

Roll No.

24048

**B. Tech. 3rd Semester (MAE)
Examination – December, 2018**

ENGINEERING MECHANICS

Paper : ME-205-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

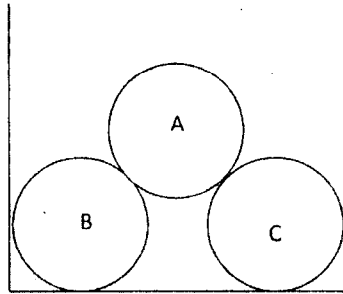
Note : Attempt any *five* questions from *eight* questions.
At least *one* question from each Section. Question No. 1 is *compulsory*.

1. Explain following : 4 × 5 = 20
- (a) Lami's Theorem
 - (b) Types of Trusses
 - (c) Radius of gyration
 - (d) S.F.D. & B.M.D

SECTION – A

2. Three Cylinders weighing 100 N each and of 80 mm diameter are placed in a channel of 180 mm width as shown in Fig. Determine the pressure exerted by (i)

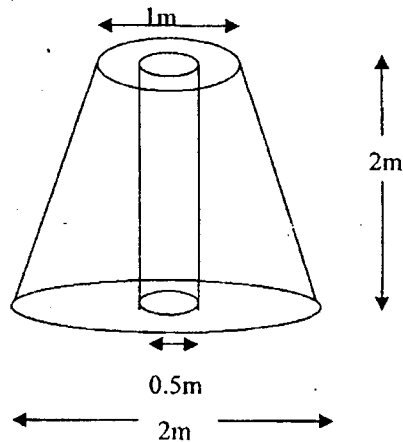
the cylinder A on B at the point of contact (ii) the cylinder B on the base and (iii) the cylinder B on the wall. 20



3. What do you understand by Equilibrium? Explain its types and conditions of equilibrium by taking some example. 20

SECTION - B

4. What do you understand by Analysis of Truss ? What are the different methods for analysis of a truss ? Explain their step by step procedure. 20
5. Find the centre of Gravity of the Fig shown below : 20



SECTION - C

6. Explain Parallel Axis Theorem and Perpendicular Axis Theorem. Derive their mathematical equation. 20
7. A particle at a position (3,4,6) ft at time $t_0 = 1$ sec is given a constant acceleration having the value $6i + 3j$ ft /sec² . If the velocity at the time t_0 is $16i+20j+5k$ ft/sec what is the velocity of the particle 20 sec later ? Also give the position of the particle. 08

SECTION - D

8. A car is travelling on a level track of a radius 50 m. Find the maximum speed at which he can travel on the curved track, if the coefficient of friction between the tyres and track is 0.45. 20
9. Draw S.F.D. and B.M.D. for a Cantilever Beam carrying a Point Load at Free end. 20