



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

F.Y. M. Tech. School of Technology | Department of Mechanical Engineering Sem.-I

Course Code: MMD 5095 Course: Design For Manufacture & Assembly Max Marks: 100

Day & Date:
Wednesday - 26/12/2018

Examination: ESE

Time: 10 to 1 PM.

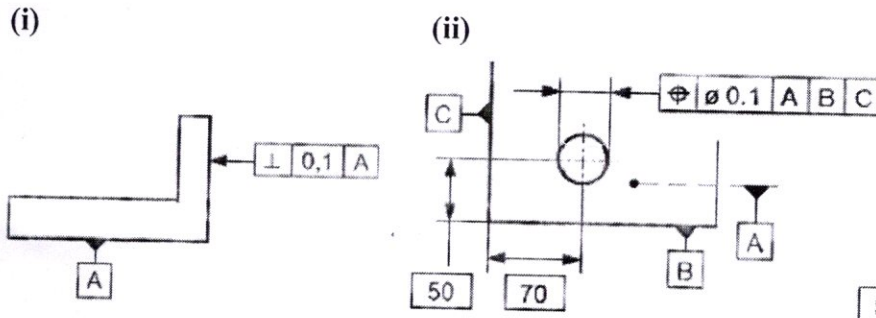
Instructions:

- 1) All Questions are compulsory.
- 2) Draw neat figures wherever necessary.

Q.1

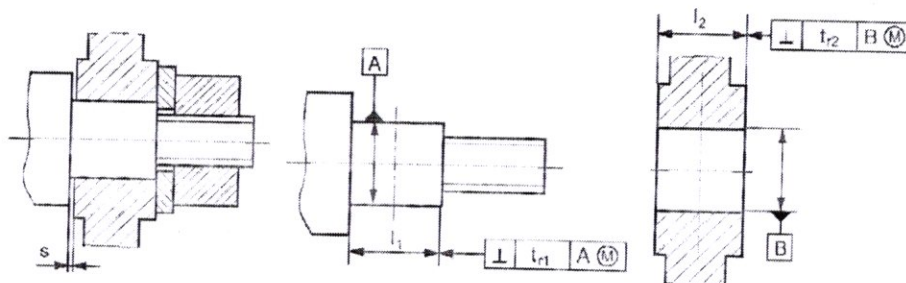
Marks CO

- a) Draw sketches of the tolerance zones for the following.



6 CO1

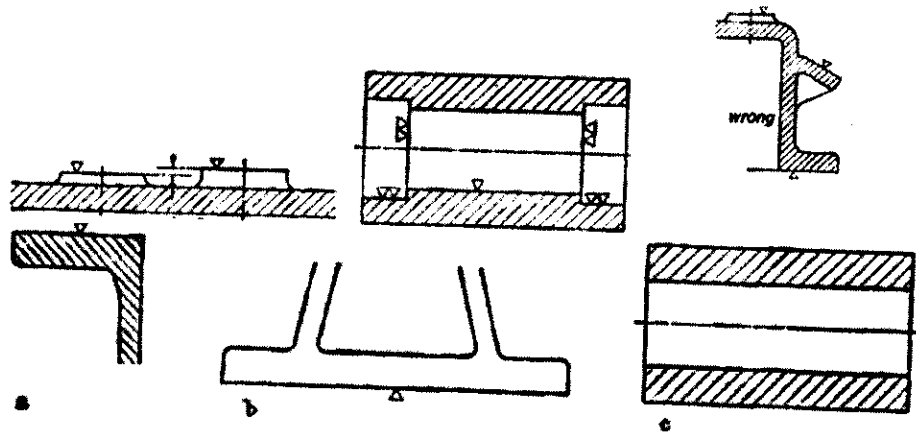
- b) With the help of a schematic drawing write the expressions for maximum and minimum dimension S considering the linear as well as perpendicularity tolerances on dimensions l_1 and l_2 as shown in the figure.



4 CO1

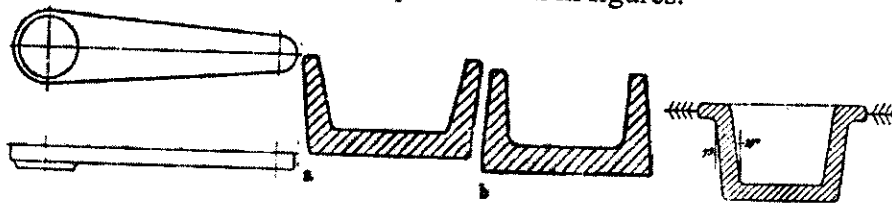
- c) For the parts shown in the figure explain with the help of neat sketches how the size of the machining area can be reduced.

6 CO2



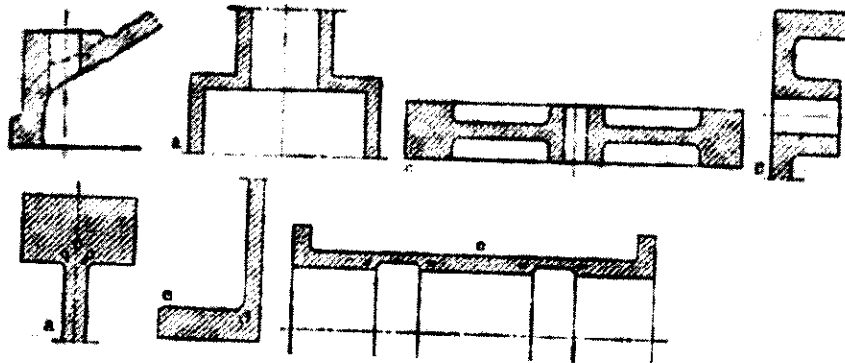
Q.2

- a) Illustrate with sketches the correct position of parting line and forging drafts on form design, for the parts shown in figures.

