Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – WINTER 2013

Subject Code: 141403 **Date: 23-12-2013**

Subject Name: Materials and Manufacture of Food Equipment

Time: 02:30 pm to 05:00 pm **Total Marks: 70**

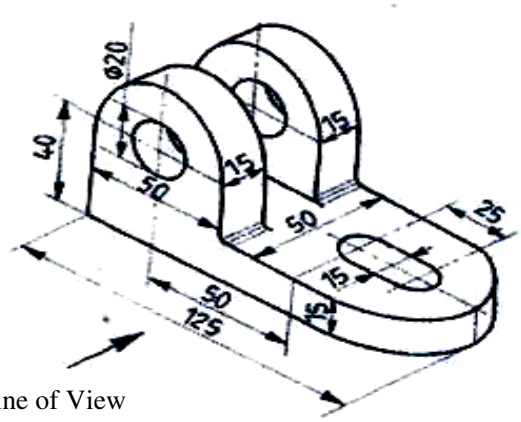
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 Examine the pictorial view of an object given below and draw the following: **14**

(i) Top view (1st angle projection)
(ii) Front view(1st angle projection)
(iii) Right hand side view(1st angle projection)
(iv)Full sectional front view.

All dimensions are in mm. Indicate the derived dimensions on the views drawn.



Line of View

Q.2 **(a)** Explain First angle and Third angle projection methods and state the rules to be followed to make section lines of an object. **07**

(b) Write differentiating notes on ANY THREE of the following: **07**

1. Touch and Draw and Drag method
2. Stress relief annealing and process annealing.
3. Fused flux and agglomerated flux.
4. Consumable and Non consumable electrodes.

OR

(b) Briefly explain the following: **07**

(i) Tempering (ii) Porosity in welding
(iii) Quenching and its medium (iv) Cyaniding
(v) Basicity Index (vi) Non ferrous metals (vii) Base metal

Q.3 **(a)** Define heat exchangers and classify their types. State their applications in process unit operations. With the help of a neat flow diagram explain the operation of PHE's and state their advantages and **07**

limitations.

(b) Define the following in the context of screw threads: **07**
(i) Lead (ii) Pitch of screw (iii) Flank (iv) Effective diameter
(v) Upper deviation (vi) Core diameter (vii) Slope

OR

Q.3 **(a)** Classify and explain engineering properties of materials. Define Proportional limit, Elastic limit, and Ultimate stress. Explain cooling curve with a neat labeled diagram. **07**

(b) Draw Acme thread and state its application. Draw different types of section lines based on material of construction of objects. **07**

Q.4 **(a)** What is submerged arc welding? Explain different welding joints with diagram? With the help of a neat diagram explain base metal, penetration, deposition rate, puddle, rood, tack weld and toe. **07**

(b) With the help of a neat diagram explain modified buttress thread and key joint and state their applications. **07**

OR

Q.4 **(a)** What are assembly drawings? Define geometrical tolerances and state their types. Briefly describe dimensional tolerance. **07**

Q.4 **(b)** What do you understand by heat treatment process in metals? State their purpose. Describe annealing, mar tempering, normalizing and hardening in detail. **07**

Q.5 **(a)** What is friction welding? Mention its applications giving suitable examples. List different welding defects and explain the reasons of cracking in welded joints. **07**

(b) What are polymers? Give some examples. Explain the mechanism of addition polymerization. What is rubber? Give some examples. Explain in brief the process of vulcanization of rubber and state its purpose. **07**

OR

Q.5 **(a)** Define composite materials and reinforced composite. Describe agglomerated materials. Give examples of each of natural and synthetic polymers. State the applications of polymer in food industry. **07**

(b) Explain with diagram the process of resistance welding? Elaborate on its advantages and disadvantages. **07**

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