Question Number : 56 Question Id : 640653688923 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The compound word '*swimming pool*' is stressed on the _____.

Options :

6406532305062. ✔ First word

6406532305063. ✖ Second word

Question Number : 57 Question Id : 640653688924 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The word '*distribute*' is ___.

Options :

6406532305064. ✔ Trisyllabic

6406532305065. ✖ Polysyllabic

6406532305066. ✖ Disyllabic

Sem1 Maths1

Section Id :	64065348480
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653100663
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 58 Question Id : 640653688925 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT **"FOUNDATION LEVEL : SEMESTER I: MATHEMATICS FOR DATA SCIENCE I (COMPUTER BASED EXAM)"**

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406532305067. ✔ YES

6406532305068. ✖ NO

Question Number : 59 Question Id : 640653688926 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Instructions:

- There are some questions which have functions with discrete valued domains (such as day, month, year etc). For simplicity, we treat them as continuous functions.

- For NAT type question, enter only one right answer even if you get multiple answers for that particular question.

Options :

6406532305069. ✔ Useful Data has been mentioned above.

6406532305070. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	640653100664
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653688927 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (60 to 61)

Question Label : Comprehension

Consider two functions $f(x) = \log_2(\log_2(\log_3 x))$ and $g(x) = -x^2 + 4x + 77$.
Let $h(x)$ be a function defined as $h(x) := (f \circ g)(x)$ in its domain,

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 60 Question Id : 640653688928 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the maximum value of $g(x)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

81

Question Number : 61 Question Id : 640653688929 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the maximum value of $h(x)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Id : 640653688938 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (62 to 63)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 62 Question Id : 640653688939 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the following limit.

Let $f(2) = 10$ and $f'(2) = 4$.
Then, calculate the value of

$$\lim_{x \to 2} \frac{xf(2) - 2f(x)}{x - 2}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 63 Question Id : 640653688940 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the following limit.

Calculate, $\lim_{x \to 9} \frac{2(\sqrt{f(x)} - 3)}{\sqrt{x} - 3}$,

given that $f(9) = 9$ and

$f'(9) = 4$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Sub-Section Number : 3

Sub-Section Id : 640653100665

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 64 Question Id : 640653688930 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Choose the correct option for $f(x) = \dfrac{1}{x-1}$.

Options :

6406532305073. ✖ The function $(fof)(x)$ in its domain is discontinuous only at the point/points $x = 1$.

6406532305074. ✔ The function $(fof)(x)$ in its domain is discontinuous only at the point/points $x = 1$ and $x = 2$.

6406532305075. ✖ The function $(fof)(x)$ in its domain is discontinuous only at point/points $x = 2$.

6406532305076. ✖ The function $(fof)(x)$ in its domain is discontinuous only at point/points $x = 1$, $x = 2$ and $x = 3$.

Question Number : 65 Question Id : 640653688931 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Choose the set of **INCORRECT** options.

Options :

6406532305077. ✔ If a function is continuous at a particular point, then the function is differentiable at that point.

6406532305078. ✖ If a function is differentiable at a particular point, then the function must be continuous at that point.

6406532305079. ✖ If $f(x)$ and $g(x)$ are bijective functions, then $gof(x)$ is also a bijective function.

6406532305080. ✖ If $f(x)$ and $g(x)$ are one-one functions, then $gof(x)$ is also one-one function.

Sub-Section Number :	4
Sub-Section Id :	640653100666
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653688932 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (66 to 67)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 66 Question Id : 640653688933 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Find the number of solutions of the equation $e^{3x} - 4e^{2x} + 3e^x = 0$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 67 Question Id : 640653688934 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the value of x that satisfies the equation $9^x - 2 \times 3^{x+1} - 27 = 0$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :   5

Sub-Section Id :   640653100667

Question Shuffling Allowed :   No

Is Section Default? :   null

Question Id : 640653688935 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (68 to 69)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 68 Question Id : 640653688936 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the limit of the following sequence.

$$\{a_n\} \text{ such that } a_n = \frac{n^3 + 2n^2 - 1}{n^3 + 3n + 1}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 69 Question Id : 640653688937 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Find the limit of the following sequence.

$\{a_n\}$ such that $a_n = \dfrac{n^3 + 2^n}{3^n + n^2}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number :   6

Sub-Section Id :   640653100668

Question Shuffling Allowed :   Yes

Is Section Default? :   null

Question Number : 70 Question Id : 640653688941 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Given a function

$$f(x) = \begin{cases} \frac{|x|}{x} & \text{if } x \neq 0 \\ 1 & \text{if } x = 0 \end{cases}$$

Which of the following options is/are true?

Options :

6406532305087. ✔ $\lim\limits_{x \to 0^+} f(x) = f(0)$.

