

MAHARASHTRA ANIMAL AND FISHERY SCIENCES UNIVERSITY, NAGPUR
SEMESTER END THEORY EXAMINATION, B. Tech. Dairy Technology 2019-20

Semester	: VII (New Syllabus)	Academic Year	: 2019-2020
Course No.	: DE - 712	Course Title	: Principles of Dairy Machine Design
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Wednesday, 15.01.2020	Time	: 11.00 to 13.00 Hrs.

- Note : 1) All questions from **Section 'A'** are compulsory.
2) Solve **Any Five** questions from **Section 'B'**.
3) Draw neat and well labelled diagram wherever necessary.

SECTION - 'A'

Q. 1 A) Choose the most appropriate answer from the options given below. (05)

- i) If number of coils are 8 and wire diameter of spring 3 mm, then solid length is given by?
 - a) 84 mm
 - b) 11 mm
 - c) 24 mm
 - d) 21 mm
- ii) White cast iron is formed when
 - a) Graphite flakes are formed
 - b) Most of the carbon content in the alloy forms iron carbide
 - c) No iron carbide is formed.
 - d) None of these
- iii) The force that brings all the given forces in equilibrium is called as
 - a) Equilibrant
 - b) Concurrent
 - c) Collinear
 - d) Coplanar
- iv) If uncompressed length of spring is 40 mm and number of coils 10 mm, then pitch of coil is
 - a) 4
 - b) 40/9
 - c) 40/11
 - d) 0.4
- v) The property of a material to absorb energy and to resist shock and impact load is known as
 - a) Flexural strength
 - b) Ultimate strength
 - c) Resilience
 - d) Ultimate stress

B) Define the following. (05)

- i) Co-efficient of Friction
- ii) Resilience
- iii) Strength
- iv) Angle of Friction
- v) Malleability

Q. 2 A) Give the formulae for the following. (05)

- i) Tensile Strain
- ii) Modulus of Rigidity
- iii) Ultimate Stress
- iv) Volumetric Strain
- v) Poisson's ratio

B) State whether true or False. If false, rewrite the statement after making necessary corrections. (05)

- i) The stiffness of solid shaft is more than the stiffness of hollow shaft with same weight.
- ii) When a material is loaded within elastic limit, then the stress is equal to strain.
- iii) Two forces acting at a point are called concurrent forces.
- iv) The longest leaf in a leaf spring is called as master leaf.
- v) The proportional limit is defined as the stress at which strain curve begins to deviate from the straight line.

SECTION - 'B'

- Q. 3 Write a short note on different types of beams, supports and loads. (06)
- Q. 4 What is spring? Write the use/functions of spring. Explain different types of spring with figure. (06)
- Q. 5 List the principal theories of failure of machine parts. Explain any one in detail. (06)
- Q. 6
- A) Give difference between Elastic modulus and shear modulus in brief. (02)
 - B) Give difference between Flat belt and V belt in brief. (02)
 - C) What the major factors affecting on the design of shaft? (02)
- Q. 7.
- A) Explain stress-strain diagram for steel. (03)
 - B) What are the general considerations in design of machine part? (03)
- Q. 8
- A) Enlist the important factors for selecting proper 'factor of safety' in equipment design. (02)
 - B) List the tests for determination of hardness of the material (02)
 - C) List the types of keys. (02)
- Q. 9
- A) Explain Lami's theorem. (02)
 - B) Write a short note on Bearings. (04)
