



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2021-22 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**1<sup>st</sup> In-Sem. Examination**

**Course Code: SMS1501**

**Time: 1 Hour**

**Course Name: Production Management**

**Max. Marks: 20**

**Instructions:**

1. Attempt all questions.
2. Use of Calculator is Allowed.
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. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand (d) None
2. Consumer means:  
(a) Customer (b) Seller (c) Business Owner (d) None
3. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand (d) None
4. Micro Economics is related to:  
(a) Average economics (b) Whole economics (c) Individual economics (d) None
5. Prime Cost in a Manufacturing Industry includes:  
(a) All direct cost (b) Factory overhead cost (c) Summation of direct and factory overhead cost  
(d) none

**Section – B**

03X02 = 06 Marks

6. Explain demand curve with graph?
7. Write down the factors influencing the demand of Smart Phone in Indian Market.
8. Yesterday, the price of envelopes was \$3 a box, and Julie was willing to buy 10 boxes. Today, the price has gone up to \$3.75 a box, and Julie is now willing to buy 8 boxes. What is Julie's elasticity of demand?



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### Section – C

03X03 = 09 Marks

9. The annual sales of Link Pen manufacturing industry during the period of 2010-2019 are given below in tabular form. We have to find out the sales using 3 years moving averages method and forecast the value for the year 2020.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sales in Rs. Lakhs	12	15	14	16	18	17	19	20	?

10. If Neil's elasticity of demand for hot dogs is constantly 0.9, and he buys 4 hot dogs when the price is \$1.50 per hot dog, how many will he buy when the price is \$1.00 per hot dog?
11. The accounts of Rahim Manufactures Ltd. for the year ended 31st December 2018 show the following:

	<b>Rs.</b>
Materials purchased	1,60,000
Material left on 31.12.88	10,000
Direct labour	50,000
Direct expenses	30,000
Factory expenses	20,000
Office & administrative expenses	10,000

Find out:

- (a) Material Consumed  
(b) Prime Cost  
(c) Cost of Production



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**School of Manufacturing Skills**  
**Session: 2021-22 (Summer Semester)**  
**B. Voc. Program, Semester-V,**  
**1<sup>st</sup> In-Sem. Examination**

Course Code: SMS 1501

Time: 1 Hour

Course Name: Production Management

Max. Marks: 20

### Answer Key

#### Section – A

05X01 = 05 Marks

1. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand  
Ans. (b)
2. Consumer means:  
(a) Customer (b) Seller (c) Business Owner  
Ans. (a) Customer
3. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand  
Ans. (b) Future demand
4. Micro Economics is related to:  
(a) Average economics (b) Whole economics (c) Individual economics  
Ans. © Individual economics
5. Prime Cost in a Manufacturing Industry includes:  
(a) All direct cost (b) Factory overhead cost (c) Summation of direct and factory overhead cost  
Ans. (a) All direct cost

#### Section – B

03X02 = 06 Marks

6. Explain demand curve with graph?  
Ans. When cost is increasing, demand is decreasing and vice-versa.
7. Write down the factors influencing the demand of Smart Phone in Indian Market?  
Ans.  $D = f(\text{Price, Income, Tastes, Popularity, Advertising, Expectation of consumers})$
8. Yesterday, the price of envelopes was \$3 a box, and Julie was willing to buy 10 boxes. Today, the price has gone up to \$3.75 a box, and Julie is now willing to buy 8 boxes. What is Julie's elasticity of demand?  
Ans. To find Julie's elasticity of demand, we need to divide the percent change in quantity by the percent change in price.  
 $\% \text{ Change in Quantity} = (8 - 10)/(10) = -0.20 = -20\%$   
 $\% \text{ Change in Price} = (3.75 - 3.00)/(3.00) = 0.25 = 25\%$   
 $\text{Elasticity} = |(-20\%)/(25\%)| = |-0.8| = 0.8$   
Her elasticity of demand is the absolute value of -0.8, or 0.8.

