(3 Hours) **Total Marks: 80**

Note:

1. **Question No. 1 is compulsory**.
2. Attempt any **THREE** out of the remaining **FIVE** questions.

Q1.		**Answer any four of the following**	**20**
	A	Explain any one type of dynamometer	
	B	Give specification of grinding wheel	
	C	Differentiate compound die and combination die	
	D	Explain principle of location	
	E	Discuss water jet machining	
	F	List the benefits of additive manufacturing	
Q2.	A	Derive an expression for shear plane angle with assumptions made	**10**
	B	Draw neat sketch of single point cutting tool and explain terminologies associated	**10**
Q3.	A	Explain concept of speed, feed, and depth of cut in case of lathe, and how the tool life is affected	**10**
	B	Give classification of presses and explain any one kind press	**10**
Q4.	A	Differentiate jig and fixtures, list clamping devices with sketch	**10**
	B	Explain working principle of EDM with merits and demerits	**10**
Q5	A	Explain i) Machinability ii) Cutting fluids	**10**
	B	Explain Photo Polymerization w.r.t principle of operation, process, advantages and disadvantages. Explain its application in relevance CMET (Tokyo) and 3D systems (US)	**10**
Q6	A	Classify additive manufacturing systems and explain any one of them	**10**
	B	While machining C-40 with HSS cutting tool with feed rate of 0.2 mm/min and depth of cut of 2mm following information is noted i) Tool life of 90 minute with cutting velocity of 25 m/min ii) Tool life of 20 minute with cutting velocity of 20 m/min Determine n and C in Taylors tool life equation, and recommend cutting speed for tool life of 60 minute	**10**

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