Reg. No.												

Question Paper Code	11558

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Sixth Semester

Production Engineering

PR8602 - METAL CUTTING AND CNC MACHINES

(Regulations 2017)

Duration: 3 Hours | Max. Marks: 100

Answer ALL Questions

PART - A (10 × 2 = 20 Marks)

		Marks, K-Level, CO
1.	Compare Orthogonal and Oblique cutting processes.	*2,K2,CO1*
2.	Why Merchant's circle is not applicable to Oblique cutting process.	*2,K2,CO1*
3.	Point out the causes for Flank wear.	*2,K2,CO2*
4.	In "Carbide tool materials" only negative Rake angles are used. Justify.	*2,K2,CO2*
5.	List the indexing methods involved in Gear manufacturing.	*2,K1,CO3*
6.	State the Principle of Gear Broaching process.	*2,K1,CO3*
7.	Why recirculating ball screws are most preferable in CNC machine tools?	*2,K2,CO4*
8.	How the preset tool helps the CNC operator to mount tools into tool holder.	*2,K2,CO5*
9.	State the functions of G codes and M codes as follows G01 G04 M04 M30	*2,K1,CO6*
10.	How canned cycle is helpful in CNC machining processes?	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the tool geometry of single point cutting tool with suitable sketches.	*13, K2,CO1*
		OR	
	b)	Drive the relationship between three major velocities involved during orthogonal cutting process with neat illustration.	*13,K3,CO1*
12.	a)	Name the different types of Chips formed in metal cutting and describe each type with neat sketches.	*13,K2,CO2*
		OR	
	b)	List the main requirements of cutting tool materials and explain any four cutting tool materials with its properties and applications.	*13,K2,CO2*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

13. a) Illustrate the following Gear generating process with neat sketches i) Gear honing ii) Gear Shaping — *13,K2,CO3*

OR

b) Elucidate the following Gear finishing process with neat sketches i) Gear Burnishing ii) Gear Shaving — *13,K2,CO3*

14. a) Classify the CNC machine tool and explain any two types with neat illustration. — *13,K2,CO4*

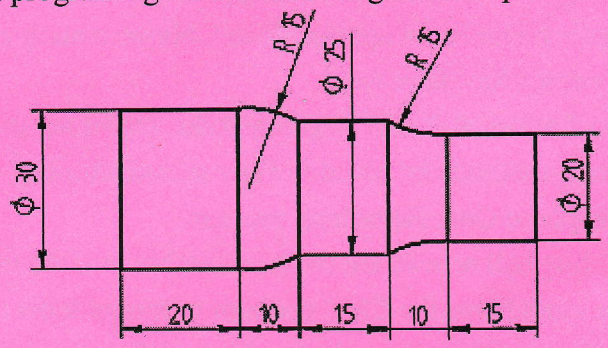
OR

b) Explain the NC machines and DNC machines with neat sketch. — *13,K2,CO4*

15. a) Explain the types of APT statements with suitable examples. — *13,K2,CO6*

OR

b) Write the part programing for the following finished part. — *13,K3,CO6*



All Dimensions are in mm

PART - C (1 × 15 = 15 Marks)

16. a) Explain the components and working principle of CNC wire cut EDM machine. — *15,K2,CO5*

OR

b) Differentiate machining centre and turning centre in terms of working principle characteristics and applications. — *15,K2,CO5*