BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Manufacturing Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, V Semester,

2nd In-Sem. Examination

Course Code: SMS1504 **Time: 1 Hour**

Course Name: Project Work **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Use of Calculators is Prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. Assembling a project team and assigning their responsibilities are done during which phase of a project management?
   a) Initiation
   b) Planning
   c) Execution
   d) Closure
2. The basic nature of a project is a _____ one.
   a) Permanent
   b) temporary
   c) (A) or (B)
   d) Both (A) and (B)
3. How will the project work be carried out, monitored, and controlled? These questions are answered in which phase of the project management?
   a) Initiating
   b) Planning
   c) Executing
   d) Closing
4. Which of the following is NOT a part of project management?
   a) Initiating
   b) monitoring
   c) closing
   d) All above are parts

5. The review of the successes and the mistakes is normally held during _____ phase.
    a) Initiation
    b) Planning
    c) Execution
    d) Closure

Section – B

03X02 = 06 Marks

6. What do you understand by the term "project"?
7. Write a short note on mass production.
8. Write Advantages of project management.

Section – C

03X03 = 09 Marks

9. Define the SMART Acronym.
10. Explain the five project phases in proper sequence and also draw layout diagrams to support this.
11. Explain project Phases Life Cycle with diagram.

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B. Voc. Program, V Semester,

2nd In-Sem. Examination

Course Code: SMS1504 **Time: 1 Hour**

Course Name: Project work **Max. Marks: 20**

Answer Key

Section – A

1. Assembling project team and assigning their responsibilities are done during which phase of a project management?
   a) Initiation
2. The basic nature of a project is a _____ one.
   b) temporary
3. How the project work will be carried out, monitored, and controlled? These questions are answered in which phase of the project management?
   b) Planning
4. Which of the following is NOT a part of project management?
   d) All above are parts
5. The review of the successes and the mistakes is normally held during _____ phase.
   d) Closure

Section – B

6. What do you understand by the term "project"?
   - A project is defined as a "**temporary endeavor** with a **beginning and an end** and it must be used to create a **unique product, service or result**".
   - Projects are undertakings that are characterized essentially by the **uniqueness** of the **conditions that affect it as a whole.**
7. Write a short note on mass production.
   - Mass production is the manufacturing of large quantities of standardized products, often using assembly lines or automation technology. Mass production facilitates the efficient production of a large number of similar products.
   - Mass production is also referred to as flow production, repetitive flow production, series production, or serial production.

8. Write Advantages of project management?

The following advantages speak for the application of project management in the process of solving complex tasks:

- Good integration of different specialists and thus different competencies in mixed project teams,
- Achieving greater creativity and innovativeness in the problem-solving process,
- Achieve better responsiveness to changing customer needs (compared to line organization),
- Optimal use of available resources to solve problems,
- Achieving a better identification with the objectives for complex projectsand so on.

Section – C

9. Define the SMART Acronym.

SMART is a acronym to guide in the setting of objectives and goals in project management.

S *Specific* – target a specific area for improvement.

M *Measurable* – quantify or at least suggest an indicator of progress.

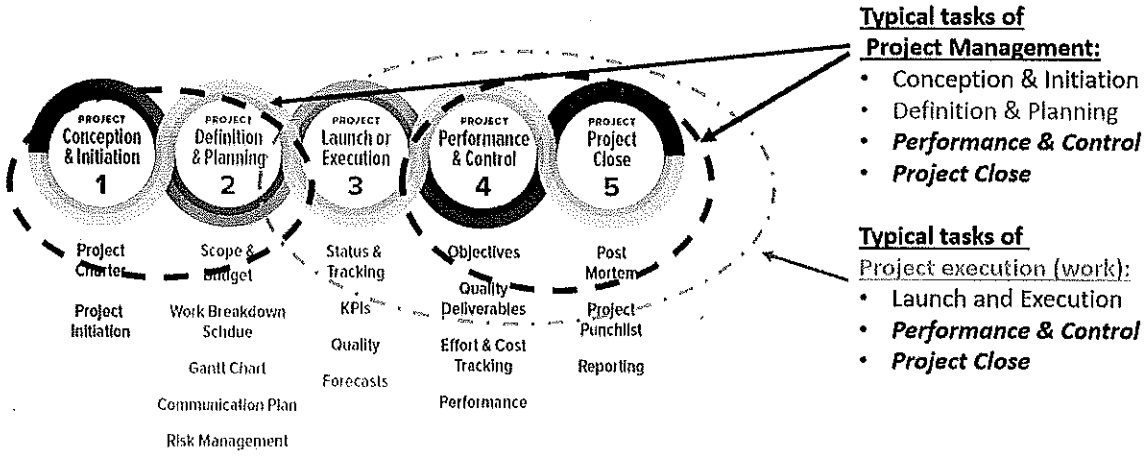
A *Achievable* – specify who will do it.

