Objective Assignment 3

The due date for submitting this assignment has passed. Due on 2021-03-10, 23:59 IST.

As per our records you have not submitted this assignment.

1) In a process capability evaluation,
   - Cp ≥ Cpk
   - Cp does not have any relationship with Cpk
   - Cp < Cpk
   - $C_{pk} = \frac{1}{2} C_{p}$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: $C_{p} \geq C_{pk}$

2) Processes that operate with “six sigma quality” in short term are assumed to produce about ___ defects per million opportunities (DPMO) considering process shift.
   - 2.4
   - 3.4
   - 4.4
   - 0.002

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 3.4

3) The concept of Six Sigma was developed by the following company.

   1 point
No, the answer is incorrect.
Score: 0
Accepted Answers: Motorola

4) A c-chart is used for,

- For defects with constant sample size
- For defectives with constant sample size
- For defectives with varying sample size
- For defects with varying sample size

No, the answer is incorrect.
Score: 0
Accepted Answers: For defects with constant sample size

5) The $C_p$ equals 1.50 and the process standard deviation equals 1.00. Determine the tolerance spread.

- 1.0
- 2.0
- 9.0
- 12.0

No, the answer is incorrect.
Score: 0
Accepted Answers: 9.0

6) Which of these is a necessary assumption made for the calculation of $C_{pk}$?

- The quality characteristic has a normal distribution
- The quality characteristic has a lognormal distribution
- The quality characteristic has an exponential distribution
- The quality characteristic has any distribution

No, the answer is incorrect.
Score: 0
Accepted Answers: The quality characteristic has a normal distribution

7) In a c-chart, the LCL comes out to be -0.16. The value of LCL that should be used is:

- -0.16
- 0.16
- 1
- 0

1 point
No, the answer is incorrect.
Score: 0
Accepted Answers: 0

8) If the process capability ratio Cp is 1.53, what percentages of the specification band **1 point** will be used by the process?

- 65.36%
- 75.11%
- 44.21%
- 21.42%

No, the answer is incorrect.
Score: 0
Accepted Answers: 65.36%

9) Observe the MINITAB output for **p-control chart** with **variable subgroup size**. **1 point**

![P Chart]

Tests performed with unequal sample sizes

Why the LCL value is considered constant (and taken as zero) in the above chart, rather than having varying limits (e.g. as shown for UCL)?

- There is a mistake while providing input to MINITAB interface
- LCL is always equal to zero for p-chart
- Proportion defective cannot be less than zero
- None of the options (a, b or c)

No, the answer is incorrect.
Score: 0
Accepted Answers: Proportion defective cannot be less than zero

10) The distribution of sample means _____. **1 point**

- is always a normal distribution.
- will be normal if either the population is normal or the sample size is n>30
- will be normal only if the sample size is at least n=30.
- will be normal only if the population distribution is normal.

No, the answer is incorrect.
Score: 0
Accepted Answers:
will be normal if either the population is normal or the sample size is n>30

11) The Minitab output of a random variable x is shown below. 1 point

Is the variable normally distributed?

- Yes
- Need more information
- No

No, the answer is incorrect.
Score: 0
Accepted Answers:
Yes

12) Customers arrive at a department store, randomly and independently. What is an appropriate distribution for modeling the number of customers that arrive in a 2-hour period? 1 point

- Normal distribution
Binominal Distribution
Poisson Distribution
Gamma Distribution

No, the answer is incorrect.
Score: 0
Accepted Answers:
Poisson Distribution

13) Samples of size 25 are selected from a population with mean 40 and standard deviation 7.5. Based on Centre limit theorem, the mean of the sampling distribution of sample means is

- 7.5
- 40
- 25
- 8

No, the answer is incorrect.
Score: 0
Accepted Answers:
40

14) The appropriate measurement scale for a customer survey is:

- Nominal
- Ordinal
- Ratio
- Interval

No, the answer is incorrect.
Score: 0
Accepted Answers:
Ordinal
15) Process capability study results are given in the below Figure:

![Process Capability Report](image)

**Sigma level** (Short Term) of the process is:

- less than 1
- more than 1
- Equal to 1
- Cannot say based on given information

No, the answer is incorrect.
Score: 0
Accepted Answers: more than 1

16) Five samples of subgroup size 3 were collected for a variable measurement. The means and within subgroup variation are provided in the following table.

<table>
<thead>
<tr>
<th>Sample number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample mean</td>
<td>5.0</td>
<td>4.9</td>
<td>5.0</td>
<td>6.0</td>
<td>5.2</td>
</tr>
<tr>
<td>Sample range</td>
<td>0.2</td>
<td>0.4</td>
<td>0.1</td>
<td>0.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

The values of which sample are identical?

- sample 1
- sample 2
- sample 3
- sample 4

No, the answer is incorrect.
Score: 0
Accepted Answers: sample 4
17) One characteristic of attributes data is that they are always  
  ○ continuous  
  ○ discrete  
  ○ expensive to collect  
  ○ read from a scale of measurement  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
**discrete**

18) Which of the following is not a process capability or performance index?  
  ○ $C_{pk}$  
  ○ $P_{pk}$  
  ○ $C_p$  
  ○ $P_p$  
  ○ $C_z$  

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
$C_z$

19) A bank statement on a customer's savings account contains 24 items of account information. Last month, 2500 bank statements were checked and 60 errors were found in the account items. The approximate value of **DPMO** is __________.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
(Type: Range) 990,1010

**Question 20, 21, 22:** Data for the number of dissatisfied customers in a department store observed for 25 samples of subgroup size 300 are shown in below Table. Np-chart is used to
monitor the process.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Number of Dissatisfied Customers</th>
<th>Sample</th>
<th>Number of Dissatisfied Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>12</td>
<td>10</td>
</tr>
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<td>3</td>
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<td>13</td>
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</tr>
<tr>
<td>4</td>
<td>8</td>
<td>14</td>
<td>10</td>
</tr>
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<td>5</td>
<td>6</td>
<td>15</td>
<td>7</td>
</tr>
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<td>6</td>
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<td>8</td>
<td>8</td>
<td>18</td>
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</tr>
<tr>
<td>9</td>
<td>13</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>9</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>184</td>
</tr>
</tbody>
</table>

20) The centerline of the chart is ___________.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 8.90,10.10

1 point

21) Upper control limit of the chart for 3-sigma limit is ___________.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 17.98,18.34

1 point

22) Lower control limit of the chart for 3-sigma limit is ___________.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.23,0.25

1 point