BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Manufacturing Skills

Session: 2019-20 (Summer Semester)

B. Voc. Program, V Semester,

2nd In-Sem. Examination

Course Code: SMS1501 **Time: 1 Hour**

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

Instructions:

1. Attempt all questions.
2. Use of Calculators 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
2. Micro Economics is related to:
   a) Average economics
   b) Whole economics
   c) Individual economics
3. Consumer means:
   a) Customer
   b) Seller
   c) Business Owner
4. 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
5. Prime Cost in a Manufacturing Industry includes:
   a) All direct cost
   b) Factory overhead cost
   c) Summation of direct and factory overhead cost

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 envelops was $3 a box, and Ram was willing to buy 10 boxes. Today, the price has gone up to $3.75 a box, and Ram is now willing to buy 8 boxes. What is Ram's elasticity of demand?

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. Krishna advertises to sell cookies for $4 a dozen. He sells 50 dozen and decides that she can charge more. He raises the price to $6 a dozen and sells 40 dozen. The elasticity of demand is 0.4? Is Krishna's demand for cookies elastic or inelastic. Assuming that the elasticity of demand is constant, how many would she sell if the price were $10 a box.
11. The accounts of Rahim Manufactures Ltd. for the year ended 31st December 2018 show the following:

	Rs.
Materials purchased	1,50,000
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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Answer Key

Section – A

05X01 = 05 Marks

1. Demand Forecasting means:
   b) Future demand
2. Micro Economics is related to:
   c) Individual economics
3. Consumer means:
   a) Customer
4. Direct Cost in a Manufacturing Industry includes:
   c) Summation of direct material and labour cost
5. Prime Cost in a Manufacturing Industry includes:
   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 = (Price, Income, Tastes, Popularity, Advertising, Expectations of consumers)
8. Yesterday, the price of envelops was $3 a box, and Ram was willing to buy 10 boxes. Today, the price has gone up to $3.75 a box, and Ram is now willing to buy 8 boxes. What is Ram's elasticity of demand?
   Ans.:
   EOD = {(8-10)/10} / {(3.75-3)/3} = -0.8

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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	?

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

10. Krishna advertises to sell cookies for $4 a dozen. He sells 50 dozen and decides that she can charge more. He raises the price to $6 a dozen and sells 40 dozen. The elasticity of demand is 0.4? Is Krishna's demand for cookies elastic or inelastic. Assuming that the elasticity of demand is constant, how many would she sell if the price were $10 a box?

Ans.: Relative inelastic.

$0.4 = \{(Q2-40)/40\} / \{(10-6)/6\}$

$Q2 = 50.67 = 51$

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

	Rs.
Materials purchased	1,50,000
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) Rs. 1,50,000

Prime cost = 150000 + 50000 + 30000 = 230000/-

Cost of production = 230000 + 20000+ 10000 = 260000/-

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Session: 2019-20 (Summer Semester)

B. Voc. Program, V Semester,

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Course Code: SMS1503 **Time: 1 Hour**

Course Name: Basics of Multiaxis Machining & Dialog CNC Programming **Max. Marks: 20**

Instructions:

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

Section – A

05X01 = 05 Marks

1. Which of the following material is not used in chromating?
   a) Iron
   b) Manganese
   c) zinc
   d) magnesium
2. Which process is used to give a steel part as a primer for coating?
   a) Chromating
   b) Phosphating
   c) Electrostatic painting
   d) None of above
3. What is the cutting speed in oxy-fuel cutting for 5mm thickness?
   a) 400mm / min
   b) 800mm / min
   c) 1200mm / min
   d) 200mm / min
4. What is the percentage of sheet metal thickness for Die clearance?
   a) Above 25%
   b) Above 10%
   c) Up to 5%
   d) Up to 30%

5. What is the cutting speed in plasma cutting for quality cut?
    a) Up to 6m / min
    b) Up to 4m / min
    c) Up to 10m / min
    d) Up to 2m / min

Section – B

03X02 = 06 Marks

6. What are the advantages of electrostatic powder coating?
7. Define electroplating.
8. Explain sheet metal consumption.

