Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: BBA (CORE) **Semester: IV**
Subject: Total Quality Management **Subject code- LSCM3004**
Max. Marks: 100 **Time: 03 hrs.**
Instructions:

SECTION A

S. No.	**Attempt all of the following, each question carry two marks.**		
Q 1	TQM	**2**	**CO 1**
Q 2	EMS	**2**	**CO 1**
Q 3	ISO	**2**	**CO 1**
Q 4	QMS	**2**	**CO 1**
Q 5	SPC	**2**	**CO 1**
Q 6	QFD	**2**	**CO 1**
Q 7	JIT	**2**	**CO 1**
Q 8	R chart	**2**	**CO 1**
Q 9	TPM	**2**	**CO 1**
Q 10	Capability Index	**2**	**CO 1**

SECTION B
Attempt any Four

Q 1	What does Total Quality Management encompass?	**5**	**CO3**
Q 2	What is ISO 14000?	**5**	**CO2**
Q 3	Difference between accuracy and consistency.	**5**	**CO3**
Q 4	What is Quality Loss Function? Discuss in details.	**5**	**CO3**
Q 5	Consider the capability of a process that puts pressurized grease in an aerosol can. The design specs call for an average of 80 pounds per square inch (psi) of pressure in each can with an upper tolerance limit of 85 psi and a lower tolerance limit of 75 psi. A sample is taken from production and it is found that the cans average 81 psi with a standard deviation of 2psi. Is the process capable at the 3σ level?	**5**	**CO3**

SECTION-C
Attempt any three

<table>
<tr><td>Q 1</td><td>A machine operator at a pencil-manufacturing facility gathered 10 different random samples of 100 pencils. The operator’s inspection was to determine whether the pencils were in compliance or out of compliance with specifications. The results of this inspection are shown below. Use these data to construct a p chart. Comment on the results of this chart.
<table>
<tr><th>Sample</th><th>n</th><th>Out of compliance</th></tr>
<tr><td>1</td><td>100</td><td>2</td></tr>
<tr><td>2</td><td>100</td><td>7</td></tr>
<tr><td>3</td><td>100</td><td>4</td></tr>
<tr><td>4</td><td>100</td><td>3</td></tr>
<tr><td>5</td><td>100</td><td>3</td></tr>
<tr><td>6</td><td>100</td><td>5</td></tr>
<tr><td>7</td><td>100</td><td>2</td></tr>
<tr><td>8</td><td>100</td><td>0</td></tr>
<tr><td>9</td><td>100</td><td>1</td></tr>
<tr><td>10</td><td>100</td><td>6</td></tr>
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<tr><td>Q 2</td><td>What is ISO 9000? Describe the process for ISO 9000.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q 3</td><td>What is Total Productive Maintenance? Describe the TPM process with reference to FMCG sector.</td><td>10</td><td>CO3</td></tr>
<tr><td>Q 4</td><td>What is SPC chart for quality management? How these charts can be use in service sector.</td><td>10</td><td>CO4</td></tr>
</table>

SECTION-D (Case study/Analytical)

	A manufacturing facility (ABC Ltd.) produces bearings. The diameter specified for the bearings is 5 millimeters. Every 10 minutes, six bearings are sampled and their diameters are measured and recorded. Twenty of these samples of six bearings are gathered. (Given for n=6; D3 = 0, D4 = 2.004)		

Sample 1	5.13	4.92	5.01	4.88	5.05	4.97
Sample 2	4.96	4.98	4.95	4.96	5.01	4.89
Sample 3	5.21	4.87	5.02	5.08	5.12	5.04
Sample 4	5.02	5.09	4.99	5.02	5.03	5.01
Sample 5	5.12	5.08	5.09	5.13	5.06	5.13
Sample 6	4.98	5.02	4.97	4.99	4.98	4.99
Sample 7	4.99	5.00	5.00	5.02	5.01	5.01
Sample 8	4.96	5.01	5.02	5.05	5.04	5.02
Sample 9	4.96	5.00	4.91	4.87	4.96	5.01
Sample 10	5.03	4.99	4.96	5.14	5.11	5.04
Sample 11	4.91	4.93	5.04	5.00	4.90	4.82
Sample 12	4.97	4.91	5.02	4.93	4.95	4.96
Sample 13	5.09	4.96	5.05	5.12	5.06	5.01
Sample 14	4.96	4.99	4.82	5.03	5.00	4.96
Sample 15	4.99	4.97	5.01	4.98	4.96	5.02
Sample 16	5.01	5.04	5.09	5.07	5.12	5.13
Sample 17	5.05	4.97	5.04	5.03	5.09	5.01
Sample 18	4.96	4.93	4.97	5.01	4.98	4.92
Sample 19	4.90	4.85	5.02	5.01	4.88	4.86
Sample 20	5.04	5.03	4.97	4.99	5.05	5.06

Q 1	Help ABC Ltd. construct a R chart from these data.	**10**	**CO4**
Q 2	How does your chart show that the “diameter specified for the bearings” is out-of-control?	**10**	**CO4**
Q 3	What action do you recommend for ABC Ltd?	**10**	**CO3**

Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
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Subject: Total Quality Management **Subject code- LSCM3004**
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Instructions:

SECTION A

S. No.	**Attempt all of the following, each question carry two marks.**		
Q 1	Six sigma	**2**	**CO 1**
Q 2	EMS	**2**	**CO 1**
Q 3	QFD	**2**	**CO 1**
Q 4	QMS	**2**	**CO 1**
Q 5	SPC	**2**	**CO 1**
Q 6	ISO	**2**	**CO 1**
Q 7	Cause effect diagram	**2**	**CO 1**
Q 8	p chart	**2**	**CO 1**
Q 9	TPM	**2**	**CO 1**
Q 10	Capability Index	**2**	**CO 1**

SECTION B
Attempt any Four

Q 1	What is continuous improvement process? How it is different from Total Quality Management encompass?	**5**	**CO3**
Q 2	What is ISO 9000?	**5**	**CO2**
Q 3	Difference between accuracy and consistency.	**5**	**CO3**
Q 4	What is JIT system? Discuss in details.	**5**	**CO3**
Q 5	Consider the capability of a process that puts pressurized grease in an aerosol can. The design specs call for an average of 80 pounds per square inch (psi) of pressure in each can with an upper tolerance limit of 85 psi and a lower tolerance limit of 75 psi. A sample is taken from production and it is found that the cans average 81 psi with a standard deviation of 2psi. Is the process capable at the 3σ level?	**5**	**CO3**

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