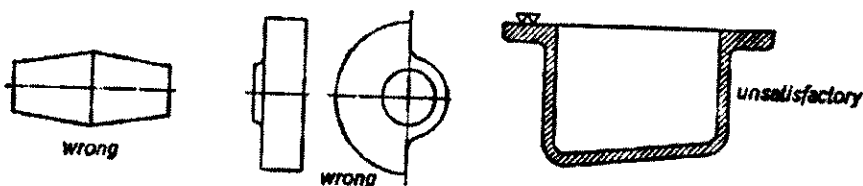


OR

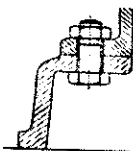
Draw sketches of redesign of the castings shown in figure to ensure better castability.



- b) Explain with neat figures how the parts shown in figures can be redesigned for better (i) clampability and



- (ii) for better accessibility to the bolt head.

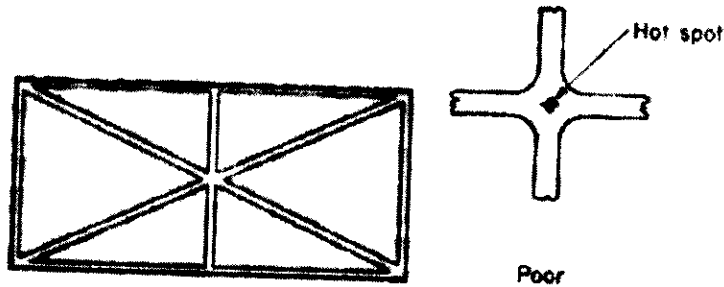


OR

Explain the principle of Design for Ease of Assembly with examples.

Q.3

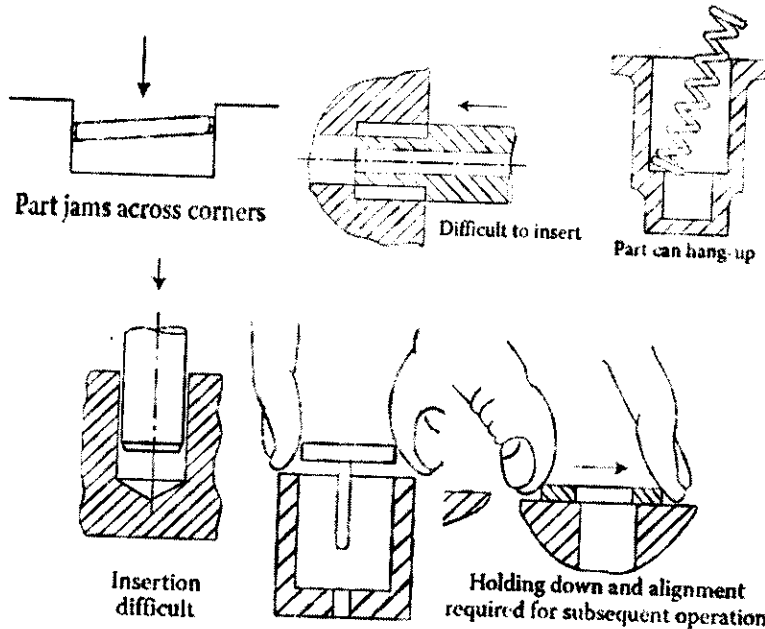
- a) Redesign the ribbed cast parts shown in figure for avoiding shrinkages and hot spots by **successively** reducing the number of ribs at each intersection.



OR

Sketch the improved part designs to facilitate easy insertion of parts during manual assembly operations with suitable examples.

CO4



6

CO3

- b) Discuss the rules for product design and design of parts for high speed automatic assembly.
- c) What are the seven forms of wastes? Explain Lean Principles.

5 CO5

7 CO5

Q4

- a) Explain how Design for six sigma (DFSS) helps in matching product requirements and production capability.
- b) (i) How does the manual assembly method differ for small parts within easy arm reach of the worker and large parts requiring major body motions, with mechanical assistance?

6 CO5

5 x 2
= 10 CO5

(ii) Explain the common fastening methods and their relative costs in assembly operations

Q5

- a) State the objectives of the DFMA. Explain how the DFA accomplishes these objectives.

6 CO5

- b) Discuss the Life Cycle for Industrial Materials.

6 CO6

- c) Discuss the Product Structure Guidelines recommended by General Electric Co. for DFE.

6 CO6

Q6

- a) Discuss the life cycle stages considered in design for the environment.

OR

Discuss the Components in a Life Cycle Assessment of a Product considered in design for the environment.

8 CO6

- b) Discuss the AT&T's Environmentally Responsible Product (ERP) Assessment Matrix used in DFE.

OR

Discuss the principles of design for recyclability used in DFE.

8 CO6
