



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set A*

**Course Code: SMS1501**

**Course Name: Production Management**

**Time: 2 Hour**

**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. Work Study can be applied in
  - A. Automotive industry
  - B. Hospital
  - C. Tourism
  - D. Every where
2. Application of Ergonomics are in
  - A. Aerospace
  - B. Product design
  - C. Health care
  - D. All three
3. In Method Study, Storage is represented by
  - A. Circle
  - B. Square
  - C. Inverted triangle
  - D. Arrow
4. In Production System, inputs are
  - A. Materials
  - B. Road
  - C. Transport
  - D. None of the above



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5. Direct Cost in a Manufacturing Industry includes:
  - A. Only direct labour cost
  - B. Only direct material cost
  - C. Summation of direct material and labour cost
  - D. None
6. 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
7. JIT concept is used for
  - A. Time study
  - B. Work study
  - C. Inventory control
  - D. None of the above
8. Under ABC analysis, quantity of Class-B product is
  - A. 70 – 80 %
  - B. 15 – 20 %
  - C. 5 – 10 %
  - D. None of the above
9. Benefits of Process Planning are
  - A. Reduction in setup costs
  - B. Reduction in tooling costs
  - C. Reduction in material costs
  - D. All
10. Number of product under "Batch Production System" are
  - A. Less
  - B. More
  - C. In between
  - D. Nil

### Section – B

04X04 = 16 Marks

11. 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?
12. What do you mean by Work Study? Discuss in detail the objective of Work Study?
13. Discuss about various types of production systems!
14. Write down the comparison between Conventional and JIT attitudes?



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – C

04X06 = 24 Marks

15. What do you mean by Ergonomics? Write down the objective and application of Ergonomics in detail?
16. A medium scale industry incurs the following costs for their products annually. The production volume on an average is 12000 a year.
- a. Raw material cost including losses due to scrap and wastage (due to rejection) = Rs.50000
  - b. Tool cost = Rs.4000
  - c. Wages to skilled hands engaged on production = Rs.20000
  - d. Wages to foremen, other supervisory staff = Rs.40000
  - e. Expenses of office staff (salary, bonus etc.) = Rs.12000
  - f. Expenses on sales and distribution agencies = Rs.8000
  - g. Expenses on insurance, lighting etc. = Rs.4000

Find direct cost as percentage of total cost.

17. Write down short notes on (i) ABC Analysis (ii) Kanban System

18. Link Company is producing pen. The gross requirements for the products in next weeks are given below. The on hand inventory levels for Body = 800, Cap=1000 and schedule receipts for Body (2nd week) = 200, Body (4th week) = 200, Cap(1st week)=1000, Ink Cartridge (2nd week) = 500, Ink Cartridge(4th week) = 500, Ink Cartridge (6th week) = 500, Ink Cartridge (8th week) = 500. No fixed lot size is available.

Week	1	2	3	4	5	6	7	8
Material requirement					1000			1000

Draw the Production Tree for Pen. Calculate the planned order release for Body!





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Course Code: SMS1501  
Course Name: Production Management

Time: 2 Hour  
Max. Marks: 50

Answer Key

Section – A

10X01 = 10 Marks

1. Work Study can be applied in
  - A. Automotive industry
  - B. Hospital
  - C. Tourism
  - D. Every where**
2. Application of Ergonomics are in
  - A. Aerospace
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  - A. Materials**
  - B. Road
  - C. Transport
  - D. None of the above
5. Direct Cost in a Manufacturing Industry includes:
  - A. Only direct labour cost
  - B. Only direct material cost
  - C. Summation of direct material and labour cost**
  - D. None



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

6. 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
7. JIT concept is used for
- A. Time study
  - B. Work study
  - C. Inventory control
  - D. None of the above
8. Under ABC analysis, quantity of Class-B product is
- A. 70 – 80 %
  - B. 15 – 20 %
  - C. 5 – 10 %
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- A. Reduction in setup costs
  - B. Reduction in tooling costs
  - C. Reduction in material costs
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10. Number of product under "Batch Production System" are
- A. Less
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  - D. Nil

### Section – B

04X04 = 16 Marks

11. 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.:

$$\text{Elasticity of demand} = 0.9 = \left| \frac{(X - 4)/4}{(\% \text{ Change in Price})} \right|$$

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

$$0.9 = \left| \frac{(X - 4)/4}{(-33\%)} \right|$$

$$\left| \frac{(X - 4)/4}{(-33\%)} \right| = 0.3$$

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

$$X = 5.2$$



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12. What do you mean by Work Study? Discuss in detail the objective of Work Study?

Ans. Definition: **It is a systematic examination of carrying out an activity so as to improve the effective use of resources and to set up standards of performance for the activity being carried out.**

Objective:

Productivity improvement ; Better utilization of resources ; Achievement of Quality Cost Delivery objectives; To identify training needs ; To establish industrial engineering standards ; Formulation of Incentive Schemes ; To recommend and implement the desired improvements in work ; To establish methods that most economical way of doing work. ; Investigation and analysis of existing situation.; Examination of weakness if any in the production process; Most effective use of the existing or proposed plant ; Efficient use of human efforts and less fatigue to operators ; Ensure proper performance of those employed in the production process.

13. Discuss about various types of production systems.

Ans.: Three types – Job production, Batch production, Continuous production.

14. Write down the comparison between Conventional and JIT attitudes?

Ans.

Conventional	Just-in-Time
Large lots are efficient (more is better) <i>Faster production is more efficient</i> Scheduling and queues are necessary tradeoffs to maximize output from equipment and manpower <i>Inventory provides safety</i>	Ideal lot size is one unit (less is better) <i>Faster production than necessary is a waste (balanced production is more efficient)</i> Tradeoffs are bad; they trade one waste for another and prevent the proper solution of problems <i>Safety stock is a waste</i> Inventory is undesirable

## Section – C

04X06 = 24 Marks

15. What do you mean by Ergonomics? Write down the objective and application of Ergonomics in detail?

Ans.: **Ergonomics** (or human factors) is the scientific discipline concerned with interactions among humans and other elements of a system in carrying out a purposeful activity.

**Objectives of ergonomics:**

Optimize integration of man and machine in order to increase work rate and accuracy

To provide a better working place befitting the needs and requirements of the worker

To design equipments and machinery in such a way that there is minimal mental and physical strain on the worker

To provide a conducive environment for executing his task effectively and efficiently with least efforts.

**Application of Ergonomics:**

Aerospace

Training

Product Design

Nuclear and Virtual Environments



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Health Care  
Transportation  
Medical etc.

16. A medium scale industry incurs the following costs for their products annually. The production volume on an average is 12000 a year.

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- b. Tool cost = Rs.4000
- c. Wages to skilled hands engaged on production = Rs.20000
- d. Wages to foremen, other supervisory staff = Rs.40000
- e. Expenses of office staff (salary, bonus etc.) = Rs.12000
- f. Expenses on sales and distribution agencies = Rs.8000
- g. Expenses on insurance, lighting etc. = Rs.4000

Find direct cost as percentage of total cost.

$$\text{Ans. Direct cost} = (50000 + 4000 + 20000) = 74000$$

$$\text{Total Cost} = 74000 + 12000 + 8000 + 4000 = 98000$$

$$\% = 74000 / 98000 = 75.5$$

17. Write down short notes on (i) ABC Analysis (ii) Kanban System

Ans.: **ABC Analysis** : Class-A: 70% - 80% of total inventory cost 10% -15% of total items.

Class-B: 20% - 15% of total inventory cost 15% -20% of total items

Class-C: 10% - 5% of total inventory cost 75% -65% of total items

**Kanban System:** System of planning and controlling production

- Kanban means *card*
- Signaling to the upstream workstation that the downstream workstation is ready for the upstream station to produce another batch of parts
- Two types of kanban cards: Conveyance card (C-Kanban) and Production card (P-Kanban)
- Shop-floor planning and control are reduced to planning and controlling the movement of orders among work centers with stable and level production schedules, priority decisions are routine
- No parts can be produced or moved without a kanban (or card)

18. Link Company is producing pen. The gross requirements for the products in next weeks are given below. The on hand inventory levels for Body = 800, Cap=1000 and schedule receipts for Body (2nd week) = 200, Body (4th week) = 200, Cap(1st week)=1000, Ink Cartridge (2nd week) = 500, Ink Cartridge(4th week) = 500, Ink Cartridge (6th week) = 500, Ink Cartridge (8th week) = 500. No fixed lot size is available.