#### Section – C



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

03X03 = 09 Marks

9. The annual sales of Link Pen manufacturing industry during the period of 2010-2019 are given below in tabular form. We have to find out the sales using 3 years moving averages method and forecast the value for the year 2020.

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sales in Rs. Lakhs	12	15	14	16	18	17	19	20	?

Ans.: Forecast for 2020 =  $(17+19+20)/3 = 18.67 = 19$

10. If Neil's elasticity of demand for hot dogs is constantly 0.9, and he buys 4 hot dogs when the price is \$1.50 per hot dog, how many will he buy when the price is \$1.00 per hot dog?

Soln.: This time, we are using elasticity to find quantity, instead of the other way around. We will use the same formula, plug in what we know, and solve from there.

Elasticity =

And, in the case of John, %Change in Quantity =  $(X - 4)/4$

Therefore :

Elasticity =  $0.9 = |((X - 4)/4)/(\% \text{ Change in Price})|$

% Change in Price =  $(1.00 - 1.50)/(1.50) = -33\%$

$0.9 = |((X - 4)/4)/(-33\%)|$

$|((X - 4)/4)| = 0.3$

$0.3 = (X - 4)/4$

$X = 5.2$

11. The accounts of Rahim Manufactures Ltd. for the year ended 31st December 2018 show the following:

	Rs.
Materials purchased	1,60,000
Material left on 31.12.88	10,000
Direct labour	50,000
Direct expenses	30,000
Factory expenses	20,000
Office & administrative expenses	10,000

Find out:

(a) Material Consumed

(b) Prime Cost

(c) Cost of Production

Ans.: (a) Material consumed =  $160000 - 10000 = \text{Rs. } 1,50,000$

(b) Prime cost =  $150000 + 50000 + 30000 = 230000/-$

(c) Cost of production =  $230000 + 20000 + 10000 = 260000/-$



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School of Manufacturing Skills  
Session: 2021-22 (Summer Semester)  
B. Voc. Program, V Semester,  
1<sup>st</sup> In-Sem. Examination

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. In any process variability is due to
  - A. Selected cause
  - B. Technical cause
  - C. Chance cause and assignable cause
  - D. None of the above
2. Which of the following is not among 7 QC tools?
  - A. Check sheet
  - B. Histogram
  - C. Kanban
  - D. Pareto chart
3. Which of the following is correct in context to Inspection?
  - A. It is a way to prevent the production of bad items
  - B. Inspection adds to the cost of the product but not for its value
  - C. Fatigue and Monotony don't affect any inspection judgment
  - D. None of above
4. The cause and effect diagram is also called
  - A. Stratification analysis
  - B. Total quality management
  - C. PDCA technique
  - D. Fish - bone diagram
5. PDCA cycle have
  - A. 12 steps
  - B. 11 steps
  - C. 10 steps
  - D. 13 steps



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## Section – B

03X02 = 06 Marks

6. Write any two definitions of quality.
7. Write any two purpose of inspection.
8. Define quality assurance.

## Section – C

03X03 = 09 Marks

9. Explain methods of inspection.
10. What is the significance of quality tools? Write down 7QC tools.
11. Explain Pareto chart with appropriate example.



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School of Manufacturing Skills  
Session: 2021-22 (Summer Semester)  
B. Voc. Program, 5<sup>th</sup> Semester,  
1<sup>st</sup> In-Sem. Examination

Course Code: SMS1505

Course Name: Quality Management

Time: 1 Hour

Max. Marks: 20

Answer Key ✓

Section – A

05X01 = 05 Marks

1. In any process variability is due to  
C. Chance cause and assignable cause
2. Which of the following is not among 7 QC tools?  
C. Kanban
3. Which of the following is correct in context to Inspection?  
B. Inspection adds to the cost of the product but not for its value
4. The cause and effect diagram is also called  
D. Fish bone diagram
5. PDCA cycle have  
A. 12 steps

Section – B

03X02 = 06 Marks

6. Write any two definitions of quality

**Ans.**

- Fitness for Use
- Conformance to Requirements
- Meeting Customer's Requirement
- Fitness for Purpose

7. Write any two purpose of inspection.

**Ans.**

- (1) To distinguish good lots from bad lots
- (2) To distinguish good pieces from bad pieces.
- (3) To determine if the process is changing.
- (4) To determine if the process is approaching the specification limits.