R *Realistic*– state what results can realistically be achieved, given available resources.

T *Time-related* – specify when the result(s) can be achieved.

10. Explain the five project phases in proper sequence also draw layout diagram to support this.

Project Phases:



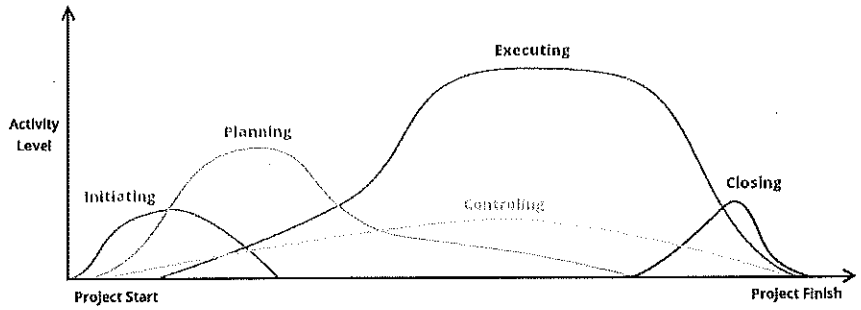
11. Explain project Phases Lifecycle with diagram.

Typical tasks of Project Management:

- Conception & Initiation
- Definition & Planning
- ***Performance & Control***
- ***Project Close***

Typical tasks of Project Execution (work):

- Launch and Execution
- ***Performance & Control***
- ***Project***



How processes overlap on a project
Planning is the most important at the start of a project. Then, executing takes over. Controlling is important throughout the entire project.

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Session: 2021-22 (Winter Semester)

B. Voc. Program, V Semester,

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Course Code: SMS1505 **Time: 1 Hour**

Course Name: Quality Management **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Section A contains 5 Questions. Each question carries 1 Marks.
3. Section B contains 3 Questions. Each question carries 2 Marks.
4. Section C contains 3 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. What is the full form of SMED in quality management?
   A. Single minute extra dies
   B. Simple management exchange of dollar
   C. A & B both
   D. Single minute exchange of dies.

2. Process capability index is denoted by
   A. A_p
   B. C_p
   C. A_{pk}
   D. C_{pk}

3. Mistake proofing is also known as
   A. Kanban
   B. JIT
   C. POKA YOKE
   D. None of above.

4. Which of the following comes under ISO 9000?
   A. Quality management systems – Requirements
   B. Quality management systems – Fundamentals and vocabulary
   C. EMS
   D. OHSAS.

5. Which charts are used for variable data?
   A. X bar chart & R chart
   B. P chart & C chart
   C. Np chart & U chart
   D. None of above.

Section – B

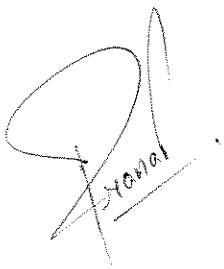
03X02 = 06 Marks

6. Write down the control limits for X bar charts when σ is given and when σ is not given.
7. Draw a neat diagram of the process when natural causes are present.
8. Write three differences between variable and attributes.

Section – C

03X03 = 09 Marks

9. Explain the process capability ratio and define ISO 14000.
10. What are the steps to create control chart?
11. What is the difference between 3 Sigma and 6 Sigma?



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Course Code: SMS1505 | **Time: 1 Hour**

Course Name: Quality Management | **Max. Marks: 20**

Answer Key

Section – A

05X01 = 05 Marks

1. What is the full form of SMED in quality management?
   A. Single minute extra dies
   B. Simple management exchange of dollar
   C. A & B both
   D. Single minute exchange of dies.

2. Process capability index is denoted by
   A. A_p
   B. C_p
   C. A_{pk}
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3. Mistake proofing is also known as
   A. Kanban
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5. Which charts are used for variable data?
   A. X bar chart & R chart
   B. P chart & C chart
   C. Np chart & U chart
   D. None of above.