19. Week	20. 1	21. 2	22. 3	23. 4	24. 5	25. 6	26. 7	27. 8
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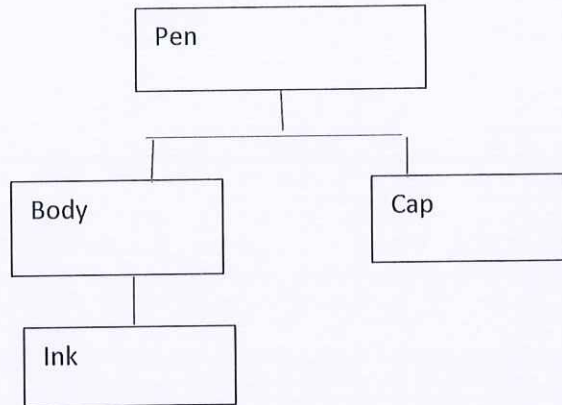


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28. Material requirement	29.	30.	31.	32.	33. 100 0	34.	35.	36. 100 0
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Draw the Production Tree for Pen. Calculate the planned order release for Body!

Ans.: Production tree:



**Body - 2 week LT (Lead Time)**

Week	1	2	3	4	5	6	7	8
Gross requirement					1000			1000
Scheduled receipts		200		200				
Available (inventory)	800	1000		1200	200	200	200	0
Net requirement					0			800
Planned order receipt					0			800
Planned order released			0			800		





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*Set-B*

**Course Code: SMS1501**

**Course Name: Production Management**

**Time: 2 Hour**

**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. Macro Economics belongs to:
  - A. Average economics
  - B. Whole economics
  - C. Individual economics
  - D. None of the above
2. MRP means
  - A. Material Resource Planning
  - B. Mean Resource Planning
  - C. Machine Resource Planning
  - D. All
3. In Method Study, Transport is represented by
  - A. Arrow
  - B. Circle
  - C. Triangle
  - D. None of the above
4. In Production System, inputs are
  - A. Materials
  - B. Man
  - C. Machine
  - D. All of the above



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. Prime Cost in a Manufacturing Industry includes:
  - A. All direct cost
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  - C. Summation of direct and factory overhead cost
  - D. None
6. JIT concept is used for
  - A. Material saving
  - B. Labour optimization
  - C. Inventory control
  - D. None of the above
7. Overhead Expenses in a Manufacturing Industry means:
  - A. Direct material cost
  - B. Direct labour cost
  - C. R&D cost
  - D. None of the above
8. Benefits of Process Planning are
  - A. Reduction in setup costs
  - B. Reduction in tooling costs
  - C. Reduction in material costs
  - D. All
9. Number of product under "Job Production System" are
  - A. Less
  - B. More
  - C. In between
  - D. Nil
10. Application of Ergonomics are in
  - A. Aerospace
  - B. Product design
  - C. Health care
  - D. All three

### Section – B

04X04 = 16 Marks

11. An operator manufactures 50 jobs in 6 hours and 30 minutes. If this time includes the time for setting his machine. Calculate the operator's efficiency. Standard time allowed for the job was:

Setting time	=	35 minutes
Production time per piece	=	8 minutes
12. Discuss about various types of production systems!
13. Write down the comparison between Conventional and JIT attitudes.
14. A department store has found that in a four-month period, the best forecast is derived by using 40% of the actual sales for the most recent month, 30% of the two months ago, 20% of three months ago and 10% of four months ago. Find out the forecast for the 5th month, if the actual sales for the 4 month is:



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Month	1	2	3	4	5
Sales in nos.	105	95	110	100	----

### Section – C

04X06 = 24 Marks

15. Describe the steps for doing a method study of job process. Illustrate one of the recording techniques used in the method improvement with a case example.
16. A medium scale industry incurs the following costs for their products annually. The production volume on an average is 12000 a year.
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Find direct cost as percentage of total cost.

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Week	1	2	3	4	5	6	7	8
Material requirement					1000			1000

Draw the Production Tree for Pen. Calculate the planned order release for Body.





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**End-Sem. Examination**

Course Code: SMS1501

Course Name: Production Management

Time: 2 Hour

Max. Marks: 50

Answer Key

## Section – A

10X01 = 10 Marks

1. Macro Economics belongs to:
  - A. Average economics
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  - C. Individual economics
  - D. None of the above
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  - C. Summation of direct and factory overhead cost
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## Section – B

04X04 = 16 Marks

11. An operator manufactures 50 jobs in 6 hours and 30 minutes. If this time includes the time for setting his machine. Calculate the operator's efficiency. Standard time allowed for the job was:

Setting time = 35 minutes

Production time per piece = 8 minutes

Soln:

Standard time for manufacturing 50 jobs =  $35 + 8 \times 50 = 435$  minutes

Efficiency =  $(435 \times 100) / 390 = 111.5\%$

12. Discuss about various types of production systems.

Ans.: Three types – Job production, Batch production, Continuous production.

13. Write down the comparison between Conventional and JIT attitudes.

Ans.

Conventional	Just-in-Time
Large lots are efficient	Ideal lot size is one unit



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<p style="text-align: center;">(more is better)</p> <p style="text-align: center;"><i>Faster production is more efficient</i></p> <p style="text-align: center;">Scheduling and queues are necessary tradeoffs to maximize output from equipment and manpower</p> <p style="text-align: center;"><i>Inventory provides safety</i></p>	<p style="text-align: center;">(less is better)</p> <p style="text-align: center;"><i>Faster production than necessary is a waste (balanced production is more efficient)</i></p> <p style="text-align: center;">Tradeoffs are bad; they trade one waste for another and prevent the proper solution of problems</p> <p style="text-align: center;"><i>Safety stock is a waste</i></p> <p style="text-align: center;">Inventory is undesirable</p>
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14. A department store has found that in a four-month period, the best forecast is derived by using 40% of the actual sales for the most recent month, 30% of the two months ago, 20% of three months ago and 10% of four months ago. Find out the forecast for the 5th month, if the actual sales for the 4 month is:

Month	1	2	3	4	5
Sales in nos.	105	95	110	100	----

Ans.:  $F_5 = 0.4 \times 100 + 0.3 \times 110 + 0.2 \times 95 + 0.1 \times 105 = 102.5$  units.

### Section – C

04X06 = 24 Marks

15. Describe the steps for doing a method study of job process. Illustrate one of the recording techniques used in the method improvement with a case example.

Ans.: This involves systematic, orderly and scientific approach to problems and decisions must be taken after listing out all possible alternatives and evaluating them critically

1. **Select** the work to be studied
  2. **Record** all relevant facts by direct observation
  3. **Examine** the facts critically in sequence using special critical examination sheet
  4. **Develop** the best method which is practical, economical and effective
  5. **Install** the method as a standard practice
- Maintain** the method installed as a standard

16. A medium scale industry incurs the following costs for their products annually. The production volume on an average is 12000 a year.

- |   |            |
|---|------------|
| a. Raw material cost including losses due to scrap and wastage (due to rejection) | = Rs.50000 |
| b. Tool cost  | = Rs.4000  |
| c. Wages to skilled hands engaged on production                                   | = Rs.20000 |
| d. Wages to foremen, other supervisory staff                                      | = Rs.40000 |
| e. Expenses of office staff (salary, bonus etc.)                                  | = Rs.12000 |
| f. Expenses on sales and distribution agencies                                    | = Rs.8000  |
| g. Expenses on insurance, lighting etc.   | = Rs.4000  |



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Find direct cost as percentage of total cost.

$$\text{Ans. Direct cost} = (50000 + 4000 + 20000) = 74000$$

$$\text{Total Cost} = 74000 + 12000 + 8000 + 4000 = 98000$$

$$\% = 74000 / 98000 = 75.5$$

17. Define Standard time. Discuss the steps involved in developing Standard Time.

**Ans.:**

**Standard Time:** It's a catalogue of "normal time" values for different elements of jobs or for minute movements involved in different jobs.

This catalogue is prepared by compiling the timings of a number of standard elements

The necessity of preparing such a catalogue arose because, generally, similar elements or motions are involved in many jobs. Eg.: Drilling holes is a common feature in many machine shop jobs.

If time study is to be conducted every time it would consume a lot of time. Hence it is economical to use previously timed and compiled data known as standard data.

