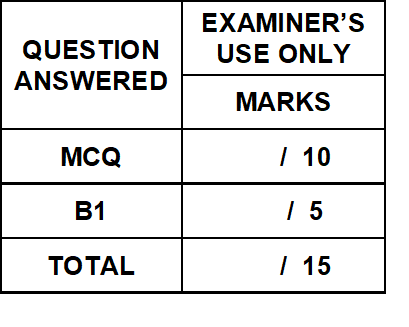
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| --- | --- | --- | --- |
| **Specialist Diploma In Industrial Internet of Things**  **Engineering Analytics & Machine Learning (ECSE202)** | | | Description: C:\Users\rajahk\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\Z7A7LSNK\big (2).jpg |
|  | | |  |
| **Name:** | **Class: PE** | | |
| **Admin No:** | **Marks:** | | |

**Written Test Set A**

**Instructions to Candidates:**

* The duration of the written test is 30 minutes.
* This paper consists of two sections, A and B.
* Section A is worth 10 marks and Section B is worth 5 marks
* Answer all questions in both sections.
* You are to write all your answers on this set of question paper.

**Section A:** This section consists of 10 multiple choice questions. Each question is worth 1 mark.

* 1. What is the value of the variable result after execution of the codes show below?

seq=[1,5,3,2,4]

result=0

for c in seq:

result=result+c

1. 15
2. 10
3. 5
4. 1

( )

* 1. In a factory robots are fitted with sensors to collect information about the condition of different modules of the robots. You are provided with historical sensors data to analyses what cause a robot to breakdown. What kind of analytics is required?

1. Descriptive Analytics
2. Predictive Analytics
3. Diagnostic Analytics
4. Prescriptive Analytics

( )

* 1. Which of the following statement(s) is (are) **TRUE** about the underlying format of date time for Microsoft Excel?

1. 0.25 is 07:00 AM
2. It is stored in a 64-bit float point.
3. It is stored in a 32-bit floating point
4. The length of a day equals 0.999.

( )

* 1. A random variable X sample space is defined by. What is the probability of P(X=1U X=4)? Note that the probability of any two sets of outcomes is mutual exclusive.

1. 2/5
2. 3/5
3. 2/6
4. 3/6

( )

* 1. A sensor is used to detect whether the temperature of a cooker is low, medium or high. Below is the data collected over 200 cooking sessions:

|  |  |  |  |
| --- | --- | --- | --- |
| Temperature Level | Low | Medium | High |
| Frequency | 56 | 110 | 34 |

What is the empirical probability of a High temperature NOT occurring?

1. 0.75
2. 0.34
3. 0.66
4. 0.83

( )

* 1. A lux meter is used to measure the brightness of every manufactured lamp. 95% of the lamp produce light intensity is between 300 lx to 340 lx (SI unit for lux). Assume the data is normally distributed, what is the mean and standard deviation?

1. 320,10
2. 315,20
3. 330,15
4. 325,25

( )

* 1. The following function is defined as:

def printdata(gender, height):

print("Gender:",gender," Height",height)

return

printdata(1.3,"Male")

What is the print out?

1. Gender: Male Height 1.3
2. Gender: 1.3 Height Male
3. Gender: Male Height 1.3
4. Gender: Male Height 1.3

( )

* 1. What of the following is NOT a characteristic of data collected from sensors?

1. Time series
2. Noisy
3. Unlikely to have missing data
4. Unstructured

(  )

* 1. Which of the following statements is NOT a motivating factor that contribute to the popularityof Engineering Analytic?

1. Easy access to high speed and cheap connection
2. Smart sensors and device technology have matured
3. Easy access to cheap computational power
4. Availability of data scientist

( )

What is the value of the variable result after execution of the codes show below?

d1={'amber':1,'Jenny':4,'Amy':5,’Mary’:10}

result=d1['amber']+d1['Amy']

1. 15
2. 5
3. 9
4. 6

( )

10

**Section B:** This section consists of a short question worth 5 marks.

1. Company XYZ wants to buy a laser cutter to cut metal bar to length of 10mm with a tolerance of +/-0.1mm and can only accept a failure rate of 5%. The technician tested four models of cutter and produce the following report:

|  |  |  |
| --- | --- | --- |
| Model | Mean (mm) | Standard Deviation |
| A | 9.99 | 0.04 |
| B | 10.03 | 0.05 |
| C | 10.01 | 0.07 |
| D | 9.98 | 0.06 |

Assuming the data is normally distributed. Which model of the laser cutter should the company buy? Show workings to justify your recommendation.

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