

Semester	: VI (V Dean)	Academic Year	: 2018-2019
Course No.	: DE- 613	Course Title	: Material Strength & Dairy Machine Design
Credits	: 2+1=3	Total Marks	: 50
Day & Date	: Monday, 24.06.2019	Time	: 11.00 to 13.00 Hrs.

## SECTION – 'A'

- (P.T.O.)

- B) State whether the following the statements are True or False. If false, rewrite the statement after making necessary corrections. (05)
- i) A beam extending beyond the supports is called a cantilever beam.
  - ii) Proportional limit is defined as the stress at which the stress-strain curve begins to deviate from the straight line.
  - iii) When equal and opposite forces applied to a body tend to elongate it, the stress produced is called tensile stress.
  - iv) The property of the material by which it can be rolled into thin plates is called malleability.
  - v) The dimension of strain is  $LT^{-2}$ .

### SECTION – 'B'

- Q. 3 A) Explain different modes of power transmission? (05)  
B) A mild steel rod supports a tensile load of 50 kN. If the stress in the rod is limited to 100 MPa, find the size of the rod when the cross-section is circular. (05)
- Q. 4 A) What is moment of inertia? State the theorems of parallel and perpendicular axes. (05)  
B) What is force? Explain the parallelogram law of resultant force. (05)
- Q. 5 A) Give the classification of engineering materials. (03)  
B) How do you select factor of safety? (03)  
C) Explain different types of springs with neat diagrams. (04)
- Q. 6. A) Explain equilibrium of forces and state Lami's Theorem. (03)  
B) A solid steel shaft is to transmit a torque of 10000 kg-m. If the shearing stress is not to exceed  $450 \text{ kg/cm}^2$ . Find the minimum diameter of the shaft. (03)  
C) Explain the general procedure for design of machine element. (04)
- Q. 7 What is Hooke's law? Explain the stress-strain diagram for metals. State the relation between Young's modulus, shear modulus and Bulk modulus for an engineering material. (10)

\*\*\*\*\*