**Steps:**

Decide the range of applicability of standard data

Break the job into elements as constant and variable elements

Conduct time study for wide variety of jobs or family of jobs under different set of parameters and conditions

Summarize the data using a summary form

Classify data into constant and variable elements

Calculate average standard time for constant elements

Explore the job characteristics leading to variability in elements

A graph between normal time dimension of variable is plotted to obtain a smooth curve

Test the data for correctness and accuracy

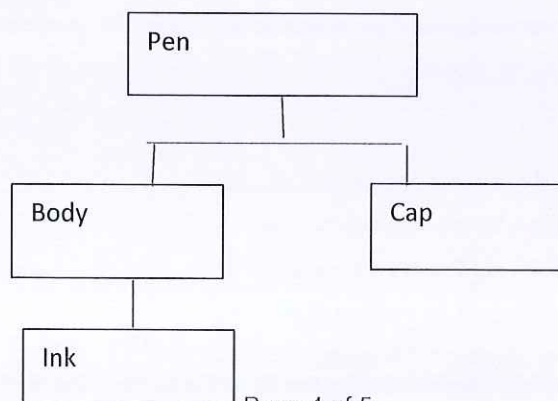
Compile the standard data obtained

18. Link Company is producing pen. The gross requirements for the products in next weeks are given below. The on hand inventory levels for Body = 800, Cap=1000 and schedule receipts for Body (2nd week) = 200, Body (4th week) = 200, Cap(1st week)=1000, Ink Cartridge (2nd week) = 500, Ink Cartridge(4th week) = 500, Ink Cartridge (6th week) = 500, Ink Cartridge (8th week) = 500. No fixed lot size is available.

Week	1	2	3	4	5	6	7	8
Material requirement					1000			1000

Draw the Production Tree for Pen. Calculate the planned order release for Body.

**Ans.:** Production tree:





## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Body - 2 week LT (Lead Time)

Week	1	2	3	4	5	6	7	8
Gross requirement					1000			1000
Scheduled receipts		200		200				
Available (inventory)	800	1000		1200	200	200	200	0
Net requirement					0			800
Planned order receipt					0			800
Planned order released			0			800		





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## School of Manufacturing Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, V Semester,

End-Sem. Examination

*Set A*

Course Code: SMS1502

Course Name: Integrated CAD-CAM-CNC

Time: 2 Hour

Max. Marks: 50

### Instructions:

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

### Section – A

10X01 = 10 Marks

1. Which among the following is the correct full form of CAPP?
  - A. Computer Aided Process Planning
  - B. Computer Aided Design
  - C. None of these
  - D. Both of these
2. Which among the following is one of the core programming language used to write solidworks?
  - A. Java
  - B. C++
  - C. C#
  - D. All of the above
3. Solidworks has been developed by which of the following company
  - A. CNC Software Inc.
  - B. Dassault
  - C. AutoDesk
  - D. None of the above
4. Which of the following is the built in CAM software?
  - A. Fanuc
  - B. Siemens
  - C. Mazatrol
  - D. None of the above



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. Which of the following is the full form for BCD?
  - A. Binary Coded Decimal
  - B. Bit Coded Decimal
  - C. Bitwise Coded Decimal
  - D. None of the above
  
6. Which among the following is the full form of CNC?
  - A. Computer Number control
  - B. Computer numerical control
  - C. Computer numerical command
  - D. None of the above
  
7. MasterCAM is a -----
  - A. Standalone CAM software
  - B. Integrated CAM software
  - C. Built In CAM software
  - D. All of the above
  
8. Which of the following is NOT the advantage of a CNC machine?
  - A. Reduces inspection time
  - B. Reduces Tooling time
  - C. Higher initial cost
  - D. Higher rate of production
  
9. A robotic hand can be a substitute for:
  - A. CNC machine
  - B. Manual material handling
  - C. Manual packaging
  - D. All of the above
  
10. AutoCAD is primarily used as a:
  - A. 2D software
  - B. 3D software
  - C. Both of the above
  - D. None of the above



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – B

04X04 = 16 Marks

11. Write down the full form of CAPP and name the softwares which are used to achieve this in industry?
12. Write down the Full form of CATIA and the year in which it was released by Dassault; also explain the primary purpose of developing CATIA by Dassault?
13. Mention the name of general purpose programming language which is also popularly used as a CAE tool?
14. Explain how Fanuc is a standalone programming controller for CNC machines.

## Section – C

04X06 = 24 Marks

15. Explain how Excel is a great tool for achieving CAPP in industries.
16. Explain the steps of FEM technique used for Computer Simulations of physical systems.
17. Differentiate between modelling and simulation softwares with suitable examples.
18. Differentiate between DNC and CNC.





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**End-Sem. Examination**

**Course Code: SMS1502**  
**Course Name: Integrated CAD-CAM-CNC**

**Time: 2 Hour**  
**Max. Marks: 50**

**Answer Key**

**Section – A**

10X01 = 10 Marks

1. Which among the following is the correct full form of CAPP?
  - A. **Computer Aided Process Planning**
  - B. Computer Aided Design
  - C. None of these
  - D. Both of these
  
2. Which among the following is one of the core programming language used to write solidworks?
  - A. Java
  - B. C++
  - C. C#
  - D. **All of the above**
  
3. Solidworks has been developed by which of the following company
  - A. CNC Software Inc.
  - B. **Dassault**
  - C. AutoDesk
  - D. None of the above
  
4. Which of the following is the built in CAM software?
  - A. Fanuc
  - B. Siemens
  - C. **Mazatrol**
  - D. None of the above
  
5. Which of the following is the full form for BCD?
  - A. **Binary Coded Decimal**
  - B. Bit Coded Decimal
  - C. Bitwise Coded Decimal
  - D. None of the above



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

6. Which among the following is the full form of CNC?
  - A. Computer Number control
  - B. Computer numerical control**
  - C. Computer numerical command
  - D. None of the above
  
7. MasterCAM is a -----
  - A. Standalone CAM software**
  - B. Integrated CAM software
  - C. Built In CAM software
  - D. All of the above
  
8. Which of the following is NOT the advantage of a CNC machine?
  - A. Reduces inspection time**
  - B. Reduces Tooling time
  - C. Higher initial cost
  - D. Higher rate of production
  
9. A robotic hand can be a substitute for:
  - A. CNC machine
  - B. Manual material handling
  - C. Manual packaging
  - D. All of the above**
  
10. AutoCAD is primarily used as a:
  - A. 2D software**
  - B. 3D software
  - C. Both of the above
  - D. None of the above

### Section – B

04X04 = 16 Marks

11. Write down the full form of CAPP and name the softwares which are used to achieve this in industry?

Ans. Computer Aided Process Planning is a technique by which a subject in industry generate Process planning with the use of computer with the help of various computer application Like Microsoft Excel.

12. Write down the Full form of CATIA and the year in which it was released by Dassault; also explain the primary purpose of developing CATIA by Dassault?

Ans. CATIA stands for Computer Aided Three Dimensional Interactive Application is the full form for CATIA it was released in year of 1982.It was primarily developed for the purpose of making Dassault defence product lineup, RAFALE design is one of the end product of this application.



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

13. Mention the name of general purpose programming language which is also popularly used as a CAE tool?

Ans: Python is the general purpose programming language which is also used as the CAE tool

14. Explain how Fanuc is a standalone programming controller for CNC machines.

Ans: Fanuc is basic G-Code generator controller which works on any type of cnc machines for which it is coded. It is very different from controllers like Mazatrol which are only developed for MAZAK machines.

### Section – C

04X06 = 24 Marks

15. Explain how Excel is a great tool for achieving CAPP in industries.

Ans: Excel is developed by Microsoft which is developed as a spreadsheet tool. It can do mathematical calculations as well support visual basic programming interface which are frequently used for generating process planning in industries also it is a standalone program which is its greatest strength so it can be plugged with any of the CAD software to generate CAPP

16. Explain the steps of FEM technique used for Computer Simulations of physical systems.

Ans: FEM stands for Finite Element analysis used for calculating forces and stresses on physical systems replicated virtually inside computers

1. Modelling of physical systems exactly in CAD
2. Dividing whole body into smaller parts known as meshing
3. Applying boundary conditions like forces, torques and pressure
4. Post Processing of results includes generating contours and graphs

17. Differentiate between modelling and simulation softwares with suitable examples.

Ans: Modelling softwares: Used for generating 3D models e.g.: solidworks

Simulation softwares: used for calculating external boundary conditions on virtual physical systems e.g.: ANSYS

18. Differentiate between DNC and CNC.

Ans: CNC stands for computer numerical control, DNC stands for direct numerical control. In CNC, far off controlling of the operation is not possible, while in DNC facilitates far-flung control. CNC is transferring machine instruction, DNC controls the information distribution to a wide variety of machines.





