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**School of Manufacturing Skills**

Session: 2021-22 (Summer Semester)

B. Voc. Program, III & V Semester,

1<sup>st</sup> In-Sem. Examination

open elective

Course Code: SMS1113

Time: 1 Hour

Course Name: Basic Pneumatics

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. Fluid power system is based on-
  - a) Bernoulli's principle
  - b) Gas law
  - c) Avogadro's law
  - d) Pascal law
2. The Function of Tank is to-
  - a) maintain a pressure range
  - b) drain water content
  - c) prevents from pressure fluctuation
  - d) remove dust particles from a
3. When  $PV=Constant$ , if we increase the volume then pressure will-
  - a) Remains constant
  - b) Decrease
  - c) Increase
4. The Fluid use to transmit power in Pneumatics is-
  - a) Air
  - b) Water
  - c) Oil
  - d) Liquid
5. A hydraulic system operates at a pressure up to-
  - a) 10-12 bar
  - b) 7-8 bar
  - c) 400 bar
  - d) 700 bar
  - d) none of these



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## Section – B

03X02 = 06Marks

6. Define Pressure and Pascal Laws.
7. Draw the symbol of OR and AND element and explain the difference between them. Also write their another name.
8. Draw the symbol of FRL unit. Also write it's another name and full form.

## Section – C

03X03 = 09 Marks

9. Explain any five differences between *Pneumatic System* and *Hydraulic System*.
10. What are the types of linear Actuators? Draw symbols and also write their functions.
11. What is Air Production system? Explain all the components of Air production system.



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Answer Key

Section – A

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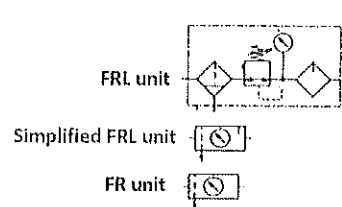


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## Section – B

03X02 = 06 Marks

1. Draw the symbol of FRL unit. Also write it's another name and full form
  - It is a combine unit of Filter, Pressure regulator and Lubricator elements
  - It's also known as Air service unit.



2. Define Pressure and Pascal Law.

- **Pressure** is defined as force per unit area. The standard unit for pressure is the Pascal, which is Newton per square meter.

$$P = \frac{F}{A} = \frac{N}{mm^2}$$

This unit is small and to avoid huge number, we use bar.

$$100,000 \text{ pa} = 100\text{KPa} = 1\text{bar}$$

A pressure in the pneumatics is over-pressure (above the atmosphere pressure) and referred as gauge pressure.

A pressure below the atmosphere is under pressure or vacuum. **The standard atm. Pr is 1.013 bar.**

### Pascal law

- An external pressure applied to a fluid in a closed vessel is uniformly transmitted throughout the fluid.

$$P_1 = P_2$$

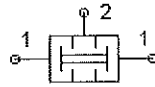
$$\frac{F_1}{A_1} = \frac{F_2}{A_2}$$

3. Draw the symbol of OR and AND element and explain the difference between them. Also write their another name

1.	OR element/shuttle valve		It provide output when we gives any input
2.	And element/dual pressure valve		It only provide output when we gives both side input



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## Section – C

03X03 = 09 Marks

1. Explain any five differences between *Pneumatic System* and *Hydraulic System*

S. No.	Hydraulic System	Pneumatic System
1.	It uses a pressurized liquid as a fluid	It uses compressed gas, usually air, as a fluid
2.	An oil hydraulic system operates at pressure up to 700 bar	A pneumatic system usually operates at 10–12 bar
3.	Generally designed as closed system	Usually designed as open system
4.	Valve operations are difficult	Valve operations are easy
5.	Heavier in weight	Lighter in weight
6.	Pumps are used to provide pressurized liquids	Compressors are used to provide compressed gases

2. What are the types of linear Actuators? Draw symbols and also write their functions.

Symbol	Function
	<b>Single acting cylinder with spring return.</b> Air pushes the piston in one direction and piston returns by spring.
	<b>Double acting cylinder –single piston rod:</b> The force exerted by compressed air moves the piston in both directions.
	<b>Double acting cylinder –double piston rod:</b> It has piston rods extending from both ends of the cylinder. It produces equal force and speed on both sides of the cylinder.
	<b>Telescopic cylinder –double acting</b> is used where space is constraint. It is used for long stroke application like in pneumatic cranes, dump trucks, lift fork trucks, dipper wagon, etc.
	<b>Double acting cylinder – Fixed cushion on one side:</b> Cushioning is used in the end position to prevent sudden impact which otherwise may damage parts.
	<b>Double acting cylinder – variable cushion on one side:</b> Fixed cushion on one side, cushioning is variable in one direction by adjusting the orifice opening.



