

15802

Roll No. _____

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15802

M. Tech. I - Sem. (Main) Exam., Dec. - 2018

Production Engineering

1MEPE2 Machining Science - II

Time: 3 Hours

Maximum Marks: 100

Min. Passing Marks: 33

Instructions to Candidates:

Attempt any five questions, Marks of questions are indicated against each question. Draw neat and comprehensive sketches wherever necessary to clearly illustrate your answer. Assume missing data suitable if any and specify the same. Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

Q.1 For the following application, identify one or more non – traditional machining processes that might be used, and present arguments to support your selection. Assume that either the part geometry or the work material (or both) preclude the use of conventional machining. The application is a blind - hole in the shape of the letter G in a 50 mm (2.0 in) cube of steel. The Overall size of the “G” is 25 × 19 mm, the depth of the hole is 3.8 mm and its width is 3 mm. [20]

Q.2 Explain in detail:

- (a) Plasma Arc Machining [10]
(b) Ion Beam Machining [10]

Q.3 A wire EDM Operation is used to cut out punch and die components from 25 mm thick tool steel plates. However, in preliminary cuts, the surface finish on the cut edge is Poor. What changes in discharge current and frequency of discharges should be made to improve the finish? [20]

- Q.4 A furniture company that makes upholstered chairs and sofas must cut large quantities of fabrics. Many of these fabrics are strong and wear – resistant, which properties make them difficult to cut. What non-traditional processes would you recommend to the company for this application? Justify your answer by indicating the characteristics of the process that make it attractive. [20]
- Q.5 Write short notes on:
- (i) Conventional Machining Processes [5]
 - (ii) Surface Finishing Processes [5]
 - (iii) Unconventional Machining Processes [5]
 - (iv) USM [5]
- Q.6 Much of the work at the Cut – Anything Company involves cutting and forming of flat sheets of fibre glass for the pleasure boat industry. Manual methods based on portable saws are currently used to perform the cutting operation, but production is slow and scrap rates are high. The foreman says the company should invest in a plasma arc cutting machine, but the plant manager thinks it would be too expensive. What do you think? Justify your answer by indicating the characteristic of the process that make PAC attractive or unattractive in this application. http://www.mgsuonline.com [20]
- Q.7 How Electron Beam Machining is different from Laser Beam Machining? Elaborate with industrial application of both. [20]
- Q.8 Explain in Detail:
- (a) ECM [10]
 - (b) EDM [10]

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