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set B*

Course Code: SMS1502

Course Name: Integrated CAD-CAM-CNC

Time: 2 Hour

Max. Marks: 50

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. Which among the following is the correct full form of GUI?
  - A. Graphical User Interface
  - B. Graph Used Interface
  - C. None of these
  - D. Both of these
2. Which among the following is one of the core programming language used to write solidworks?
  - A. Java
  - B. C++
  - C. C#
  - D. All of the above
3. NX has been developed by which of the following company
  - A. CNC Software Inc.
  - B. Siemens
  - C. AutoDesk
  - D. None of the above
4. Which of the following is the built in CAM software?
  - A. Fanuc
  - B. Siemens
  - C. Mazatrol
  - D. None of the above



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. Which of the following is the full form for BCD?
  - A. Binary Coded Decimal
  - B. Bit Coded Decimal
  - C. Bitwise Coded Decimal
  - D. None of the above
  
6. Which among the following is the full form of CNC?
  - A. Computer Number control
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  - D. None of the above
  
7. MasterCAM is a -----
  - A. Standalone CAM software
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  - D. All of the above
  
8. Which of the following is NOT the advantage of a CNC machine?
  - A. Reduces inspection time
  - B. Reduces Tooling time
  - C. Higher initial cost
  - D. Higher rate of production
  
9. A robotic hand can be a substitute for:
  - A. CNC machine
  - B. Manual material handling
  - C. Manual packaging
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10. AutoCAD is primarily used as a:
  - A. 2D software
  - B. 3D software
  - C. Both of the above
  - D. None of the above



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – B

04X04 = 16 Marks

11. Write down the full form of CAPP and name the softwares which are used to achieve this in industry?
12. Write down the Full form of CATIA and the year in which it was released by Dassault; also explain the primary purpose of developing CATIA by Dassault?
13. Mention the name of general purpose programming language which is also popularly used as a CAE tool?
14. Explain how Fanuc is a standalone programming controller for CNC machines.

## Section – C

04X06 = 24 Marks

15. Explain how Excel is a great tool for achieving CAPP in industries.
16. Explain the steps of FEM technique used for Computer Simulations of physical systems.
17. Differentiate between modelling and simulation softwares with suitable examples.
18. Differentiate between DNC and CNC.





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

Course Code: SMS1502

Course Name: Integrated CAD-CAM-CNC

Time: 2 Hour

Max. Marks: 50

**Answer Key**

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  - A. **Graphical User Interface**
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  - E. Java
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  - G. C#
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## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

6. Which among the following is the full form of CNC?
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  - C. Manual packaging
  - D. All of the above**
  
10. AutoCAD is primarily used as a:
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  - B. 3D software
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### Section – B

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## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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Ans: Fanuc is basic G-Code generator controller which works on any type of cnc machines for which it is coded. It is very different from controllers like Mazatrol which are only developed for MAZAK machines.

### Section – C

04X06 = 24 Marks

15. Explain how Excel is a great tool for achieving CAPP in industries.

Ans: Excel is developed by Microsoft which is developed as a spreadsheet tool. It can do mathematical calculations as well support visual basic programming interface which are frequently used for generating process planning in industries as it is a standalone program which is its greatest strength so it can be plugged with any of the CAD software to generate CAPP

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# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set A*

**Course Code: SMS1503**

**Course Name: Basics of Multiaxis Machining & Dialog CNC Programming**

**Time: 2 Hour**

**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 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



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. Basic Components of CNC Controllers are-
  - a) Power Supply unit
  - b) Circuitry protection unit
  - c) Motor driver unit
  - d) All of the above
6. Rapid Feed rate of STAR SB-20R for X, Y and Z axes is \_\_\_\_\_
  - a) 35000 mm/min
  - b) 35000 m/min
  - c) 35000 mm/rev
  - d) 20 m/min
7. Maximum machining Diameter of STAR SB-20R is -
  - a) 20 mm
  - b) 18 mm
  - c) 25 mm
  - d) 30 mm
8. Maximum Drilling Capability of STAR SB-20R for stationary tool is -
  - a) 20 mm
  - b) 18 mm
  - c) 25 mm
  - d) 35 mm
9. Maximum spindle speed of STAR SB-20R is -
  - a) 15000 rpm
  - b) 20000 rpm
  - c) 10000 rpm
  - d) 12000 rpm
10. What is operational mode of STAR SB-20R?
  - a) Left Handed
  - b) Right Handed
  - c) Neutral
  - d) Both a and b

### Section – B

04X04 = 16 Marks

11. Write down the main difference between synchronous and Asynchronous electric motor.
12. Write down the various popular controllers in use.
13. Name the various functional units of STAR SB-20R.
14. Write down the capacity and major specifications of STAR SB-20R.



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – C

04X06 = 24 Marks

15. What do you mean by functional units of a machine tool? Name the various functional units of a CNC lathe.
16. Describe in brief about various types of five axis machining centers along with their application.
17. Write down the differences between Five axis machining and (3+2) axis machining?
18. Provide details of various Power transmission units of STAR SB-20R.





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

**Course Code: SMS1503**

**Course Name: Basics of Multiaxis Machining & Dialog CNC Programming**

**Time: 2 Hour**

**Max. Marks: 50**

**Answer Key**

**Section – A**

10X01 = 10 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**



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

6. Rapid Feed rate of STAR SB-20R for X, Y and Z axes is \_\_\_\_\_
  - a) **35000 mm/min**
  - b) 35000 m/min
  - c) 35000 mm/rev
  - d) 20 m/min
7. Maximum machining Diameter of STAR SB-20R is -
  - a) **20 mm**
  - b) 18 mm
  - c) 25 mm
  - d) 30 mm
8. Maximum Drilling Capability of STAR SB-20R for stationary tool is -
  - a) **20 mm**
  - b) 18 mm
  - c) 25 mm
  - d) 35 mm
9. Maximum spindle speed of STAR SB-20R is -
  - a) 15000 rpm
  - b) 20000 rpm
  - c) **10000 rpm**
  - d) 12000 rpm
10. What is operational mode of STAR SB-20R?
  - a) Left Handed
  - b) **Right Handed**
  - c) Neutral
  - d) Both a and b

### Section – B

04X04 = 16 Marks

11. 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

12. Write down the various popular controllers in use.

Ans. 1) Fanuc 21M

2) Sinumerik Operate 840D

3) Heidenhain TNC426



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

13. Name the various functional units of STAR SB-20R.

Ans.

- A) Guide Bush
- B) Back Attachment
- C) Back -4 spindle
- D) Head Stock
- E) Tool Post

14. Write down the capacity and major specifications of STAR SB-20R.

Item		Specifications
Maximum machining diameter		$\Phi$ 20 mm
Maximum headstock stroke	Guide bush version	205 mm
	Non-guide bush version	50 mm
Maximum drilling capability	Stationary tool	$\Phi$ 20 mm
	Power driven tool	$\Phi$ 5 mm $\Phi$ 6 mm & $\Phi$ 7 mm
Maximum tapping capability	Stationary tool	M 10x P1.5
	Power driven tool	M 5 x P0.5, M6x P1.0
Maximum milling capability		$\Phi$ 7 mm, $\Phi$ 10 mm

## Section – C

04X06 = 24 Marks

15. 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.

16. 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**



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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.

17. 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.

18. Provide details of various Power transmission units of STAR SB-20R.

Item		Specifications	Remarks
Power supply	Voltage	3 phase, 200Vac±10%	
	Frequency	50/60Hz ±1Hz	
	Capacity	SB-12R	Load run average power: 4.5KVA
SB-16R/ 20R		Load run average power: 3.7KVA	
Main circuit breaker	Machine	Rated current: 30A Rated shutdown capacity: Icu/Ics: 2.5/1kA	QF001
	External transformer	Rated current: 20A Rated shutdown capacity: Icu/Ics: 2.5/1kA	Transformer [0G492]
		Rated current: 20A Rated shutdown capacity: Icu/Ics: 7.5/4kA	Transformer CE Marking Version [0T497]
Leakage current		5mA	
Electric circuit diagram No.		10171/**_***	Included with the machine **_*** is an edition number



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
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*Set B*

**Course Code: SMS1503**

**Time: 2 Hour**

**Course Name: Basics of Multiaxis Machining & Dialog CNC Programming**

**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. Rapid Feed rate of STAR SB-20R for X, Y and Z axes is \_\_\_\_\_
  - a) 35000 mm/min
  - b) 35000 m/min
  - c) 35000 mm/rev
  - d) 20 m/min
2. Maximum machining Diameter of STAR SB-20R is -
  - a) 20 mm
  - b) 18 mm
  - c) 25 mm
  - d) 30 mm
3. Maximum Drilling Capability of STAR SB-20R for stationary tool is -
  - a) 20 mm
  - b) 18 mm
  - c) 25 mm
  - d) 35 mm
4. Maximum spindle speed of STAR SB-20R is -
  - a) 15000 rpm
  - b) 20000 rpm
  - c) 10000 rpm
  - d) 12000 rpm



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. What is operational mode of STAR SB-20R?
  - a) Left Handed
  - b) Right Handed
  - c) Neutral
  - d) Both a and b
6. Electric motors are driven by \_\_\_\_\_ forces.
  - a) Ferromagnetic
  - b) Electromagnetic
  - c) Gamma
  - d) External
7. Asynchronous motor is an \_\_\_\_ induction motor.
  - a) AC
  - b) DC
  - c) Water
  - d) Gas
8. Basic Components of CNC Controllers are -
  - a) Power Supply unit
  - b) Circuitry protection unit
  - c) Motor driver unit
  - d) All of the above
9. Power transmission component includes -
  - a) Belts
  - b) Shaft
  - c) Couplings
  - d) All of the above
10. Joining elements include -
  - a) Pins
  - b) Snap-fits
  - c) Both a & b
  - d) None of the above

### Section – B

04X04 = 16 Marks

11. Name the various functional units of STAR SB-20R.
12. Write down the capacity and major specifications of STAR SB-20R.
13. Write down the main difference between synchronous and Asynchronous electric motor.
14. Write down the various popular controllers in use.



