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FPT-402/S&MoFM/4th Sem/2016/N

**SERVICING AND MAINTENANCE OF  
FOOD MACHINERIES**

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

Answer any *five* questions.

1. (a) Write about the different mechanical properties of metals. 6
- (b) What are engineering materials ? Classify them with example. 1+4=5
- (c) What are the factors to be considered while selecting the engineering materials ? 3
2. (a) What is hardening ? Describe the process of hardening of metals. 1+4=5
- (b) What is a pump ? Why they are used in food industry ? 1+2=3

[Turn over

(c) Write short notes on :  $3 \times 2 = 6$

(i) Reciprocating positive displacement pump

(ii) Pitting corrosion.

3. (a) Write about three different non-ferrous metals and their alloys.  $3 \times 3 = 9$

(b) Match the following :  $1 \times 5 = 5$

A

B

(i) Chromium

(i) non-metal

(ii) Glass

(ii) physical property of metal

(iii) Compressor

(iii) metal casting process

(iv) Electroplating

(iv) transport of air through pipe

(v) Electrical conductivity

(v) non-ferrous metal

4. (a) Choose the correct answer :  $1 \times 5 = 5$

(i) Piston pump / gear pump is a type of reciprocating type positive displacement pumps.

(ii) Wrought iron / cast iron is not normally considered as corrosion resistant material.



(iii) Uniform corrosion occurs over entire exposed area / localised area of metal surface.

(iv) Silver / Copper has the highest thermal conductivity property.

(v) Cast iron is a group of iron-carbon alloy / iron-copper alloy.

(b) Write true or false : 1×5=5

(i) Polyvinyl chloride is a type of thermo-plastic material.

(ii) The process used in electroplating is called electrodeposition.

(iii) Pumps and compressors have similar working principle.

(iv) Metal is heated upto suitable temperature and then quenched in water during material hardening.

(v) Non-metals are non-ductile.

(c) Write a note on cast iron including their properties and types. 4

5. (a) What is tensile and compressive stress ? 4
- (b) Why lubrication is required in machines ? 4
- (c) Write the working principle of heat exchanger with diagram. 6
6. (a) Briefly discuss about different joints in pipe fittings, especially mentioning flange joints, hydraulic joints and socket and spigot cottor joint. 9
- (b) Write the working principle of centrifugal pump. 5
7. (a) How the valves work in homogenizen of milk processing ? Answer with suitable diagram. 8
- (b) Write short notes on any *three* :  $2 \times 3 = 6$
- (i) Nut
  - (ii) Bolt
  - (iii) Washer
  - (iv) Rivets
  - (v) Gate valve.