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

Note:
1. **Question No. 1 is compulsory.**
2. **Attempt any THREE out of the remaining FIVEquestions.**
3. **Assume suitable data if necessary.**

Q. 1.		Answer the following (**any FOUR)**	**(20)**
	(a)	Draw the Merchants force circle diagram	
	(b)	List the application methods of cutting fluids	
	(c)	Properties of cutting tool material	
	(d)	Taylor's tool life equation	
	(e)	Tool nomenclature	
Q. 2.	(a)	Distinguish between orthogonal and oblique cutting	**(10)**
	(b)	Explain design procedure of broach in detail with example.	**(10)**
Q. 3.	(a)	Explain temperature distribution in metal cutting.	**(10)**
	(b)	Discuss BUE formation and its effect on surface finish.	**(10)**

Q. 4. (a) Determine the shear plane angle, cutting force components and resultant **(10)**
force on the tool for orthogonal cutting of material with yield stress of
260N/mm^2 .Following are the machining parameters.
Tool rake angle $= 20^0$
Uncut chip thickness $=0.30$ mm
chip with$= 3$ mm
chip thickness ratio$=0.50$
Angle of friction $=42^0$

     (b) Explain constructional feature of solid tool.   **(10)**

Q. 5.	(a)	Explain strain gauge lathe dynamometer.	**(10)**
	(b)	Discuss the design steps of face milling cutter.	**(10)**
Q. 6.		Write short notes on:	**(20)**
	(a)	Form tool	
	(b)	Types of chips	
	(c)	Design of shank	
	(d)	Fracture roughness	

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