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – C

04X06 = 24 Marks

15. Describe in brief about various types of five axis machining centers along with their application.
16. Provide details of various Power transmission units of STAR SB-20R.
17. What do you mean by functional units of a machine tool? Name the various functional units of a CNC lathe.
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# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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**School of Manufacturing Skills**  
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**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

Course Code: SMS1503

Course Name: Basics of Multiaxis Machining &amp; Dialog CNC Programming

Time: 2 Hour

Max. Marks: 50

Answer Key

Section – A

10X01 = 10 Marks

1. Rapid Feed rate of STAR SB-20R for X, Y and Z axes is \_\_\_\_\_
  - a) **35000 mm/min**
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2. Maximum machining Diameter of STAR SB-20R is -
  - a) **20 mm**
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  - b) **Right Handed**
  - c) Neutral
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## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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  - a) Pins
  - b) Snap-fits
  - c) Both a & b**
  - d) None of the above

### Section – B

04X04 = 16 Marks

11. Name the various functional units of STAR SB-20R.

Ans.

- a) Guide Bush
- b) Back Attachment
- c) Back -4 spindle
- d) Head Stock
- e) Tool Post

12. Write down the capacity and major specifications of STAR SB-20R.



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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Maximum machining diameter		$\Phi$ 20 mm
Maximum headstock stroke	Guide bush version	205 mm
	Non-guide bush version	50 mm
Maximum drilling capability	Stationary tool	$\Phi$ 20 mm
	Power driven tool	$\Phi$ 5 mm $\Phi$ 6 mm & $\Phi$ 7 mm
Maximum tapping capability	Stationary tool	M 10x P1.5
	Power driven tool	M 5 x P0.5, M6x P1.0
Maximum milling capability		$\Phi$ 7 mm, $\Phi$ 10 mm

13. 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

14. Write down the various popular controllers in use.

Ans. 1) Fanuc 21M

2) Sinumerik Operate 840D

3) Heidenhain TNC426

### Section – C

04X06 = 24 Marks

15. 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.



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

16. Provide details of various Power transmission units of STAR SB-20R.

Item		Specifications	Remarks
Power supply	Voltage	3 phase, 200Vac±10%	
	Frequency	50/60Hz ±1Hz	
	Capacity	SB-12R	Load run average power: 4.5KVA
SB-16R/20R		Load run average power: 3.7KVA	
Main circuit breaker	Machine	Rated current: 30A Rated shutdown capacity: Icu/Ics: 2.5/1kA	QF001
	External transformer	Rated current: 20A Rated shutdown capacity: Icu/Ics: 2.5/1kA	Transformer [0G492]
		Rated current: 20A Rated shutdown capacity: Icu/Ics: 7.5/4kA	Transformer CE Marking Version [0T497]
Leakage current		5mA	
Electric circuit diagram No.		10171/**_***	Included with the machine **_*** is an edition number

17. 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.

18. 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.



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set A*

**Course Code: SMS1504**  
**Course Name: Project Work**

**Time: 2 Hour**  
**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. Assembling 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. Which of the following is NOT a part of project management?
  - A. Initiating
  - B. monitoring
  - C. closing
  - D. All above are parts
4. The scope of the work is defined in which phase of the project management?
  - A. Initiating
  - B. Planning
  - C. Executing
  - D. Closing



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5. The project phase model was introduced. Which of the following phases is typically not part of project management? (Mark only one answer)
- A. Definition & Planning
  - B. Performance & Control
  - C. Launch or Execution
  - D. Project Close
6. How the project work will 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
7. The review of the successes and the mistakes is normally held during \_\_\_\_\_ phase.
- A. Initiation
  - B. planning
  - C. execution
  - D. closure
8. In addition to the Goals we also define Deliverables in the project contract. Which of the following statements is true? (Mark only one answer)
- A. The Deliverables are used to measure and to proof whether the agreed goals have been met.
  - B. The Deliverables are outside of the area of interest.
  - C. As soon as the Project Report is submitted to the customer, the project is considered as finished and therefore the goals have been achieved.
  - D. There are no Deliverables to be achieved in a project! We only are interested to achieve the agreed goals.
9. During the "Project Definition" phase, we do not define the following:
- A. Communication plan
  - B. Project plan / GANNT chart
  - C. Project Goals
  - D. The location for Project Closure ceremony
10. The project phase model was introduced. Which of the following phases is typically not part of project execution? (Mark only one answer)
- A. Conception & Initiation
  - B. Performance & Control
  - C. Launch or Execution
  - D. Project Close



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – B

04X04 = 16 Marks

11. What do you understand by the term "project"?
12. Write Advantages of project management?
13. Write a short note on mass production.
14. Define what is project contract

## Section – C

04X06 = 24 Marks

15. Define the SMART Acronym.
16. Explain project Phases Lifecycle with diagram.
17. Explain the five project phases in proper sequence also draw layout diagram to support this.
18. Discuss the curve propagation of large project via different phase timings with proper diagram?





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Set-A

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

**Course Code: SMS1504**  
**Course Name: Project Work**

**Time: 2 Hour**  
**Max. Marks: 50**

**Answer Key**

**Section – A**

10X01 = 10 Marks

1. Assembling 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.  
**B. temporary**  
A. Permanent  
C. (A) or (B)  
D. Both (A) and (B)
3. Which of the following is NOT a part of project management?  
**D. All above are parts**  
A. Initiating  
B. monitoring  
C. closing
4. The scope of the work is defined in which phase of the project management?  
**A. Initiating**  
B. Planning  
C. Executing  
D. Closing
5. The project phase model was introduced. Which of the following phases is typically not part of project management? (Mark only one answer)  
**C. Launch or Execution**  
A. Definition & Planning  
B. Performance & Control  
D. Project Close



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

6. How the project work will 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
7. The review of the successes and the mistakes is normally held during \_\_\_\_\_ phase.
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  - B. planning
  - C. execution
  - D. closure**
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  - B. Performance & Control
  - C. Launch or Execution
  - D. Project Close

### Section – B

04X04 = 16 Marks

11. 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**.

12. Write Advantages of project management?

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



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- 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 projects and so on.

13. 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.

14. Define what is project contract

**Contract** is an agreement between two or more parties, to exchange providing a specific work (Scope of Work) with agreed compensations (mainly cost and/or any others specified in the contract) include terms and conditions. The Contract terms and conditions including both parties' obligation, liability, payment, and other terms and conditions are legally binded. The Contract dispute settlement process and change management work process are a part of contract. In addition to being a signed document.

### Section – C

04X06 = 24 Marks

15. 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.

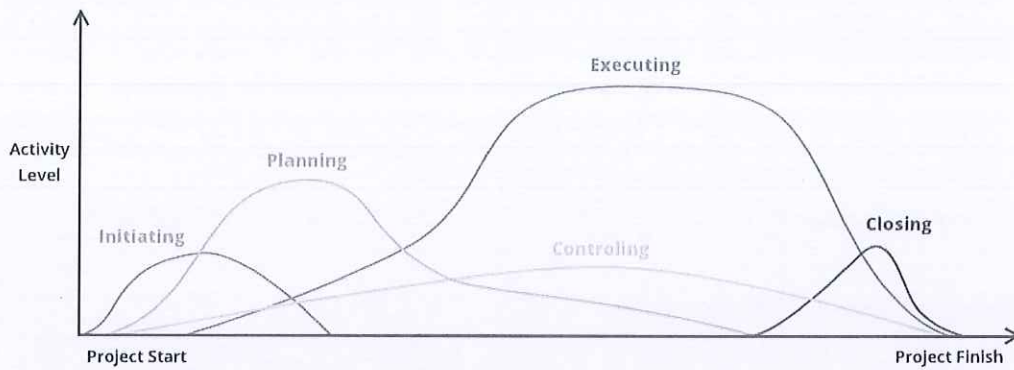
16. Explain project Phases Lifecycle with diagram.

