



ARKA JAIN University
Jharkhand



END SEM EXAMINATION
School of Engineering & IT

Branch	Mechanical Engineering	Program	B. Tech
Subject Name:-	Humanities II - Organizational Behaviour	Semester	VI
		Year	April 2024

- Start writing from 2nd page onwards; don't Write on the 1st Page Backside
- Answer all Questions of Section A (Compulsory)
- Answer Any Four out of Six of Section B
- Answer Any Three out of Five of Section C
- Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.

Time: 3 Hour
Max. Marks : 70

Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

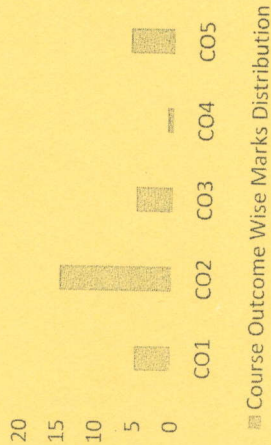
Course Outcomes,	KL- Knowledge Level,	PO – Program Outcome
CO1	Understand the dynamics of human behavior in work context.	
CO2	Understand the determinants of work behavior from different levels.	
CO3	Develop competencies of analyzing behavioral issues in the work environment	
CO4	Expose students to key ideas and issues in OB that influence the way people behave in organizational setting	
CO5	Analyse the Individual and Interpersonal Behaviour in global perspective.	

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Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks

Q.N	QUESTIONS	Marks	COs	KL	PO
1					
i	Enlist the Key elements of Organizational Behaviour.	2	CO1	K1	PO1
ii	Define nature of Organizational Behaviour.	2	CO2	K1	PO2
iii	Write down the name of different types of Organizational Behaviour.	2	CO2	K1	PO2
iv	What are the different types of committee Organizational Behaviour.	2	CO2	K1	PO2
v	Define chain of command .	2	CO2	K1	PO2
vi	Write the name of different types of OB Model.	2	CO2	K1	PO2
vii	Justify individual Personality affects Organizational Behaviour.	2	CO 2	K1	PO2
viii	Write down the name of different types of motivation theory	2	CO 2	K1	PO2
ix	How committee Organization works discuss in brief.	2	CO3	K1	PO3
x	Discuss any one of theory of personality in brief.	2	CO3	K1	PO3

Section B (Answer any FOUR out of SIX) – 20 Marks



(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Write a short note on Organizational design and discuss its elements in brief.	5	CO1	K2	PO1
3	Discuss Social Learning Theory in brief.	5	CO2	K4	PO2
4	What are the factors which influence individual behaviour in organisation?	5	CO2	K4	PO2
5	Discuss in brief MCGREGORS Theory of X and theory of Y in brief	5	CO2	K2	PO2
6	Explain Characteristics of Attitude And Features of Attitude in brief.	5	CO4	K2	PO4
7	What are the different types of Organizational structure enlist the name with benefit and drawback in brief.	5	CO4	K2	PO4

Section C (Answer any THREE out of FIVE) – 30 Marks-

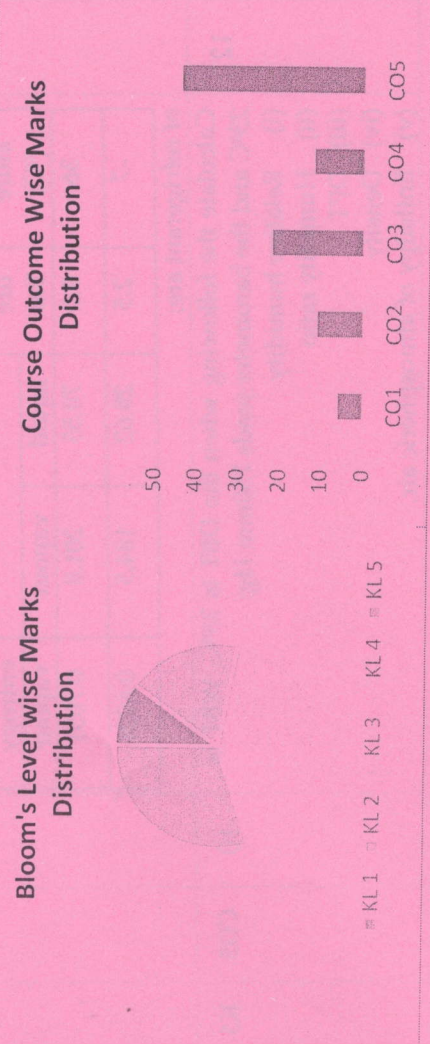
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Explain Line organisational structure with flow chart.	10	CO1	K2	PO1
9	Discuss how Personality Influence On Organisational Behaviour in details.	10	CO1	K2	PO1
10	Elaborate any one type of motivation theory in details.	10	CO2	K2	PO2
11	Explain Socio-Psychological Theory In OB.	10	CO5	K6	PO5
12	Explain any one type of Organisation Structure with flow chart.	10	CO5	K5	PO5