Section – C

03X03 = 09 Marks

9. Describe the chemical vapor composition(CVD) and write down their advantage and application.
10. Explain thermal spraying method of metal coating.
11. Explain the following.
    a) Oxy-fuel cutting
    b) Water jet cutting

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Answer Key

Section – A

05X01 = 05 Marks

1. Which of the following material is not used in chromating?

d) magnesium

2. Which process is used to give a steel part as a primer for coating?

b) Phosphating

3. What is the cutting speed in oxy-fuel cutting for 5mm thickness?

b) 800mm / min

4. What is the percentage of sheet metal thickness for Die clearance?

c) Up to 5%

5. What is the cutting speed in plasma cutting for quality cut?

b) Up to 4m / min

Section – B

03X02 = 06 Marks

6. What are the advantages of electrostatic powder coating?

Ans. Advantages

- Solvent free coating with thermosetting resins.
- Recovery of the over-spray coating powder.
- Environmentally friendly.
- All-over coating and good adhesion to the part.

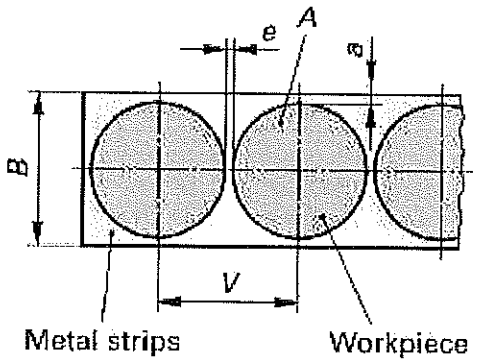
7. Define electroplating.

Ans. Electroplating is the process of applying a metal coating on another piece of metal (or another conductive surface) through an **electro-deposition process**. In electroplating, the deposited metal becomes part of the existing product with the plating/coating.

8. Explain sheet metal consumption.

Ans. Sheet metal consumption

Between the workplace webs of thickness e and borders of thickness an at the strip are required. when determining the metal consumption A_o for each work piece cut from a sheet metal strip of width B with strip feed V, waste at the strip ends is not taken into account.

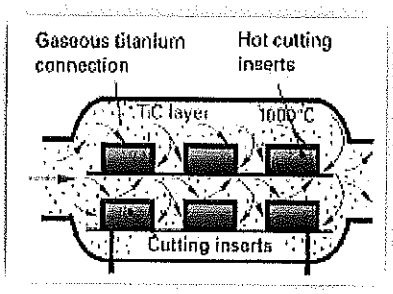


Section – C

03X03 = 09 Marks

9. Describe the chemical vapor composition(CVD) and write down their advantage and application.

- **Ans.** Chemical Vapor Deposition (CVD) is an atmosphere controlled process conducted at elevated temperatures (1000 °C) in a CVD reactor.
- During this process, **thin-film coatings** are formed as the result of reactions between **various gaseous phases** and the heated surface of substrates within the CVD reactor. As different gases are transported through the reactor, distinct hard coating layers are formed on the **tool.**

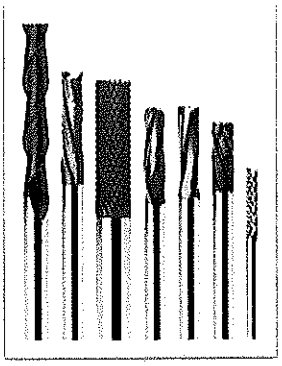


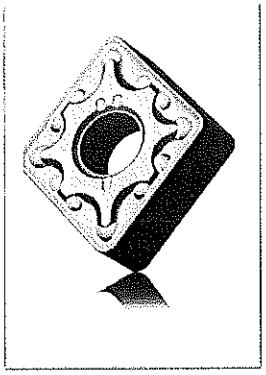
Advantage

- Possibility of coating with oxides, metal carbides and metal nitrides.
- Thin multilayer coating is also possible.