#### **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 Close*



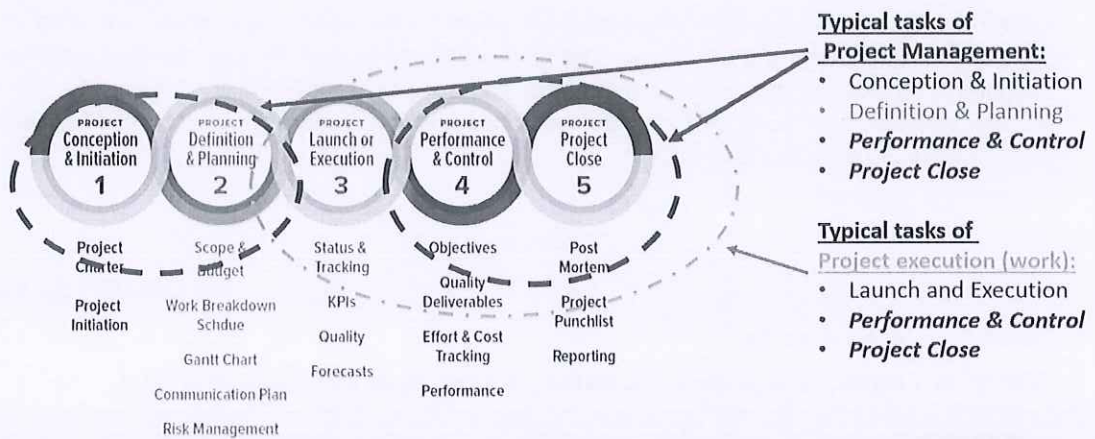
How processes overlap on a project

Planning is the most important at the start of a project. Then, executing takes over.

Controlling is important throughout the entire project.

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

### Project Phases:



18. Discuss the curve propagation of large project via different phase timings with proper diagram?

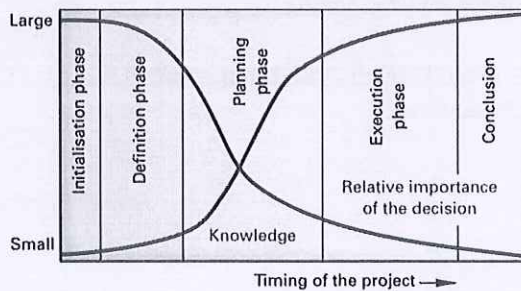


Figure 4: Influence of the decisions and knowledge on the project

### Relative importance of the decision:

In the start of a project the importance of decisions is always biggest with the least amount of knowledge.

### Gain of knowledge:

The gain of knowledge in project comes with the progress we make in a project.

Ideal moment for signing the **Project Contract!!**



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
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**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set B*

**Course Code: SMS1504**

**Course Name: Project Work**

**Time: 2 Hour**

**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. After the "table of content" the main part of the project report should always be written in the following order:
  - A. Introduction, body, conclusion
  - B. Body, introduction, appendix
  - C. Introduction, reference, conclusion
  - D. Conclusion, body, introduction
2. The scope of the work is defined in which phase of the project management?
  - A. Initiating
  - B. Planning
  - C. Executing
  - D. Closing
3. Evaluate following statement: The project team should always communicate directly among the team members and the project leader has always to be informed regarding the status and decisions.
  - A. Yes, because talking is very nice and social. Basically the team members are friends and should regard their friendship as priority number 1 during the project work.
  - B. No, because the team members should not be friends. They are colleagues and should not have a too deep relation among each other.
  - C. No, the communication should always go through the project leader. He will decide what steps should be taken next.
  - D. Yes, direct communication avoids the dilution of the information and also increases the pace of decision taking. Because the project leader is always in the loop he can interfere in the decision making process of the team if required.



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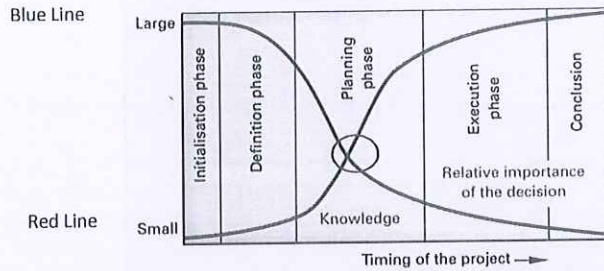
4. Assembling project team and assigning their responsibilities are done during which phase of a project management?
  - A. Initiation
  - B. Planning
  - C. Execution
  - D. Closure
5. The basic nature of a project is a \_\_\_\_\_ one.
  - A. Permanent
  - B. temporary
  - C. (A) or (B)
  - D. Both (A) and (B)
6. Which of the following is NOT a part of project management?
  - A. Initiating
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  - D. All above are parts
7. Evaluate following statement: The project report should always be written at the end of the project.
  - A. Yes, because at the end all the information and data are available. It does not make sense to start with project report writing in the beginning therefore.
  - B. No, the phase "project report writing" should be started at the very beginning and should be a continuous activity during the whole project. It helps to avoid a work overload at the end of the project. If not enough information and data is available, the structure/template of the report can always be prepared.
  - C. No, the project report should be written at the beginning of the project because the team just needs to follow to what is written in the report. At the end the project team adds only the appendix.
  - D. None of the answers above is correct.
8. The project phase model was introduced. Which of the following phases is typically not part of project management? (Mark only one answer)
  - A. Definition & Planning
  - B. Performance & Control
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  - D. Project Close
9. The review of the successes and the mistakes is normally held during \_\_\_\_\_ phase.
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10. During the "Project Definition" phase, we do not define the following:
  - A. Communication plan
  - B. Project plan / GANNT chart
  - C. Project Goals
  - D. The location for Project Closure ceremony

## Section – B

04X04 = 16 Marks

11. What do you understand by the term "project"?
12. Write Advantages of project management?
13. Write the name of three typical project risks and to take a suitable risk reduction measure for each risk.
14. The interplay of knowledge and influence of decisions in the progress of projects.

a) Please name the red line correctly



b) Please name the blue line correctly

**Figure 4: Influence of the decisions and knowledge on**

- c) Explain the importance of the intersection point in the circle in own words. What document should be signed ideally at this point?
- d) Explain about the signed document at intersection point

## Section – C

04X06 = 24 Marks

15. Explain the progression of a project from Point A to Point B with the help of diagram and illustrate the five different phases of the project.
16. Define the SMART Acronym.
17. Explain the five project phases in proper sequence also draw layout diagram to support this.
18. Explain about the project organization structure with help of diagram.







# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

**Course Code: SMS1504**  
**Course Name: Project Work**

**Time: 2 Hour**  
**Max. Marks: 50**

**Answer Key**

**Section – A**

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## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. The basic nature of a project is a \_\_\_\_\_ one.
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  - C. Launch or Execution**
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  - D. The location for Project Closure ceremony**



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – B

04X04 = 16 Marks

11. 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**.

12. Write Advantages of project management?

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

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- 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 projects and so on.

13. Write the name of three typical project risks and to take a suitable risk reduction measure for each risk.

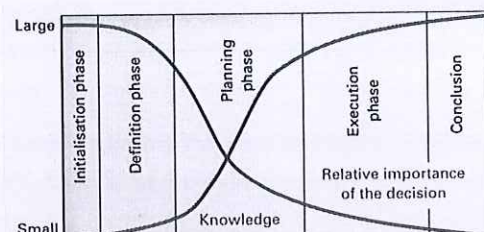
Project risks – typical project risks

- Over-optimistic timing and budget plan Example of risk reduction measure: Planning of reserves/extra resources in the project contract (similar measure to reduce the risk is also valid)
- Loss of key employees due to illness, leaving the company Risk reduction measure: Planning of reserves/extra resources in the project contract (similar measure to reduce the risk is also valid)
- Non-compliance with agreed deadlines Risk reduction measure: Precise reporting and monitoring of the progress of the Project (similar measure to reduce the risk is also valid)
- Conflict between team members Risk reduction measure: Addressing conflicts early and solution-oriented in team Meetings (similar measure to reduce the risk is also valid)
- Lack of support of management Risk reduction measure: Write interim reports, using examples to point out the importance of the project. (similar measure to reduce the risk is also valid)
- Lack of acceptance among potential users of the product Risk reduction measure: Carry out experiments on the customers at an early stage. Design aspects of the product in such a way that the customers want the product. (similar measure to reduce the risk is also valid)
- Technological feasibility such as limited material properties or size Risk reduction measure: Recognize and recommend early termination of the project (similar measure to reduce the risk is also valid)
- Legal risk such as product liability Risk reduction measure: Know legal aspects of the area of interest. Derive responsibilities for product safety from this, adhere to them in the product and record them in the user manual. (similar measure to reduce the risk is also Valid)