 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Branch	Mechanical Engineering	Program	B.Tech	Semester	VI
Subject Name	Refrigeration and Air-Conditioning	Year	April 2024		
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments</u> with the <u>Invigilator or Discussing with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>				
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks					
Q. N	QUESTIONS	Mark s	COs	KL	
i	Draw the vapor compression cycle on T-s and P-h diagram when the vapor is superheated at the end of compression.	2	CO1	K1	
ii	State the function of evaporator and condenser in a simple vapor compression system.	2	CO1	K2	
iii	State the function of condenser and generator in an absorption system.	2	CO1	K2	
iv	Define a 'refrigerant'.	2	CO2	K1	
v	Define one tonne of refrigeration.	2	CO2	K1	
vi	What are the refrigeration controls?	2	CO3	K3	
vii	Define Coefficient of performance.	2	CO2	K1	
viii	What are the factors for selection of air-conditioning system?	2	CO5	K2	
ix	State Dalton's law of partial pressure.	2	CO5	K1	
x	What do you mean by humidification?	2	CO4	K2	

CO - Course Outcomes,	KL- Knowledge Level,	PO – Program Outcome
CO1	Understand the various thermodynamic cycles used in refrigeration and air conditioning.	
CO2	Apply the knowledge of basic science in refrigeration.	
CO3	Analyse various theories and their mathematical equations by real data.	
CO4	Evaluate the performance of different refrigeration system.	
CO5	Creating curiosity to learn about new development in field of refrigeration and A.C.	



Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Describe the open-air refrigeration systems with its T-s diagram	5	CO2	K3
3	Discuss the effect of the following on the performance of a vapour compression system: a) Effect of discharge pressure b) Effect of suction pressure	5	CO3	K3
4	State the advantages of vapour absorption refrigeration system over vapour compression refrigeration system.	5	CO3	K2
5	Mention the chemical formula and the refrigerant number of following refrigerants: (i) Monochloro trifluoro methane (ii) Trichloro trifluoro ethane (iii) Methyl Chloride (iv) Ethane (v) Carbon-di-oxide.	5	CO4	K3
6	How the refrigerants are classified? State the desirable properties of ideal refrigerant.	5	CO5	K2
7	List out the various psychrometry processes. Explain the process of heating and humidification.	5	CO4	K3

Section C (Answer any THREE out of FIVE) – 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Derive an expression for C.O.P. for an vapour compression refrigeration system.	10	CO3	K4
9	With a neat sketch explain the working principle of Li Br-water absorption refrigeration system.	10	CO4	K4
10	An air-refrigeration system operating on Bell-Coleman cycle, takes in air from coldroom at 268 K and compress it from 1 bar to 5.5 bar. The index of compression being 1.25. The compressed air is cooled to 300 K. The ambient temperature is 20°C. Air expands in an expander where the index of expansion is 1.35. Calculate:	10	CO5	K5

