

B.Tech
2022
2nd Sem.

B.TECH FOOD TECHNOLOGY
2nd Semester Examination 2022
Course Code- BFTEC-206
Course Title - Basic Engineering Mechanics

Time: 03 hours

Max. Marks: 75

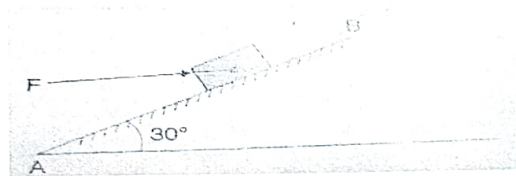
Note: It is necessary to answer all the questions of Section-A. Limit your answers within 20-40 words in this part.

1. Answer any three questions from Section-B.
2. Different parts of the same question are to be attempted adjacent to each other's.
3. Assume suitable data wherever required.
4. Calculator is allowed.

Section-A (5x6=30 Marks)

- Q.1 (a) What do you understand by engineering mechanics. Write down the classification of engineering mechanics.
(b) Define Lami's theorem with diagram.

- Q.2 Determine the horizontal force F to be applied to the block weighing 1500 N to hold it in position on a smooth inclined plane AB which makes an angle of 30 degree with the horizontal.



- Q. 3 (a) What is the Law of transmissivity?
(b) Define parallelogram law of forces.
- Q. 4 (a) What is force classify the types of forces.
(b) Verify whether the following equation has dimensional homogeneity
 $v^2 - u^2 = 2as.v$ (Where v =final velocity, u =initial velocity, a =acceleration, s =distance)
- Q. 5 (a) What do you understand by mass? Differentiate between distance and displacement
(b) What do you understand by limiting friction? Differentiate between sliding and rolling friction.

Section - B (3x15=45 Marks)

- Q. 1. What do you understand by Hooks law? Derive the expression for the deformation of a uniform bar.

- Q. 2. Write short notes-

(a) Longitudinal strain and lateral strain (b) Bulk modulus (c) Moment of force

- Q. 3 A steel bar of 2 m long, 20 mm wide and 15 mm thick is subjected to a tensile load of 30 kN. Find the increase in volume if Poissons ratio is 0.25 and $E=2 \times 10^5 \text{ N/mm}^2$.

- Q. 4. What should be the value of θ in figure that will make the motion of 900 N block down the plane to impend? The coefficient of friction for all contact surfaces is $1/3$.