8. Define quality assurance.

**Ans.**

Quality assurance is the method of assuring the desired quality, reliability, service and



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other aspects in the manufactured product in current production.

### Section – C

03X03 = 09 Marks

9. Explain methods of inspection.

**Ans.**

There are two methods of inspection. They are **100% inspection** and **Sampling inspection**

- **100% INSPECTION**

This type will involve careful inspection in detail of quality at each strategic point or stage of manufacture where the test involved is non-destructive and every piece is separately inspected. It requires more number of inspectors and hence it is a costly method. There is no sampling error. This is subjected to inspection error arising out of fatigue, negligence, difficulty of supervision etc. It is suitable only when a small number of pieces are there or a very high degree of quality is required.

**Example:**

Jet engines, Aircraft, Medical and Scientific equipment.

- **SAMPLING INSPECTION**

In this method randomly selected samples are inspected. Samples taken from different batches of products are representatives. If the sample prove defective, the entire concerned is to be rejected or recovered. Sampling inspection is cheaper and quicker. It requires less number of Inspectors. In the case of destructive test, random or sampling inspection is desirable.

10. What is the significance of quality tools? Write down 7QC tools.

**Ans.**

The elementary statistical tools have fetched a lot of importance, as the seven indispensable tools of Quality for any organization to flourish to the zenith of excellence. The concept behind the seven basic tools came from Kaoru Ishikawa, according to whom, 95% of quality related problems can be resolved with these basic tools.

- Histogram or stem-and-leaf plot
- Check sheet
- Pareto chart
- Cause-and-effect diagram
- Stratification
- Scatter diagram
- Control chart

11. Explain Pareto chart with appropriate example.

**Ans.**

A Pareto diagram, also called 80/20 rule, is used to graphically abridge and display the relative significance of the differences between clusters of data i.e., separating the vital few causes (20%) that account for a dominant share of quality loss (80%) (Besterfield, 2001). The Pareto diagram is based on Pareto principle, which states that few of the defects accounts for most of the effects.



