JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2023

B.Tech-3rd Semester (CE)

COURSE CODE (CREDITS): 18B11CE315 (3)   MAX. MARKS: 15

COURSE NAME: **Engineering Mechanics**

COURSE INSTRUCTORS: Dr. Saurav   MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b)Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q1. Spherical ball of weight 100 N is attached to a string and is suspended from the ceiling as shown in Fig. 1(a). What tension would be induced in the string? Subsequently a horizontal force of 200 N is applied to the ball as shown in Fig. 1(b). Calculate the resultant tension in the string and the angle which the string makes with the vertical using Lami's theorem.   **[3, CO1]**
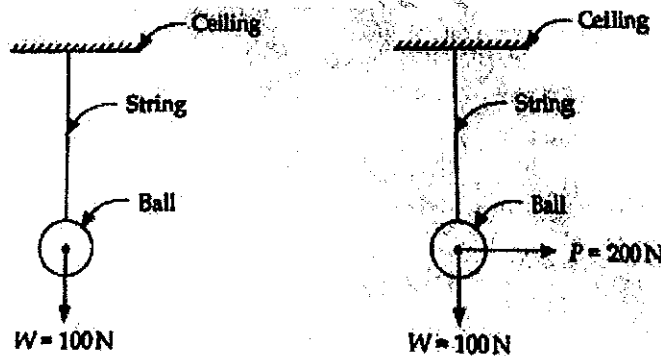

Fig. 1(a) and (b)

Q2. A uniform plank ABC of weight 30 N and 2 m long is supported at one end A and at a point B, 1.4 m from A as shown in Fig.2. Find the maximum weight W that can be placed at C, so that the plank does not topple.   **[2, CO1]**
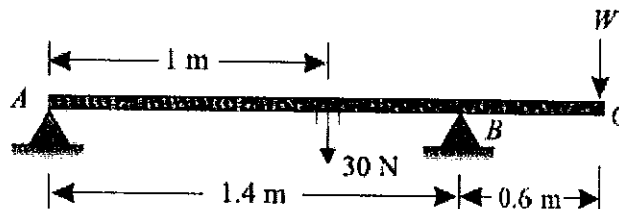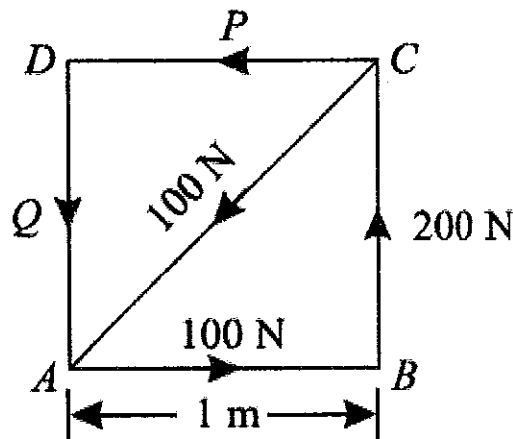

Fig. 2

Q3. Two unlike parallel forces of magnitude 400 N and 100 N are acting in such a way that their lines of action are 150 mm apart. Determine the magnitude of the resultant force and the point at which it acts. **[3, CO1]**

Q4. Enumerate various characteristics of a couple. Show using an example the resolution of a force into force and moment. **[4, CO1]**

Q5. A square ABCD of side 1m has forces acting along its sides as shown in Fig 3. Find the values of P and Q, if the system reduces to a couple. Also find magnitude of the couple.

[3, CO1]

Fig. 3