Section – B

03X02 = 06 Marks

6. Write down the control limits for X bar charts when σ is given and when σ is not given.

Ans.

- When σ is not given

Upper control limit **(UCL)** $= \bar{\bar{x}} + A_2\bar{R}$

Lower control limit **(LCL)** $= \bar{\bar{x}} - A_2\bar{R}$

- When σ is given

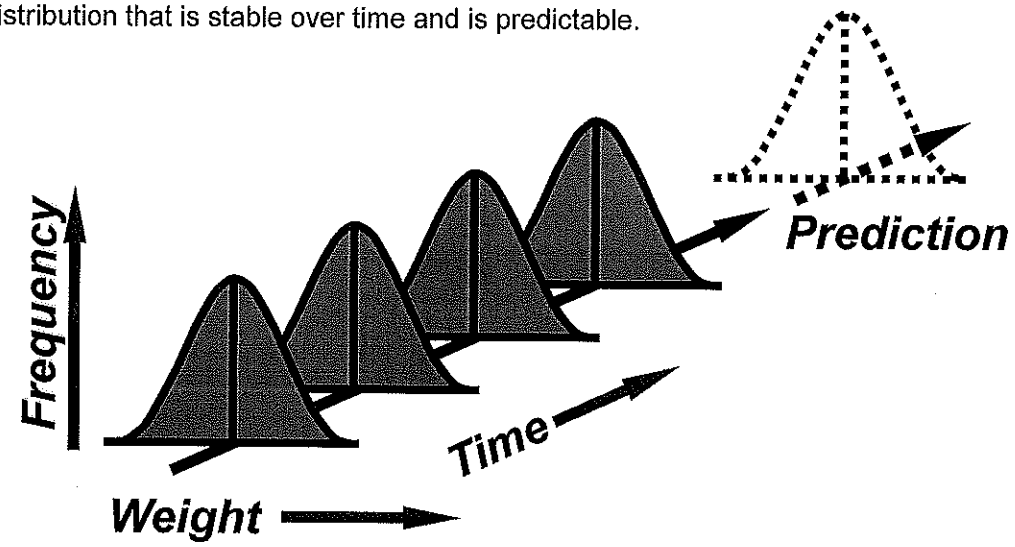
Upper control limit **(UCL)** $= \bar{\bar{x}} + z\sigma_{\bar{x}}$

Lower control limit **(LCL)** $= \bar{\bar{x}} - z\sigma_{\bar{x}}$

7. Draw a neat diagram of the process when natural causes are present.

Ans.

If only natural causes of variation are present, the output of a process forms a distribution that is stable over time and is predictable.



8. Write three differences between variable and attributes.

Ans.

Sr. No.	Variable	Attribute
1	Characteristics that can take any real value	Defect-related characteristics
2	May be in whole or in fractional numbers	Classify products as either good or bad or count defects
3	Continuous random variables	Categorical or discrete random variables

Section – C

03X03 = 09 Marks

9. Explain the process capability ratio and define ISO 14000.

Ans.

$$C_p = \frac{\textit{Upper Specification - Lower Specification}}{6\sigma}$$

- A capable process must have a C_p of at least 1.0
- Does not look at how well the process is cantered in the specification range
- Often a target value of C_p = 1.33 is used to allow for off-centre processes
- Six Sigma quality requires a C_p = 2.0

ISO 14000

ISO 14000 is a series of environmental management standards developed and published by the International Organization for Standardization for organizations. The ISO 14000 standards provide a guideline or framework for organizations that need to systematize and improve their environmental management efforts.

10. What are the steps to create control chart?

Ans.

I. Take samples from the population and compute the appropriate sample statistic
II. Use the sample statistic to calculate control limits and draw the control chart
III. Plot sample results on the control chart and determine the state of the process (in or out of control)
IV. Investigate possible assignable causes and take any indicated actions
V. Continue sampling from the process and reset the control limits when necessary

11. What is the difference between 3 Sigma and 6 Sigma?

Ans.