6406532305088. ✖ $\lim\limits_{x \to 0^-} f(x)$ does not exist.

6406532305089. ✔ f is not continuous at $x = 0$.

6406532305090. ✘ f is differentiable at $x = 0$.

Question Number : 71 Question Id : 640653688945 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the functions $f(x) = \sqrt{x+2}$ and $g(x) = \log(1 + x^2)$. Which of the following options is/are true?

Options :

6406532305100. ✘ $(f \circ g)(x) = \log(2x + 1)$.

6406532305101. ✘ The domain of the function $(g \circ f)(x)$ is $[-2, -1]$

6406532305102. ✔ $(g \circ f)(x) = \log(x + 3)$.

6406532305103. ✔ The domain of the function $(g \circ f)(x)$ is $(-2, \infty)$

Sub-Section Number :	7
Sub-Section Id :	640653100669
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 72 Question Id : 640653688942 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

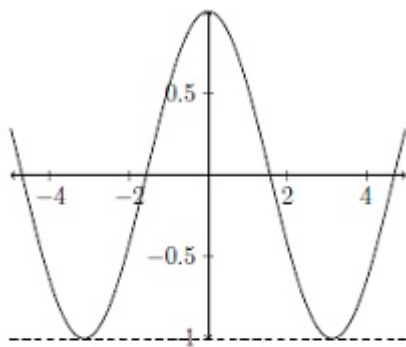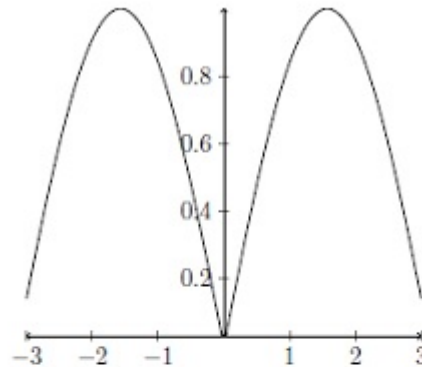Consider the graphs given below:

Figure: Curve 1
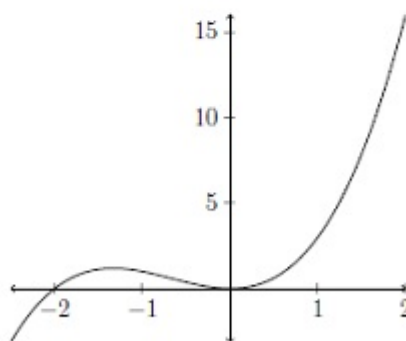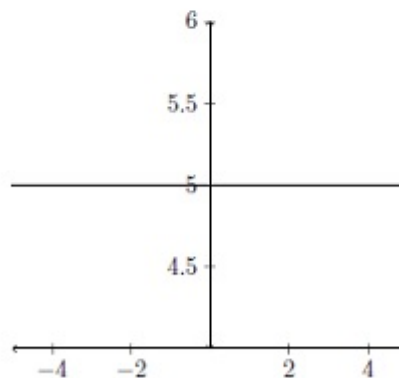

Figure: Curve 2

Figure: Curve 3

Figure: Curve 4

Choose the set of correct options:

Options :

6406532305091. ✔ There are at least two points on Curve 1, where the derivatives of the function corresponding to Curve 1, are equal.

6406532305092. ✔ At the origin the derivative of the function corresponding to Curve 2 does not exist.

6406532305093. ✖ The derivative of the function corresponding to Curve 3, at the origin and at the point (−2, 0) are the same.

6406532305094. ✖ The derivative of the function corresponding to Curve 4 does not exist at any point.

Sub-Section Number :   8

Sub-Section Id :   640653100670

Question Shuffling Allowed :   Yes

Is Section Default? :   null

Question Number : 73 Question Id : 640653668943 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

Consider a function f defined as,

$$f(x) = \begin{cases} 3mx + n & x < 1, \\ 11 & x = 1, \\ 5mx - 2n & x > 1 \end{cases}$$

If f is continuous at $x = 1$, then the value of $m + n$ is

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number :   9

Sub-Section Id :   640653100671

Question Shuffling Allowed :   Yes

Is Section Default? :   null

Question Number : 74 Question Id : 640653668944 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let f be a differentiable function such that $f(4) = 6$ and $f'(4) = -2$. What is the approximated value

of f (4.2) using the linear approximation of f at $x = 4$?

Options :

6406532305096. ✼ 5.3

6406532305097. ✼ 5.4

6406532305098. ✼ 5.5

6406532305099. ✔ 5.6

Sem1 Statistics1

Section Id :	64065348481
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	40
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653100672
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 75 Question Id : 640653688946 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction