

- 25, 50
- 15, 40
- 50, 25
- 40, 15

273 PU_2016_384_D
Given Var X_1 = 4, Var X_2 = 2 and Var (X_1 + 2 X_2) = 32, then Cov(X_1,X_2) is equal:-

- 5
- 6
- 2
- 4

280 PU_2016_384_D

If $f(x) = 1/\pi$; $0 \le x \le p$ then $E(\sin x)$ is equal to:-

○ $1/\pi$

○ 0

○ $3/\pi$

○ $2/\pi$

288 PU_2016_384_D
If M_d , Q, D and P stand for median, quartile, decile and percentile respectively, then which of the following relation between them is true?

○ $M_d = Q_2 = D_6 = P_{50}$

○ $M_d = Q_2 = D_4 = P_{50}$

○ $M_d = Q_2 = D_5 = P_{50}$

○ $M_d = Q_3 = D_5 = P_{75}$

269 PU_2016_384_D
When there are finite number of trials, which are repeated for only two outcomes, then the distribution under application is:-

○ Poisson

○ Geometric

○ Normal

○ Binomial

264 PU_2016_384_D
Let X follow Normal distribution with mean 2 and variance 3 [N(2, 3)].
Then Y = 2X+3 is:-

○ N(7, 24)

○ N(7, 22)

○ N(7, 17)

○ N(7, 12)

297 PU_2016_384_D
20% of a larger number is 2.3 less than 30% of a smaller number. The larger number also exceeds the smaller number by 10. What is the value of the larger number?

○ 33

○ 47

○ 53

○ 67

285 PU_2016_384_D
10 is the mean of a set of 7 observations and 5 is the mean of a set of 3 observations. The mean of a combined set is:-

○ 10

○ 15

○ 8.5

○ 7.5