14. The interplay of knowledge and influence of decisions in the progress of projects.

- a) Please name the red line correctly  
Knowledge

Blue Line



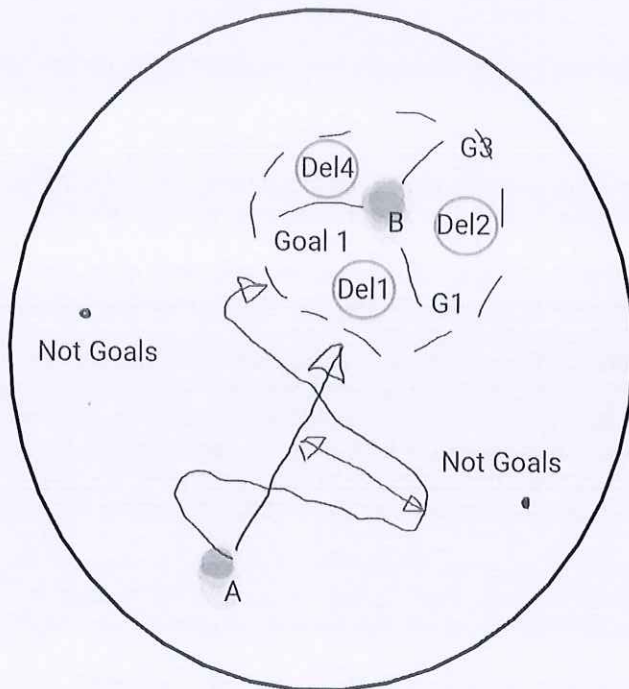


- b) Please name the blue line correctly Red Line  
Influence of decision
- c) Explain the importance of the intersection point in the circle in own words. What document should be signed ideally at this point?  
At this moment the knowledge has increased to such a value that the project contract can be signed. The influence of the decision has decreased, but is still high enough to make the decision for the coming project phases.
- d) Explain about the signed document at intersection point  
Contract is an agreement between two or more parties, to exchange providing a specific work (Scope of Work) with agreed compensations (mainly cost and/or any others specified in the contract) include terms and conditions.

### Section – C

04X06 = 24 Marks

15. Explain the progression of a project from Point A to Point B with the help of diagram and illustrate the five different phases of the project.



Phase 1 - Conception and Initiation  
(Area of interest)

Phase 2 - Definition and planning  
(Starting Point A - Ending Point B)  
(Project contract)

Phase 3 - Launch or Execution  
(Project progress in reality)

Phase 4 - Performance and Control  
(Progress in reality to the plan has to be updated) (Gap needs to be minimized)

Phase 5 - Closure  
(Handing over the deliverables)

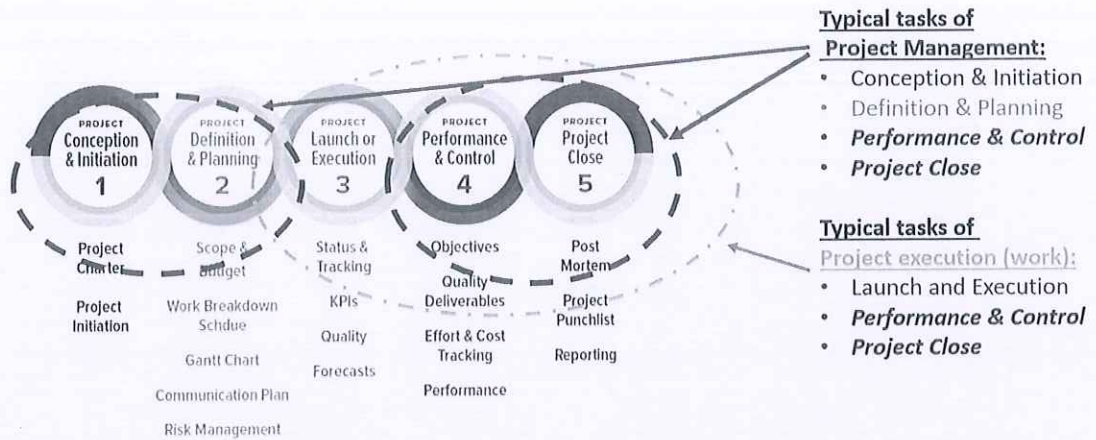
16. Define the SMART Acronym.

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

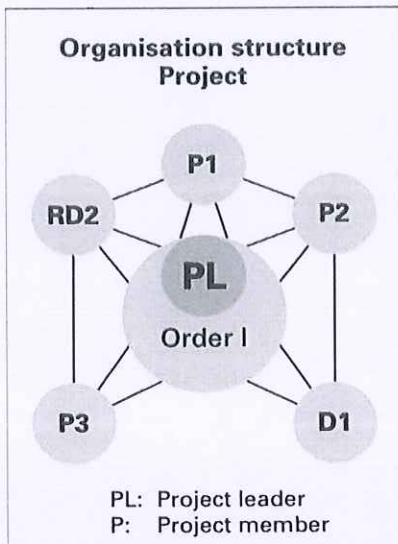
- S** *Specific* – target a specific area for improvement.
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17. Explain the five project phases in proper sequence also draw layout diagram to support this.

## Project Phases:



18. Explain about the project organization structure with help of diagram.







# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

## School of Manufacturing Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, V Semester,

End-Sem. Examination

*Set A*

Course Code: SMS1505

Course Name: Quality Management

Time: 2 Hour

Max. Marks: 50

### Instructions:

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

### Section – A

10X01 = 10 Marks

1. 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
2. Which of the following is not among 7 QC tools?
  - A. Check sheet
  - B. Histogram
  - C. Kanban
  - D. Pareto chart
3. The cause and effect diagram is also called
  - A. Stratification analysis
  - B. Total quality management
  - C. PDCA technique
  - D. Fish - bone diagram
4. PDCA cycle have
  - A. 12 steps
  - B. 11 steps
  - C. 10 steps
  - D. 13 steps



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5. In any process variability is due to
  - A. Selected cause
  - B. Technical cause
  - C. Chance cause and assignable cause
  - D. None of the above
6. Which generic approach's precursor is the Toyota Production System?
  - A. Kaizen
  - B. TQM
  - C. Lean manufacturing
  - D. Six sigma
7. 80/20 Rules is applicable for
  - A. Pareto Charts
  - B. Fishbone Diagram
  - C. To define the OEE
  - D. PFMEA
8. Dock Inspection is called.
  - A. Incoming Inspection
  - B. Final Inspection
  - C. In process Inspection
  - D. BOP Inspection
9. For Attribute data which chart is prepared:
  - A. X bar Chart
  - B. Range Chart
  - C. P chart
  - D. None of the above
10. A six sigma process has defect level below \_\_\_\_\_ defects per million opportunities.
  - A. 3.4
  - B. 4.3
  - C. 5.6
  - D. 6.0

## Section – B

04X04 = 16 Marks

11. Differentiate between Quality control & Quality assurance with practical example.
12. What is COPQ? Define Appraisal and prevention cost.
13. Write down purpose of inspection.
14. When assignable causes are identified in a process, explain with an example?



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – C

04X06 = 24 Marks

15. What are the different type of wastes in Lean manufacturing & define them?
16. Name the 7 QC tool. Explain the fishbone diagram with neat & clean Sketch.
17. Explain Pareto chart with appropriate example.
18. Write at least six characteristics of quality circle.





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Set-A

Registration No.: .....

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

**Course Code: SMS1505**  
**Course Name: Quality Management**

**Time: 2 Hour**  
**Max. Marks: 50**

**Answer Key**

**Section – A**

10X01 = 10 Marks

1. 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 the above
2. Which of the following is not among 7 QC tools?
  - A. Check sheet
  - B. Histogram
  - C. Kanban**
  - D. Pareto chart
3. The cause and effect diagram is also called
  - A. Stratification analysis
  - B. Total quality management
  - C. PDCA technique
  - D. Fishbone diagram**
4. PDCA cycle has-
  - A. 12 steps**
  - B. 11 steps
  - C. 10 steps
  - D. 13 steps
5. In any process, variability is due to
  - A. Selected cause
  - B. Technical cause
  - C. Chance cause and assignable cause**
  - D. None of the above



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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## Section – B

04X04 = 16 Marks

11. Differentiate between Quality control & Quality assurance with a practical example.

Ans.

