

315366

12526

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following :** **10**
- a) Define Process Engineering.
 - b) State any two guidelines for DMFA.
 - c) Draw graphical symbol of surface finish for below description.
 - i) Graphical symbol indicating removal of material not permitted.
 - ii) Basic graphical symbol for surface texture.
 - d) List down two types of BOM.
 - e) Define Operation sheet.
 - f) Define Group technology.
 - g) List down any four CAPP software available in the market.

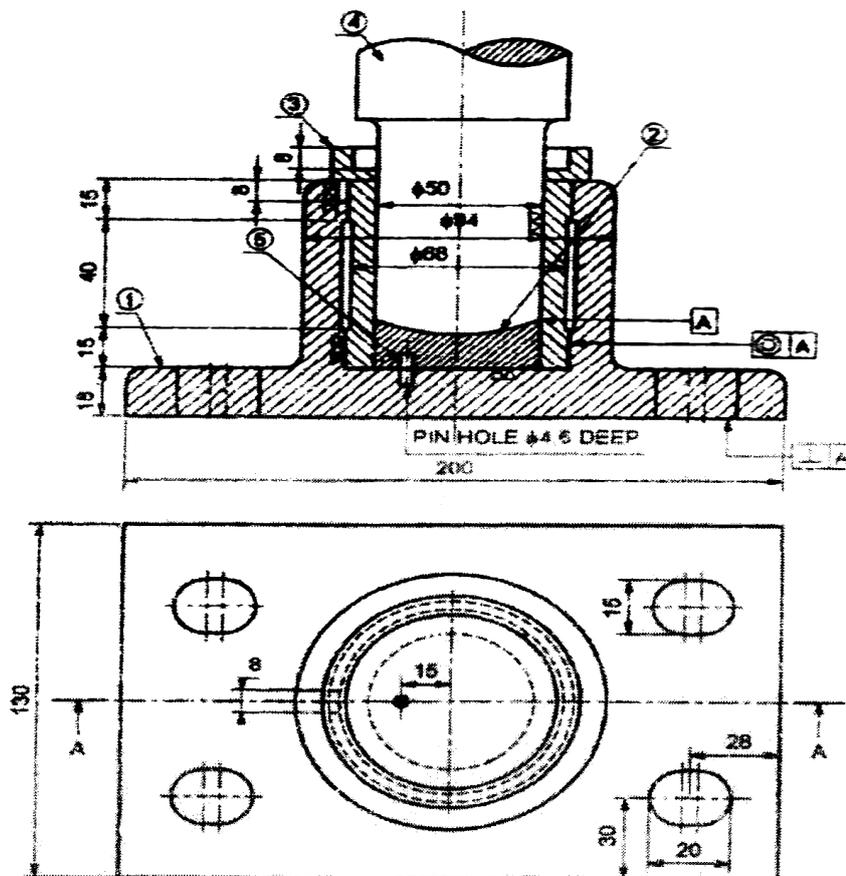
P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Explain functions of Process engineering department. (Any four)
 - b) State types of tolerance stack up analysis and explain any one type with suitable sketch.
 - c) Explain type of inspection method based on number of samples to be inspected.
 - d) List down information required to do process planning.
- 3. Attempt any THREE of the following : 12**
- a) Explain factors affecting Make or Buy decision during process planning.
 - b) Classify part family construction methods and explain any one method.
 - c) Explain framework of CAPP with suitable sketch.
 - d) Explain Tool selection procedure during process planning.
- 4. Attempt any THREE of the following : 12**
- a) Draw organizational flow chart for development of process plans.
 - b) State the process for manufacturing of IC engine blocks. Write four advantages and four disadvantages for the stated process.
 - c) List down Basic requirement for part family coding system.
 - d) Explain Generative CAPP.
 - e) Describe contribution of CAPP in implementation of CIM.

5. Attempt any TWO of the following :

12

- a) Perform Product Analysis on a metal cupboard considering following product criteria's.
- Material
 - Ergonomics
 - Health and environment
 - Cost
 - Aesthetics
 - Function
- b) From a production drawing of foot step bearing in Fig. No. 1., interpret the part drawing to prepare following:
- Prepare tolerance chart
 - Prepare bill of material
 - Suggest machine and tooling for generating internal hole of $\phi 50$ on part no. 3.



All dimensions are in mm

Fig. No. 1

- c) Prepare a Route sheet for a Fig. No. 2. (Assume suitable data if necessary)

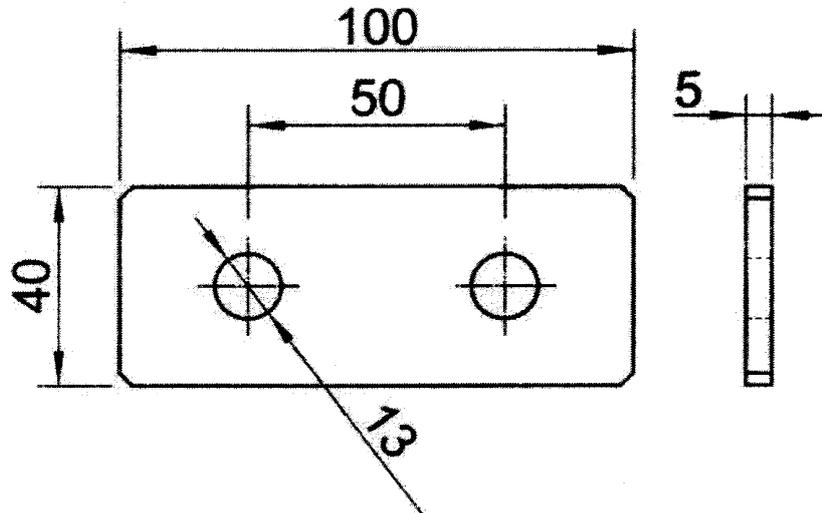


Fig. No. 2

6. Attempt any TWO of the following :

12

- a) Prepare Process flow chart for replacement of punctured tyre with new tyre for your two-wheeler.
- b) Construct possible part families and Machine cells for a given set of parts (P_i) and Machines (M_i) using Production Flow Analysis.

Machines	Parts								
	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	P ₉
M ₁	1	1		1				1	
m ₂					1				1
m ₃			1		1				1
m ₄		1		1		1			
M ₅	1							1	
m ₆			1						1
m ₇		1				1	1		

- c) Justify the role of artificial intelligence in preparing process plans.
