V71/BCP102/EE/20160519

Time : 3 Hours **Marks : 80**

Instruction :

1. All Questions are Compulsory.
2. Each Sub-question carry 5 marks.
3. Each Sub-question should be answered between 75 to 100 words. Write every questions answer on separate page.
4. Question paper of 80 Marks, it will be converted in to your programme structure marks.

1. Solve any **four** sub-questions.

   a) Describe about representation of a force graphically. 5

   b) Define moments with examples. 5

   c) Explain Coplanar system of forces. 5

   d) What is resultant force? Explain with example. 5

   e) Describe couple with diagram. 5

2. Solve any **four** sub-questions.

   a) State different conditions of equilibrium. 5

   b) Define Newton's third law of motion with examples. 5

   c) Distinguish between rectilinear motion and curve linear motion. 5

   d) Explain Lami's theorem with equation. 5

   e) State different types of beams with neat sketches. 5

3. Solve any **four** sub-questions.

   a) Define stationary waves with its characteristics. 5

   b) Describe relative motion. 5

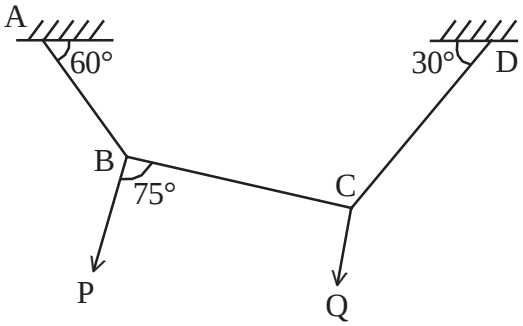
   c) Write about different rectilinear motions. 5

   d) Define following Elastic constants - Young's modulus, modulus of rigidity. 5

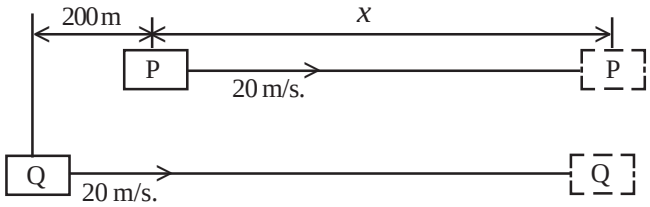
   e) State relationship between different elastic constants with expression. 5

4. Solve any **four** sub-questions.

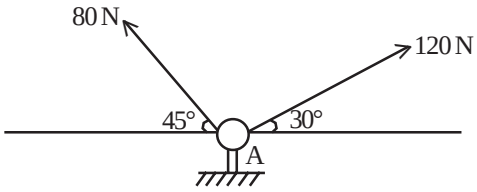
a) A string ABCD carries two loads P and Q. If P = 50kN, find force Q and tensions in different portions of string. 5



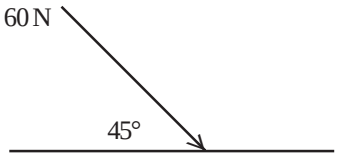
b) Two cars P and Q are travelling in parallel lanes on a straight highway with a uniform velocity 72 kmph. Car P is ahead of car Q by 200m. At a certain instant, car P decelerates uniformly at 2.5 m/s^2, whereas car Q accelerates uniformly at 2m/S^2. When and where will car Q overtake car P? 5



c) Two forces of 120 N and 80 N act on an eye-bolt at A as shown. Determine the resultant of the two forces by parallelogram law of forces. 5



d) Resolve a force P = 600N into horizontal and vertical components. 5



e) Find resultant of following parallel system of forces. 5