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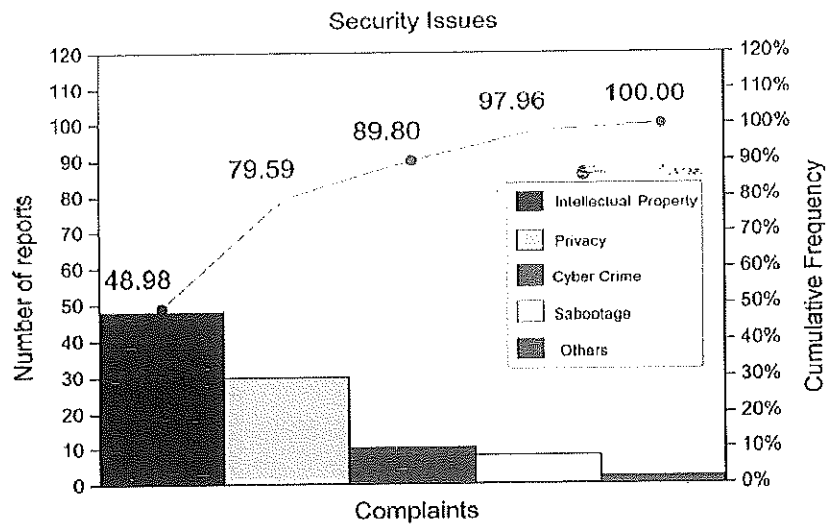
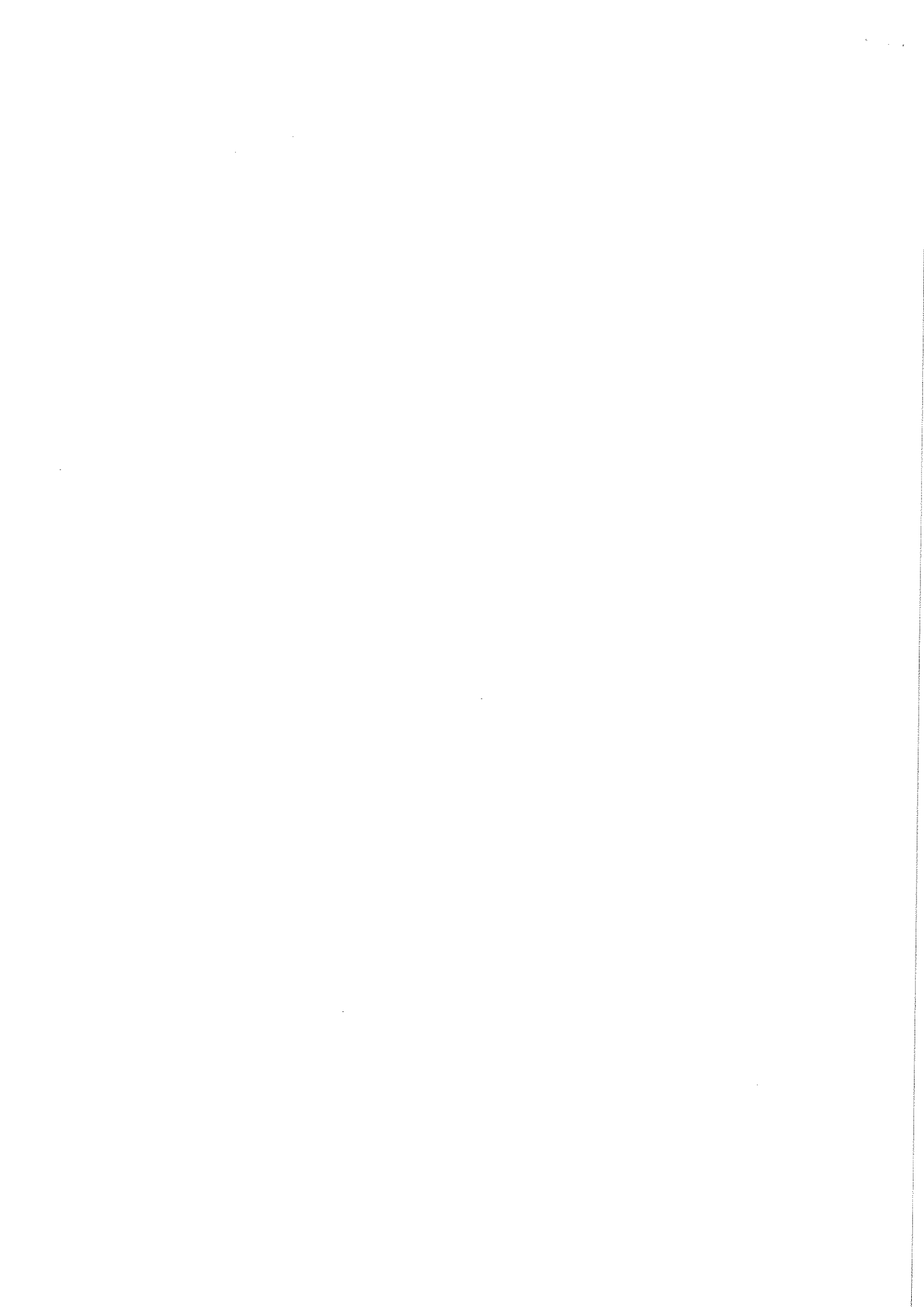


Figure 4 Pareto diagram used to prioritize the security issues





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Session: 2021-22 (Summer Semester)  
B. Voc., V Semester,  
1<sup>st</sup> In-Sem. Examination

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



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## 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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School of Manufacturing Skills  
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B. Voc., V Semester,  
1<sup>st</sup> In-Sem. Examination

Course Code: SMS1507  
Course Name: Multiaxis Machining

Time: 1 Hour  
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



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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.