Applications

- Coating of tools and indexible cutter inserts, guide rollers, thread guides and similar objects with hard materials coatings of Al_2O_3, Tic, TiN, TiAlN and AlCrN.

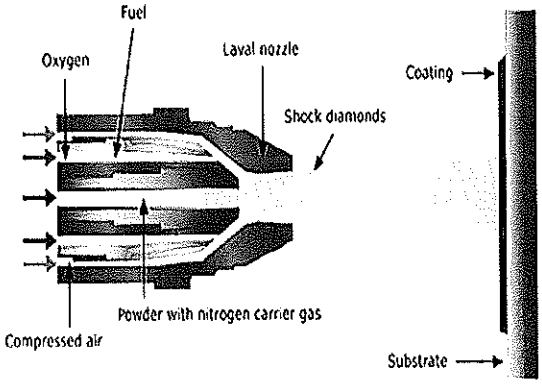




10. Explain thermal spraying method of metal coating.

Ans. Thermal spraying techniques are coating processes in which melted (or heated) materials are sprayed onto a surface. The "feedstock" (coating precursor) is heated by electrical (plasma or arc) or chemical means (combustion flame).

- Thermal spraying can provide thick coatings (approx. thickness range is 20 microns to several mm, depending on the process and feedstock), over a large area at high deposition rate as compared to other coating processes such as electroplating, physical and chemical vapour deposition.
- Coating materials available for thermal spraying include metals, alloys, ceramics, plastics and composites. They are fed in powder or wire form, heated to a molten or semi molten state and accelerated towards substrates in the form of micrometer-size particles.
- Combustion or electrical arc discharge is usually used as the source of energy for thermal spraying.



11. Explain the following.

a) Oxy-fuel cutting

Ans. Plain carbon and low-alloy steels burn in pure oxygen if their ignition temperature is exceeded. This is around 1200°C and is below the melting temperature.
Flame cutting exploits this behavior. The cutting point on the work piece is heated up to the ignition temperature using a fuel gas- oxygen is connected. After this, the steel burns at the incandescently hot cutting point. The resultant iron oxide together with the molten steel by the pressure of the oxygen jet. Forward movement of the cutting torch results in a kerf.

Application	Plain carbon and low-alloy steels
Material thicknesses	5 mm to 1,000 mm
Cutting speed	800 mm/min at 5 mm thickness 400 mm/min at 80 mm thickness
Advantages	Use of manually-guided burners and NC-controlled machines possible
Disadvantages	Not suitable for thin sheets, alloy steels and non-ferrous metals

b) **Ans.** **Waterjet cutting**
Waterjet cutting works with a very thin waterjet which often has a blasting abrasive such as quartz sand mixed in with it in order to increase the eroding action.
Cutting process
The cutting water is brought up to a pressure of around 4,000 bar using a pump and fed into the cutting head. The blasting abrasive is added here. the jet, which is between 0.1 and 0.5 mm in width, then starts to cut the material from a starting hole in the workpiece. The cutting speed depends on the hardness and toughness of the material in addition to the required cut quality. A very smooth and burr- free cut edge is achieved using fine cutting in which the process runs at around 25% of the possible cutting speed.
Considerable noise is produced during waterjet cutting. This can be reduced by cutting underwater.

Application	Metals, non-ferrous metals, plastics, textiles, composite materials, laminated materials
Material thicknesses	1 mm to 100 mm
Cutting speed	0.4 m/min for steel 0.8 m/min for aluminium
Cutting material	Water with abrasive additives
Advantages	Cutting of all materials possible; no heat effects and therefore no distortion
Disadvantages	Only used when thermal cutting processes are unsuitable