

Department of Mechanical Engineering
Birla Institute of Technology and Science, Pilani, Pilani campus
MF F316: Machining and Machine Tools
Comprehensive Examination (18/05/2023)
Time: 180 min; Max. Marks: 35

Note to Students:

1. Please follow all the *Instructions to Candidates* given on the cover page of the answer book.
 2. This is an OPEN BOOK test.
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1. Explain the process of lapping with schematic. How is it different from grinding? 4+1 = **5**

2. If in turning of a mild steel rod by a cutting tool at a given machining condition using cutting fluids, the tool life decreases from 60 min to 20 min due to increase in cutting velocity from 60 m/min to 120 m/min. At what cutting velocity the life of that tool under the same condition and environment will be 40 min.? **10**

3. Why is grinding a highly energy intensive process as compared to turning? **5**

4. Why does a drill have a helix? **5**

5. What is tool life? How would you identify tool wear during machining? What are the various factors that affect tool life? **1+3+1 = 5**

6. How does tool failure occur for the following materials? Explain with schematic.
(a) High speed steel, (b) Ceramics, (c) Carbide **2+2+1 = 5**