



NTM processes
Level **600**
Total Marks **100**

2nd term (2016-2017)
Time allowed 3 hours

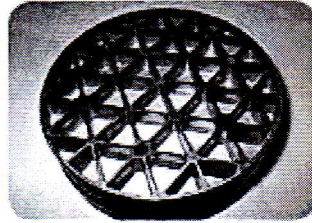
Master degree Final Exam **May 2017**

Answer all the following Questions

QUESTION 1(50marks)

???????????????????? Offers a unique blend of capabilities, quality and material compatibility for the machining of engineered ceramics and advanced technical materials. This NTM (.....?????????????) Process is versatile, offering flexibility to meet a wide range of design requirements, and yields high-quality parts with little or no subsurface damage and no heat-affected zone. These benefits make it a valuable resource for the scientists, engineers and designers who are developing tomorrow's advanced technologies.

The following shape is a one of theses NTM process applications.

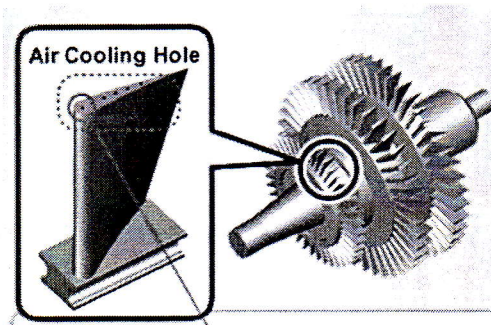


Honeycomb structure machined on the back of a silicon mirror (Nonconductive)

Chose that NTM process and explain it in details

QUESTION 2(40marks)

Select two different NTM methods to produce the following shape and make a complete comparison between them.



*Gas Turbine blade air cooling hole
(Fine deep hole)(Conductive material)*

QUESTION 3(10marks)

Explain in brief the mechanism of metal removal in all NTM processes