Sr. No.	The 3 sigma Company	The 6 sigma Company
1	Spends 15~25% of sales dollars on cost of failure	Spends 5% of sales dollars on cost of failure
2	Relies on inspection to find defects	Relies on capable process that don't produce defects
3	Does not have a disciplined approach to gather and analyze data	Use Measure, Analyze, Improve, Control and Measure, Analyze, Design

4	Benchmarks themselves against their competition	Benchmarks themselves against the best in the world\
5	Believes 99% is good enough	Believes 99% is unacceptable
6	Define CTQs internally	Defines CTQs externally

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Session: 2021-22 (Winter Semester)

B. Voc. Program, V Semester,

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Course Code: SMS1507 **Time: 1 Hour**

Course Name: Multiaxis Machining **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Section A contains 5 Questions. Each question carries 1 Marks.
3. Section B contains 3 Questions. Each question carries 2 Marks.
4. Section C contains 3 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. Power transmission component includes
   a) Belts
   b) Shaft
   c) Couplings
   d) All of the above
2. Joining elements include:
   a) Pins
   b) Snap-fits
   c) Both a & b
   d) None of the above
3. Electric motors are driven by _____ forces.
   a) Ferromagnetic
   b) Electromagnetic
   c) Gamma
   d) External
4. Asynchronous motor is an ___ induction motor.
   a) AC
   b) DC
   c) Water
   d) Gas
5. Basic Components of CNC Controllers are
   a) Power Supply unit

b) Circuitry protection unit

c) Motor driver unit

d) All of the above

Section – B

03X02 = 06 Marks

6. Write down the main difference between synchronous and Asynchronous electric motor.
7. Write down the various popular controllers in use.
8. Write down the name of additional axes and also mention their parent axes (along which they are rotating).

Section – C

03X03 = 09 Marks

9. What do you mean by functional units of a machine tool? Name the various functional units of a CNC lathe.
10. Describe in brief about various types of five axis machining centers along with their application.
11. Write down the differences between Five axis machining and (3+2) axis machining?

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B. Voc., V Semester,

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Course Code: SMS1507 **Time: 1 Hour**

Course Name: Multiaxis Machining **Max. Marks: 20**

Answer Key

Section – A

05X01 = 05 Marks

1. Power transmission component includes
   d) All of the above
2. Joining elements include:
   c) Both a & b
3. Electric motors are driven by _____ forces.
   b) Electromagnetic
4. Asynchronous motor is an ___ induction motor.
   a) AC
5. Basic Components of CNC Controllers are
   d) All of the above

Section – B

03X02 = 06 Marks

6. Write down the main difference between synchronous and Asynchronous electric motor.

Ans. **Synchronous motor:**

Synchronous motor is a motor that operates at synchronous speed, i.e., speed of the rotor is equal to the stator speed of the motor.

Asynchronous motor:

Asynchronous motor is an AC Induction motor. The rotor of the Asynchronous motor rotates at the speed less than the synchronous speed

7. Write down the various popular controllers in use.

Ans. 1) Fanuc 21M
2) Sinumerik Operate 840D
3) Heidenhain TNC426

8. Write down the name of additional axes and also mention their parent axes (along which they are rotating).

Ans.

a) A axis – X axis
b) B axis – Y axis
c) C axis – Z axis

Section – C

03X03 = 09 Marks

9. What do you mean by functional units of a machine tool? Name the various functional units of a CNC lathe.

Ans. 1) Drive Units
2) Power transmission Units
3) Work units
4) Supporting and holding components
5) Joints and fastening units
6) Measuring and control units
7) Units for environmental protection, disposal and safety at work.

10. Describe in brief about various types of five axis machining centers along with their application.

Ans. **1) Rotary table + Pivot Spindle Head**

This machine design is effective for tall workpieces and for cylindrical parts with holes around the periphery.

2) Double rotary table

This is the best machine for the use of long tools or extensions. It is also effective for cylindrical parts with a ring of holes in one face.

3) Double Pivot Spindle Head

This machine is effective for parts that are rectangular instead of round.

4) Rotary Table + Table Trunnion

This machine can take relatively deep cuts for its size.

11. Write down the differences between Five axis machining and (3+2) axis machining?

Ans. **5-Axes Machining**

1. Also called continuous or simultaneous 5-axis machining involves continuous adjustments of the cutting tool along all five axes to keep the tip optimally perpendicular to the part.

2. Machining is faster.
3. Movement at higher speed results in increased wear rate as well as greater need for part crash detection hence it is more difficult from programming point of view.

(3+2) Axes Machining

1. Also called positional 5-axis machining involves executing 3-axis program with cutting tool locked at an angle determined by the two rotational axes. Machining that involves reorienting the tool bit along the rotational axes between cuts is called '5-axis indexed' though it still counts 3+2.
2. Machining is relatively slow due to stopping and starting between each reorientation of the tool.
3. Part programming is relatively simpler.