

Code No: **R31036**

R10

Set No. 1

III B.Tech I Semester Supplementary Examinations, May - 2017

METAL CUTTING & MACHINE TOOLS

(Mechanical Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

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| 1 | a) | What are the factors influencing in selection of cutting speeds and feeds for machining operation? | [8M] |
| | b) | In an orthogonal cutting experiment with a tool of rake angle $\alpha = 7^\circ$, the chip thickness was found to be 2.5mm when the uncut chip thickness was set to 1mm. Find i) the shear angle and ii) the friction angle assuming that Merchant's formula holds good. | [7M] |
| 2 | | What are the various types of lathe? How are they classified? Explain any one type with neat sketch | [15M] |
| 3 | a) | Give the comparison between planer and shaper. | [9M] |
| | b) | Discuss briefly the planer driving mechanisms. | [6M] |
| 4 | | Discuss in detail the following with neat sketches:-
(i) Gang drilling machine (ii) Turret drilling machine | [15M] |
| 5 | | Explain briefly with neat sketches:-
(i) Planetary milling machines (ii) knee-column milling machines | [15M] |
| 6 | a) | What is surface grinding? Explain. | [7M] |
| | b) | Explain in detail about centreless grinding process. | [8M] |
| 7 | a) | What is a "clamp"? | [3M] |
| | b) | List the basic requirements of clamping devices and explain about quick acting clamps. | [12M] |
| 8 | a) | Differentiate between CNC and NC machines. | [4M] |
| | b) | Explain the elements of CNC machine with neat sketch. | [11M] |
