Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)

B. Tech(Fifth Semester - Regular) Examinations, November 2025

23BMEPC35002-Advanced Manufacturing Science

(Mechanical)

Time: 3 hrs Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	List the various metal removal processes.	CO1	K1
b.	Write down the formula for calculating taper turning angle by tailstock set over distance and compound rest method	CO2	K3
c.	What are the different types of single spindle automatics lathes?	CO3	K2
d.	Demonstrate how indexing mechansim help in gear cutting	CO4	K3
e.	Classify modern machining processes on the basis of the type of energy employed.	CO5	K2

PART – B(10 x 5=50 Marks)

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Distinguish between the orthogonal cutting and oblique cutting in detail.	5	CO1	K3
b.	Tool life tests in turning yield the following data: (1) V = 110 m/min, T = 20 min; (2) V = 85 m/min, T= 40 min. (A) Determine the n and C values in the Taylor tool life equation. Based on the equation, compute (B) the tool life for a speed of 95 m/min and (C) the speed corresponding to a tool life of 30 min.	5	CO1	K4
	(OR)			
c.	Elaborate the merchant force circle along with assumptions.	5	CO1	K2
d.	Name the techniques used to measuring tool wear. Describe their advantage and limitations	5	CO1	K2
3.a.	What are the different types of machining operations that can be performed on a lathe	5	CO2	K1
b.	Explain about the column and knee type milling machine and name its main parts with neat sketch.	5	CO2	K2
	(OR)			
c.	Write short notes on reaming and boring operation	5	CO2	K2
d.	With a simple sketch explain working of crank and slotted link quick return motion mechanism used in shaper	5	CO2	K2
4.a.	Describe the working principle of multi spindle automatics	5	CO3	K2
b.	List the advantages and disadvantages of gear shaping process.	5	CO3	K1
	(OR)			
c.	Discuss the features of ram type and saddle type Turret.	5	CO3	K2
d.	State the advantages and disadvantages of super finishing process	5	CO3	K2
5.a.	Define kinematics of machine tools and explain the different types of motions involved.	5	CO4	K1
b.	Describe the working of a speed reversal mechanism used in machine tools.	5	CO4	K2

	(OR)			
c.	Evaluate the factors affecting the machining time in various machining operations	5	CO4	K5
d.	Describe and demonstrate various tool holding and job holding methods used in different machine tools.	5	CO4	K3
6.a	Summarize the needs for development of unconventional machining processe	5	CO5	K2
b.	Illustrate the schematic layout of abrasive jet machine and explain	5	CO5	K3
	(OR)			
c.	Discuss in detail, the EDM process and its principle of operation with the help of a neat diagram..	5	CO5	K2
d.	Justify the need of unconventional manufacturing process in today's industries.	5	CO6	K5

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