11	<p>i) COP of the system.</p> <p>ii) Mass of air circulated per minute for production of 1500 kg of ice per day at 0°C from water at 20 °C, and</p> <p>The compression is isentropic and there is not under cooling in the condenser. The vapour is dry and saturated condition at the beginning of the compression. Estimate the theoretical COP. If the actual COP is 0.65 of theoretical COP, calculate the net cooling produced per hour. The refrigerant flow is 5 Kg/min. The properties</p> <table border="1"> <thead> <tr> <th rowspan="2">Temperature (°C)</th> <th rowspan="2">Pressure bar</th> <th colspan="2">Specific enthalpy</th> <th rowspan="2">Specific entropy vapour</th> </tr> <tr> <th>liquid</th> <th>vapour</th> </tr> </thead> <tbody> <tr> <td>36</td> <td>9.0</td> <td>70.55</td> <td>201.8</td> <td>0.7051</td> </tr> <tr> <td>-7</td> <td>2.5</td> <td>29.62</td> <td>184.5</td> <td>0.6921</td> </tr> </tbody> </table> <p>of refrigerant are;</p>	Temperature (°C)	Pressure bar	Specific enthalpy		Specific entropy vapour	liquid	vapour	36	9.0	70.55	201.8	0.7051	-7	2.5	29.62	184.5	0.6921	10	CO5	K5
Temperature (°C)	Pressure bar			Specific enthalpy			Specific entropy vapour														
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36	9.0	70.55	201.8	0.7051																	
-7	2.5	29.62	184.5	0.6921																	
12	<p>Calculate the following when the DBT is 35°C, WBT is 23°C and the barometer reads 750mm Hg:</p> <p>(i) Relative humidity</p> <p>(ii) Humidity ratio</p> <p>(iii) DPT</p> <p>(iv) Density</p> <p>(v) Enthalpy of atmospheric air.</p>	10	CO5	K5																	



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G- Course/Outcomes, KL- Knowledge Level, PO - Program Outcome

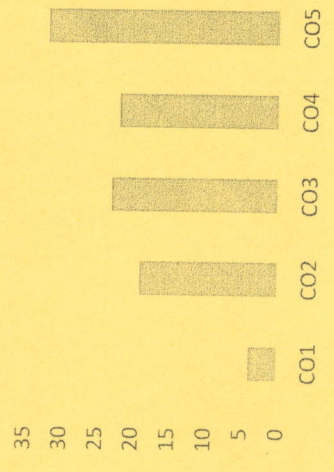
Course Outcomes	CO1	Remembering the theories of various power cycles.	PO - Program Outcome
	CO2	Understanding the working principles and mathematical relations for various cycles.	
	CO3	Analyzing the factor affecting performance of various cycles.	
	CO4	Creating a learning ability about new development in the field of I. C. Engines.	
	CO5	Evaluating the performance of thermodynamic cycles and relative comparison among them	

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Bloom's Level wise Marks Distribution



Course Outcome Wise Marks Distribution



Branch	Mechanical Engineering	Program	B. Tech
Subject Name	Internal Combustion Engine	Semester	VI
		Year	April 2024
Time: 3 Hour	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Papers. 		
Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks

Q. N1	QUESTIONS	Marks	COs	KL
i	What is meant by TDC and BDC?	2	CO1	K2
ii	Write the function of crank shaft.	2	CO1	K2
iii	What do you mean by break thermal Efficiency of an engine?	2	CO2	K1
iv	What are the fuel used in Internal Combustion Engine	2	CQ2	K1
v	Define Supercharging.	2	CO3	K2
vi	What is the function of fuel injector?	2	CO3	K1
vii	What do you mean by cetane number?	2	CO3	K2
viii	What is stoichiometric ratio of fuel?	2	CO5	K2
ix	What is the function of carburettor?	2	CO4	K2
x	What do you mean by pre-ignition?	2	CO3	K2

Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Differentiate between petrol engine & diesel Engine	5	CO2	K3
3	What is supercharging? Elaborate its type with suitable diagrams.	5	CO3	K5
4	Explain different methods of cooling system.	5	CO4	K4
5	Highlight the significance of Lubricating oil? State required properties of lubricating oil.	5	CO4	K4
6	Explain magneto ignition system with its components and neat diagram.	5	CO2	K4
7	List the advantages and disadvantages of CRDI.	5	CO2	K2

Section C (Answer any THREE out of FIVE) – 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	The cubic capacity of a four-stroke over-square spark-ignition engine is 245 cc. The over-square ratio is 1.1. The clearance volume is 27.2 cc. Calculate the bore, stroke and compression ratio of the engine.	10	CO5	K5
9	Elaborate the following. a) Mechanical Fuel Injection System. b) Carburation system	10	CO4	K4
10	Derive the efficiency of Air standard Diesel Cycle.	10	CO5	K4
11	Define carburettor. Explain its components and working with neat diagram.	10	CO3	K3
12	The following observations have been made from the test of a four cylinder, two - stroke petrol engine. Diameter of the cylinder = 10 cm; stroke = 15cm; speed = 1600 rpm; Area of indicator diagram = 5.5 cm ² ; Length of the indicator diagram = 55 mm; spring constant = 3.5 bar/ cm; Determine the indicated power of the engine.	10	CO5	K5