- **Quality Control:** "A part of quality management focused on fulfilling quality requirements".
- **Quality Control** is defined as "The operational techniques and activities used to fulfil requirements for quality".
- **Quality Assurance:** "A part of quality management focused on providing confidence that quality requirements will be fulfilled
- **Quality Assurance** is defined as "All the planned and systematic activities implemented within the quality system that can be demonstrated to provide confidence that a product or service will fulfil requirements for quality".



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

12. What is COPQ? Define Appraisal and prevention cost.

**Ans.**

Those costs that are generated as a result of producing defective material. This cost includes the cost involved in fulfilling the gap between the desired and actual product/service quality. It also includes the cost of lost opportunity due to the loss of resources used in rectifying the defect. This cost includes all the labour cost, rework cost, disposition costs, and material costs that have been added to the unit up to the point of rejection. COPQ does not include detection and prevention cost.

13. Write any two purposes 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.

14. When assignable causes are identified in a process?

**Ans.**

When there is some inconsistency in process operation.

For example, a breakfast cereal packaging line may be designed to fill each cereal box with 500 grams of product, but some boxes will have slightly more than 500 grams, and some will have slightly less, in accordance with a distribution of net weights. If the production process, its inputs, or its environment changes (for example, the machines doing the manufacture begin to wear) this distribution can change. For example, as its cams and pulleys wear out, the cereal filling machine may start putting more cereal into each box than specified. If this change is allowed to continue unchecked, more and more product will be produced that fall outside the tolerances of the manufacturer or consumer, resulting in waste. While in this case, the waste is in the form of "free" product for the consumer, typically waste consists of rework or scrap.

### Section – C

04X06 = 24 Marks

15. What is the different type of wastes in Lean manufacturing & define them?

**Ans.**

- unnecessary transportation;
- excess inventory;
- the unnecessary motion of people, equipment or machinery;
- waiting, whether it is people waiting or idle equipment;
- over-production of a product;
- over-processing or putting more time into a product than a customer needs, such as designs that require high-tech machinery for unnecessary features; and
- defects, which require effort and cost for corrections.
- Waste of unused talent and ingenuity.

16. Name the 7 QC tool. Explain the fishbone diagram with neat & clean Sketch.

**Ans.**

1. Histogram or stem-and-leaf plot
2. Check sheet
3. Pareto chart
4. Cause-and-effect diagram
5. Defect concentration diagram
6. Scatter diagram
7. Control chart

**Fishbone Diagram Steps:**

1. Define the problem or effect to be analyzed.
  2. Form the team to perform the analysis. Often the team will uncover potential
  3. causes through brainstorming.
  4. Draw the effect box and the centerline.
  5. Specify the major potential cause categories and join them as boxes connected to the centerline.
  6. Identify the possible causes and classify them into the categories in step 4. Create new categories, if necessary.
  7. Rank order the causes to identify those that seem most likely to impact the problem.
  8. Take corrective action.
17. Explain the 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 the Pareto principle, which states that few of the defects account for most of the effects.

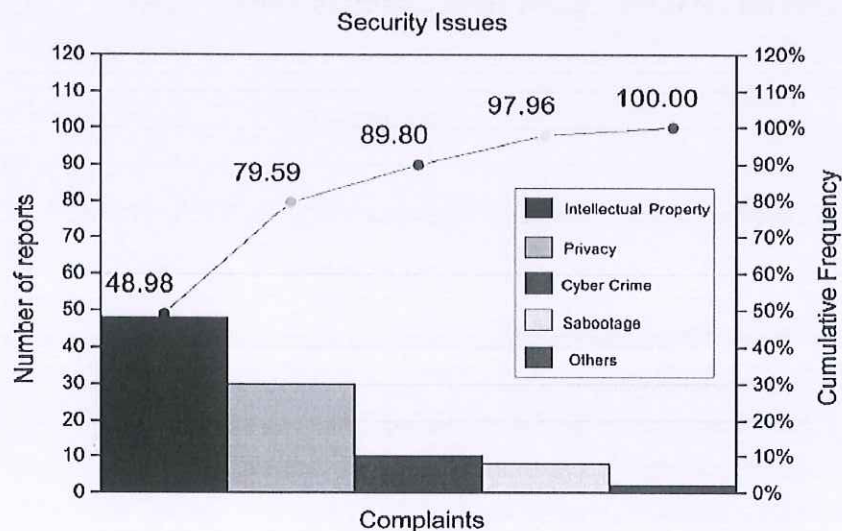


Figure 4 Pareto diagram used to prioritize the security issues



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

18. Write at least six characteristics of the quality circle.

**Ans.**

- Volunteers
- Set Rules and Priorities
- Decision made by consensus
- Members of a circle need to receive training
- Support of senior management required
- Members need to be empowered





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

Set-B  
①

**School of Manufacturing Skills**  
**Session: 2020-21 (Summer Semester)**  
**B. Voc. Program, V Semester,**  
**End-Sem. Examination**

*Set-B*

**Course Code: SMS1505**  
**Course Name: Quality Management**

**Time: 2 Hour**  
**Max. Marks: 50**

**Instructions:**

1. Attempt all questions.
2. Section A contains 10 Questions. Each question carries 1 Mark.
3. Section B contains 04 Questions. Each question carries 4 Marks.
4. Section C contains 04 Questions. Each question carries 6 Marks.

**Section – A**

10X01 = 10 Marks

1. A control chart displays
  - A. Process capability
  - B. Top management takes interest in quality
  - C. Inspectors are doing their job
  - D. Process variability
2. PDCA means
  - A. Plan Do Check Act
  - B. Process Do Check Assurance
  - C. Plan Define Check Assurance
  - D. None of the above
3. How is lean manufacturing achieved by an organization?
  - A. Controlling of waste
  - B. Elimination of Waste
  - C. Meetings with operator
  - D. By 100% inspection
4. For non-Attribute data which chart is prepared:
  - A. X bar Chart
  - B. N Chart
  - C. P chart
  - D. None of the above



## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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### Section – B

04X04 = 16 Marks

11. Differentiate between Quality control & Quality assurance with practical example.
12. What is COPQ? Define Appraisal and prevention cost.
13. What is ISO 9001:2015? Why ISO certification is important for companies?
14. What is Quality charts? Which charts are used for variable and attribute data?



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section – C

04X06 = 24 Marks

15. Name the 7 QC tool. Explain the fishbone diagram with neat & clean Sketch.
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17. What is the different type of wastes in Lean manufacturing & define them?
18. Write at least six characteristics of quality circle.





# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

## School of Manufacturing Skills Session: 2020-21 (Summer Semester) B. Voc. Program, V Semester, End-Sem. Examination

Course Code: SMS1505  
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Time: 2 Hour  
Max. Marks: 50

### Answer Key

#### Section – A

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## BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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13. What is ISO 9001:2015? Why ISO certification is important for companies?

**Ans.**

ISO 9000:2015 describes the fundamental concepts and principles of quality management which are universally applicable to the following:

- organizations seeking sustained success through the implementation of a quality management system;
- customers seeking confidence in an organization's ability to consistently provide products and services conforming to their requirements;
- organizations seeking confidence in their supply chain that their product and service requirements will be met;
- organizations and interested parties seeking to improve communication through a common understanding of the vocabulary used in quality management

14. What is Quality charts? Which charts are used for variable and attribute data?

**Ans.**

Two broad categories of chart exist, which are based on if the data being monitored is "variable" or "attribute" in nature.

- Variable Control Charts.  
X bar control chart. ...  
Range "R" control chart. ...  
Standard Deviation "S" control chart. ...
- Attribute Control Charts. ...  
"u" and "c" control charts. ...  
"p" and "np" control charts.

## Section – C

04X06 = 24 Marks

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**Ans.**

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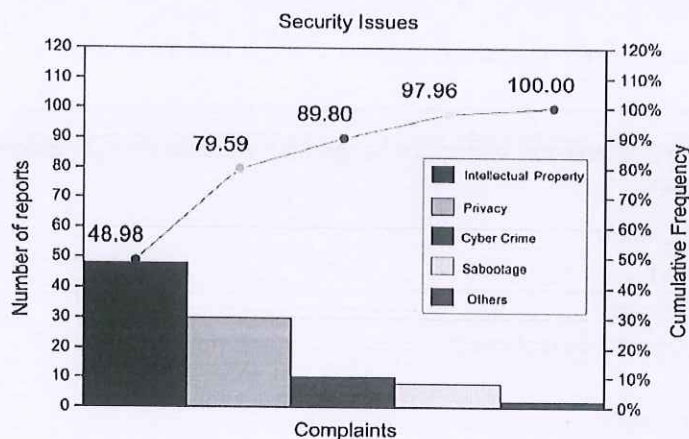


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