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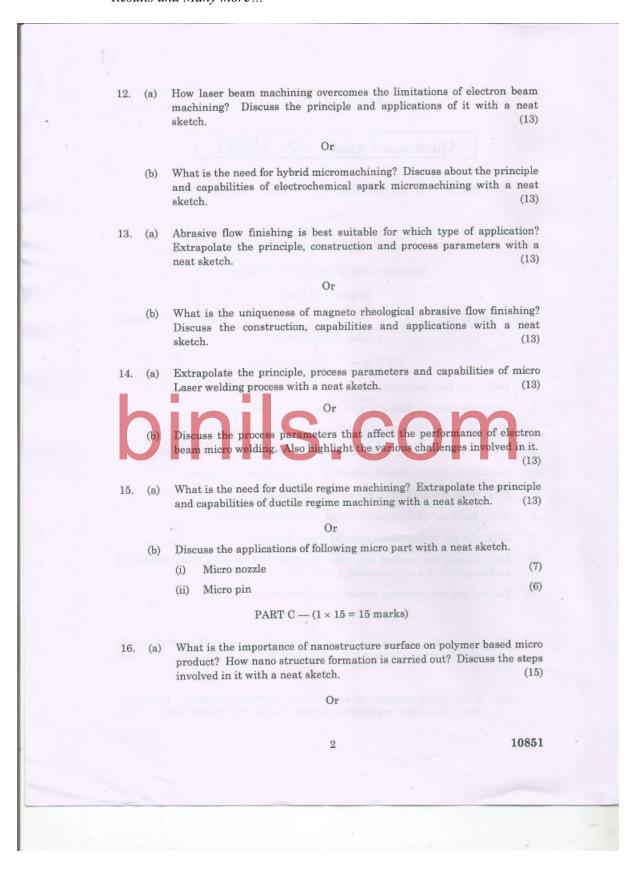
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|   | Reg. No. :  |
|---|---|
|   | Question Paper Code: 10851  |
|   | M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.   |
|   | Elective  |
|   | Manufacturing Engineering   |
|   | MF 4001 – MICRO MANUFACTURING   |
|   | (Regulations 2021)  |
| Time : Thr                                  |   |
|   | Answer ALL questions.   |
|   | PART A — $(10 \times 2 = 20 \text{ marks})$   |
| 1. Defin                                    | ne the term micromachining.   |
| <ul><li>3. Write</li><li>4. Which</li></ul> | the principle diagram represents micro-turning process.  e down the principle of electron beam micromachining.  th type of grinding wheel is used in "Electrolytic in-process dressing? |
|   | out the applications of magneto rheological finishing process.  t is the principle of elastic emission machining.   |
|   | e down the advantages of roller imprinting technology.  |
|   | light the applications of micro extrusion process.  |
| 9. Ment                                     | tion any one contact and noncontact method used for measurement<br>ace profile of a micromachined part.   |
| 10. List o                                  | out any two precision applications of micro gear.   |
|   | PART B — $(5 \times 13 = 65 \text{ marks})$   |
|   | Explain the construction, working principle and capabilities of ultrasomicromachining process with a neat sketch.   |
|   | Or  |
|   | What is the principle of electrochemical micromachining? Discuss detail about their capabilities and applications with a neat sketch.   |
|   |   |
|   |   |

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- (b) A typical manufacturing industry is interested in the production precision micro part for the following requirements.
  - (i) Part accuracy: 10-20 μm
  - (ii) Surface finish: 70=200 nm
  - (iii) Operating environment: High temperature 2000°C
  - (iv) Material: Tantalum
  - (v) Type of part: Prismatic part with micro features

For the above requirements provide answer to the following:

- (1) Which type of manufacturing processes can be adopted?
- (2) Justify the answer with salient features of chosen process.
- (3) Draw the schematic diagram and mention the major equipments.

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3

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