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3. What is Air Production system? Explain all the components of Air production system.

Air Compressor	Pressure gauge
Electric motor	Auto/manual drain
pressure switch	Safety valve
check valve	Air dryer
Tank	line Filter



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*Open Elective*

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

**Course Code: SMS1114**

**Time: 1 Hour**

**Course Name: Basics of Production Management**

**Max. Marks: 20**

**Instructions:**

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2. Use of Calculator is allowed.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

**Section – A**

05X01 = 05 Marks

1. Effective Demand means:  
(a) The amount consumers desire (b) Must be able to pay (c) Must be willing And able to pay (d) None
2. Macro Economics belongs to:  
(a) Average economics (b) Whole economics (c) Individual economics (d) None
3. Consumers means:  
(a) Customer (b) Seller (c) Business Owner (d) None
4. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand (d) None
5. In case of Perfectly Elastic Demand, the degree of responsiveness is equal to:  
(a) Infinity (b) Zero (c) One (d) None  
(b)

**Section – B**

03X02 = 06 Marks

6. Explain demand curve with graph?
7. Write down the factors influencing the demand of big (50") fridge in Indian market?
8. Yesterday, the price of envelopes was \$5 a box, and Ram was willing to buy 10 boxes. Today, the price has gone up to \$6 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 Pen Drive manufacturing industry during the period of 2010-2019 are given below in tabular form. We have to find out the trend of the sales using 4 years moving averages method and forecast the value for the year 2020.



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Year	2012	2013	2014	2015	2016	2017	2018	2019	2020
Sales in Rs. Lakhs	13	16	16	18	20	22	19	21	?

10. What do you mean by Elasticity of Demand? Explain various types of Elasticity of Demand.
11. Explain in detail the Delphi Method of Forecasting



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**Answer Key** ✓

**Section – A**

05X01 = 05 Marks

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(a) The amount consumers desire (b) Must be able to pay (c) Must be willing And able to pay  
Ans. ©
2. Macro Economics belongs to:  
(a) Average economics (b) Whole economics (c) Individual economics  
Ans. (b) Whole economics
3. Consumers means:  
(a) Customer (b) Seller (c) Business Owner  
Ans. (a) Customer
4. Demand Forecasting means:  
(a) Past demand (b) Future demand (c) Present demand  
Ans. (b) Future demand
5. In case of Perfectly Elastic Demand, the degree of responsiveness is equal to:  
(a) Infinity (b) Zero (c) One  
Ans.: (a)

**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 big (50") fridge in Indian market?  
Ans.: Ans.: D = (Price, Income, Tastes, Popularity, Advertising, Expectations of consumers)
8. Yesterday, the price of envelopes was \$5 a box, and Ram was willing to buy 10 boxes. Today, the price has gone up to \$6 a box, and Ram is now willing to buy 8 boxes. What is Ram's elasticity of demand?  
Ans.:  $EOD = \frac{(8-10)/10}{(6-5)/5} = -1$



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### Section – C

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9. The annual sales of Pen Drive manufacturing industry during the period of 2010-2019 are given below in tabular form. We have to find out the trend of the sales using 4 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	13	16	16	18	20	22	19	21	?

Ans.: Demand forecast for 2020 =  $(20+22+19+21)/4 = 20.5 = 21$

10. What do you mean by Elasticity of Demand? Explain various types of Elasticity of Demand.

Ans.: The law of demand tells us that as the price of a commodity falls, the quantity demanded increases, and *vice versa.* (Eg. Gold).

Perfectly elastic demand (At a given price or less than the given price, infinite qty will be bought)

Perfectly inelastic demand ( Same qty will be bought at any price)

Demand with unity elasticity (Equally proportionate demand for proportionate change)

Relatively elastic demand ( More than proportionate demand due to price change)

Relatively inelastic demand (less than proportionate demand due to price change)

11. Explain in detail the Delphi Method of Forecasting

Ans.

The most primitive method of forecasting is *guessing*.

Delphi is used for long-range forecast.

It is generally used for

new product demand,

technological forecast for new technology,

effect of scientific advances,

changes in society,

changes in competitive environment, etc.

For example, the effect of internet/intranet or information-highway in the educational system of India in next 25 years may be forecasted through this approach.