

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2023)

CLASS: BTECH
BRANCH: PRODUCTION ENGINEERING

SEMESTER : VI
SESSION : SP2023

SUBJECT: PE313 TOOL DESIGN

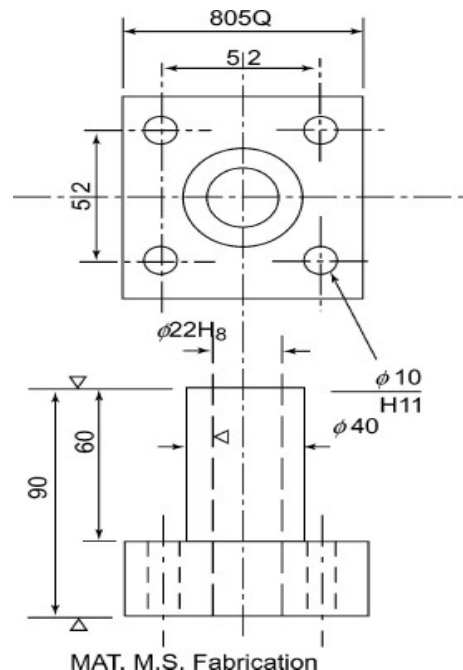
TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
-

- | | | CO | BL |
|---|-----|----|----|
| Q.1(a) Make a brief note on the selection criteria for the cutting tools. | [2] | 1 | 3 |
| Q.1(b) Why the tooling's are required in manufacturing | [3] | 1 | 2 |
| Q.2(a) Economy of tooling depends upon which factors | [2] | 1 | 3 |
| Q.2(b) (i) Let a fixture cost Rs. 400/- and one run is made per year. How many pieces are to be manufactured per year so that it can pay for itself in two years.
Let,
saving in labour cost per unit= 0.03
percentage of overhead applied on labour saved= 50%
Cost of each setup= Rs. 10/-
annual allowance for interest on investment= 6%
annual allowance for taxes= 4%
annual allowance for repair= 10%
annual allowance for depreciation= 50% | [3] | 2 | 4 |
| (ii) If 6 runs are made per year, how many components are manufactured under above condition | | | |
| Q.3(a) Distinguish between complete and partial location with simple examples. | [2] | 1 | 3 |
| Q.3(b) What is meant by over locations? Explain the effect of over location on machining accuracy with simple examples. | [3] | 1 | 3 |
| Q.4 Analyse the following part drawing. Four holes of 10 mm diameter are to be drilled. | | | |



- | | | | | |
|--------|--|-----|---|---|
| Q.4(a) | Select the best jig for the same. Draw the Jig | [2] | 2 | 6 |
| Q.4(b) | Write down the locating and clamping methods used by you with suitable justifications. | [3] | 2 | 6 |
| Q.5(a) | How are the dies broadly classified? | [2] | 3 | 2 |
| Q.5(b) | What is the difference among a progressive die, compound die and combination die | [3] | 3 | 2 |

.....21/02/2023.....M