

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019****Subject Code: 2141403****Date: 13/12/2019****Subject Name: Materials & Manufacture of Food Equipment****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Provide drawing sheet to the students along with the supplementary

**Q.1 (a) Define thermosetting plastics and give examples. 03****(b) Write short notes on the followings: 04**

1. Puddle
2. Oxidizing flame
3. Natural flame
4. Spot facing

**(c) Differentiate between single and multiple start threads with the help of neat labeled diagram. The number of threads in a in M30 external ISO metric screw thread bolt are 10 per inch. Calculate the followings: 07**

- (i) Slope of the screw for a single start thread
- (ii) Nominal diameter
- (iii) Pitch

**Q.2 (a) Differentiate between nitriding and cyaniding. 03****(b) Enlist methods of carburizing. Discuss the methods in detail. 04****(c) Classify heat treatments. Explain in detail about quenching. Also list out importance of heat treatment. 07****OR****(c) Write down the stepwise procedure to be followed for drawing hexagonal nut. 07****Q.3 (a) Differentiate between right-handed and left-handed threads. 03****(b) With the help of a neat diagram show different parts of plates in PHE. 04****(c) Enlist applications of evaporators in food industry. What is single effect evaporators? With the help of a neat diagram indicate different methods of feeding in evaporators. 07**

**OR**

- Q.3** (a) List down the types of welding joints. **03**
- (b) Explain the principle of tungsten inert gas welding with diagram. **04**
- (c) Explain iron allotropy in detail with neat diagram along with the cooling curve. And discuss micro constituents of iron and steel. **07**
- Q.4** (a) Define polymer and mention its uses in food industry. **03**
- (b) Write a brief note on geometrical tolerance and its types. **04**
- (c) Define the followings: **07**
1. Pitch of the thread
  2. Tolerance
  3. Flatness of surface
  4. Lead of the thread
  5. Composite materials
  6. Bilateral limits
  7. Monomer

**OR**

- Q.4** (a) Give the detailed classification of threads. And explain the difference between actual and theoretical dimension of thread by taking any one thread as an example. **03**
- (b) Draw a neat labeled diagram of socket and spigot joint. **04**
- (c) Classify the keys and explain in detail about parallel keys. Also draw gib headed key fitted on the shaft of diameter 100mm with dimensions. **07**
- Q.5** (a) Write a short note on third angle method of projection. **03**
- (b) Describe in detail about vulcanization of rubber. **04**
- (c) classify sectional views. Differentiate between full and half sectional views. Describe in brief about broken out sectional view. **07**

**OR**

Through hole  $\phi 20$ , C bore to  $\phi 30 \times 6$  deep on both sides

Dimensions: 35, 40, 25, 10, 60, 20, R10, 60, 70, 20, R20,  $\phi 50$ , 10,  $\phi 15$ .