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Branch	Mechanical Engineering	Program	B.Tech
Subject Name	Mechatronics System	Semester	VI
		Year	April 2024

Time: 3 Hour
Max. Marks : 70

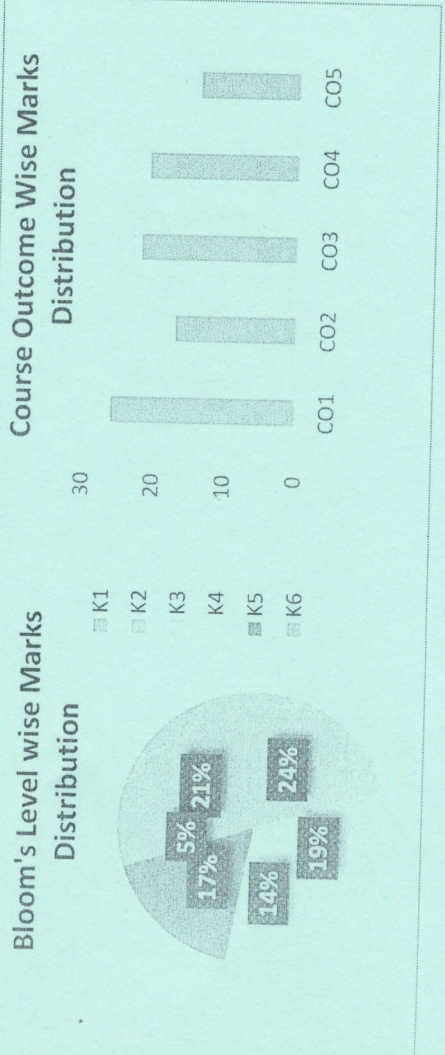
- Start writing from 2nd page onwards; don't write on the 1st Page Backside
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Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks					
Q. N1	QUESTIONS	Marks	COs	KL	PO
i	What are different specific features of Mechatronics System.	2	CO1	K1	PO2
ii	Enlist main components of a humanoid robot.	2	CO4	K2	PO4
iii	Define sensors and Transducers.	2	CO1	K1	PO5
iv	Define sensitivity and resolution.	2	CO1	K3	PO2
v	What do you understand by actuators?	2	CO3	K4	PO4
vi	What is piezoelectric transducers?	2	CO4	K1	PO5
vii	Write system model equation for a linear potentiometer.	2	CO4	K5	PO2
viii	Write difference between microprocessor and microcontroller.	2	CO2	K2	PO4
ix	Write instruction code and symbols used in PLC programming.	2	CO5	K4	PO5
x	Write difference between hydraulic and pneumatic systems.	2	CO5	K3	PO4

CO - Course Outcomes,	KL - Knowledge Level,	PO - Program Outcome
CO1	Remembering the theories about various types of sensors and transducers.	
CO2	Understanding the various mechanical, electrical and pneumatic actuation systems.	
CO3	Evaluating the basic mathematical building blocks for mechanical, electrical, thermal and fluid actuation system and its interfacing of input/output requirements.	
CO4	Applying Knowledge of mechatronics in proper selection of sensor and transducer for specific purpose.	
CO5	Creating curiosity to learn new development in the field of mechatronics.	

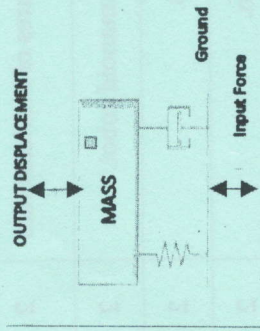
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Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
2	Explain importance of each elements of a mechatronics system.	5	CO1	K1	PO2
3	Explain LVDT as displacement transducer.	5	CO3	K2	PO4
4	What are transducers? What are different types of transducers?	5	CO1	K3	PO5
5	Explain Basic structure of a microprocessor/PLC based control system.	5	CO2	K2	PO2
6	Enlist any five static characteristics of sensors and explain them.	5	CO3	K6	PO4
7	Write a mathematical equation for spring – mass-damper system.	5	CO4	K5	PO5



Section C (Answer any THREE out of FIVE) – 30 Marks-

(Each question 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL	PO
8	Make a list of proximity/ position sensor and explain working of any two of them.	10	CO3	K1	PO2
9	What are different elastic transducers? Explain construction and working of any on elastic transducers.	10	CO2	K4	PO4
10	What are main building blocks for any electrical system? Develop a mathematical model for total voltage supplied (V) in terms of capacitor potential difference (Vc) in R-L-C series circuit.	10	CO3	K5	PO5
11	What are the main components of hydraulic actuation system? Also draw and explain hydraulic circuit for operating DAC using 4/2 DCV.	10	CO4	K3	PO4

12

What are main components of a PLC system? Write a PLC program for mixing tank.

