Roll No. 1700100800 8

Total Pages : 3

305307

Dec., 2018

B.Tech. IIIrd Semester

ENGINEERING MECHANICS

(ES-301)

Time : 3 Hours] [Max. Marks : 75

Instructions:

(i) It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.

(ii) Answer any four questions from Part-B in detail.

(iii) Different sub-parts of a question are to be attempted adjacent to each other.

(iv) Any other specific instructions.

PART–A

1. (a) Define static indeterminancy. (1.5)

(b) Explain limiting friction. (1.5)

(c) What is a wedge? (1.5)

(d) Define centroid. (1.5)

(e) Explain rectilinear motion. (1.5)

(f) What is mass moment of inertia? (1.5)

(g) Explain resonance. (1.5)

(h) Define free body diagram. (1.5)

(i) What is a beam? (1.5)

(j) Define couple. (1.5)

PART-B

2. (a) Define inertia quantities. (10)

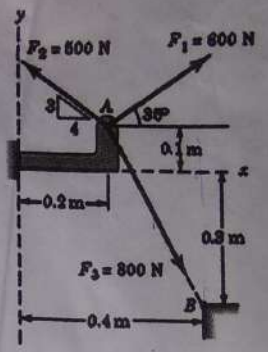
(b) Differentiate between first and second moments of area. (5)

3. (a) Derive the relation between area and mass inertia terms. (5)

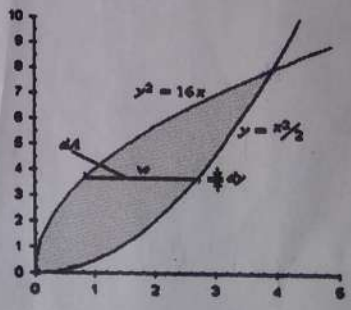
(b) Derive the equation for Newton's law for path variables. (10)

4. Define the work energy equations. (15)

5. The forces F1, F2, and F3, all of which act on point A of the bracket, are specified in three different ways. Determine the x and y scalar components of each of the three forces. (15)



6. Find the Second Moment of Area for the shaded region between the curves. (15)



7. Define the following: Stability, Idealization in mechanics. (15)