10

CO5

K2

PO3

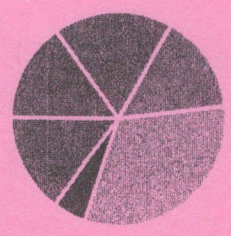
2/5/24 E 50

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Branch	Mechanical Engineering	Program	B.Tech
Subject Name	Manufacturing Processes - II	Semester	VI
		Year	April 2024
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> Start writing from 2nd page onwards; don't Write on the 1st Page Backside Answer all Questions of Section A (Compulsory) Answer Any Four out of Six of Section B Answer Any Three out of Five of Section C Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will Result in the <u>Cancellation of the Papers.</u> 		
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Course Outcomes,	KL- Knowledge Level,	PO – Program Outcome
CO1	Remembering the basic theories of machining and selection of machine tool.	
CO2	Understanding the principles behind working of each machine tools	
CO3	Applying the knowledge of kinematics in the constructional and operational features of shaper, planer, drilling, milling, sawing and broaching machines.	
CO4	Analyzing the basic functions of different machine tools.	
CO5	Evaluating different formulas used in analysis of machining operations.	

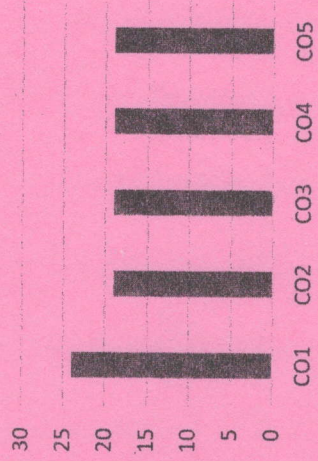
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Bloom's Level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



Section A (Each question Carry 02 Marks from Q1-i to x) – 20 Marks

Q. N1	QUESTIONS	Marks	COs	KL
i	Name the various cutting tool materials.	2	CO1	K1
ii	Compare orthogonal and oblique cutting.	2	CO1	K1
iii	What are the advantages of automatic lathes?	2	CO2	K1
iv	What are the different operations performed on Lathe?	2	CO2	K2
v	Write down any four operations that can be performed in a shaping machine.	2	CO3	K2
vi	What is the work holding devices used in milling machines?	2	CO3	K4
vii	Explain truing of grinding wheel.	2	CO4	K2
viii	What is broaching?	2	CO4	K2
ix	Explain the following codes: G03, M30, G90, M08	2	CO5	K1
x	Differentiate between open loop and close loop system.	2	CO5	K1

Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	A tool life of 60 minute is obtained at a speed of 25 m/min and 6 minutes at 50 m/min. Calculate the following i) Tool life equation. ii) Cutting speed for 4 minutes tool life.	5	CO1	K5
3	What do you understand by the term "Tool Designation or Tool Signature"?	5	CO1	K2
4	Distinguish between Capstan lathe and Turret lathe.	5	CO2	K1
5	Sketch and explain following drilling operations: (a) Countersinking (b) Trepanning (c) Spot facing	5	CO3	K6
6	Discuss the various bonding materials and abrasives used for making grinding wheels.	5	CO4	K3
7	List the differences between NC and CNC.	5	CO5	K2

Section C (Answer any THREE out of FIVE) - 30 Marks-

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Write a short note on (a) Heat zones in cutting. (b) any two modern tool materials.	10	CO1	K3
9	Explain with neat sketches the working principle of taper turning operation with different methods?	10	CO2	K6
10	Explain the principle of operation of a shaper machine with a neat sketch.	10	CO3	K4
11	Explain the meaning of each letter mentioned on the following grinding wheel. 'W-C-10-E-5-V-17'.	10	CO4	K4
12	Explain the following in CNC machining. (a) Linear Interpolation (b) Circular Interpolation	10	CO5	K4