

# 2002 SCHEME

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CIV13/23

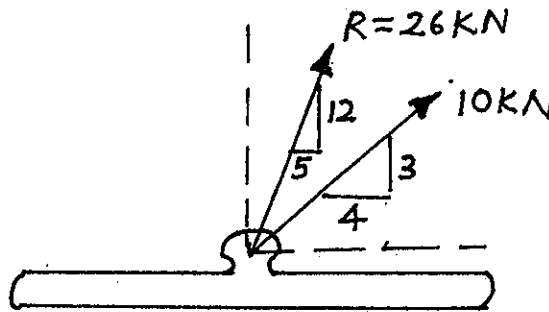
## First/Second Semester B.E. Degree Examination, December 2011 Elements of Civil Engineering

Time: 3 hrs.

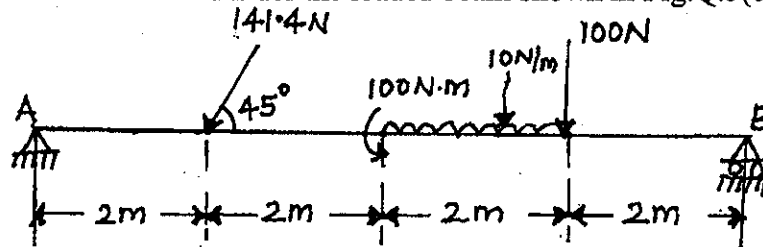
Max. Marks:100

**Note: 1. Answer any FIVE full questions.  
2. Draw neat sketches wherever necessary.**

- 1
  - a. Briefly explain the impact of infrastructural development on a country. (08 Marks)
  - b. Briefly explain the project planning and scheduling. (06 Marks)
  - c. Enlist the characteristics of good brick. (06 Marks)
  
- 2
  - a. Explain the characteristics of good mortar. (08 Marks)
  - b. Enlist the characteristics of good timber. (06 Marks)
  - c. Write the advantages and disadvantages of fiber reinforced concrete. (06 Marks)
  
- 3
  - a. Explain the different types of composite materials. (08 Marks)
  - b. What are smart materials? Write the applications. (06 Marks)
  - c. Briefly explain the advantages of remote sensing techniques. (06 Marks)
  
- 4
  - a. Explain the different types of force system with sketches. (06 Marks)
  - b. Briefly explain the resolution and composition of forces. (04 Marks)
  - c. 26 kN force is the resultant of two forces, one of which is as shown in Fig.Q.4(c). Determine the other force. (10 Marks)



- 5
  - a. State the conditions of equilibrium of coplanar non-concurrent force system. (03 Marks)
  - b. State and prove Varignon's theorem. (07 Marks)
  - c. Determine the reactions at A and B for the loaded beam shown in Fig.Q.5(c). (10 Marks)



Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 6 a. Determine the centroid of triangular lamina about its base. (06 Marks)  
 b. State parallel axis and perpendicular axis theorem. (04 Marks)  
 c. Locate the centroid of area shown in Fig.Q.6(c). (10 Marks)

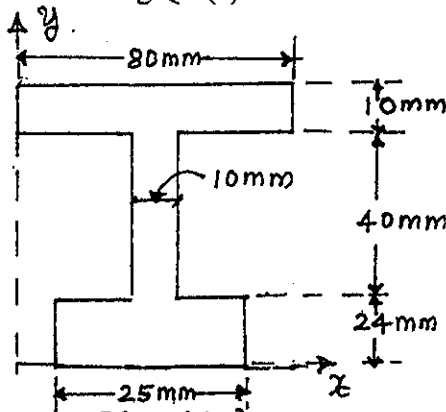


Fig.Q.6(c)

- 7 a. Derive an expression for the moment of inertia of a circle about the diametrical axis. (08 Marks)  
 b. Determine the moment of inertia of the area about the base AB and centroidal axis parallel to AB for the Fig.Q.7(b). (12 Marks)

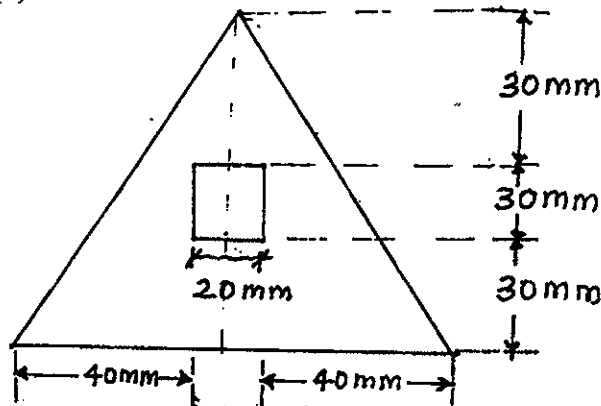


Fig.Q.7(b)

- 8 a. State the laws of friction. (04 Marks)  
 b. Prove that angle of friction is equal to angle of repose. (06 Marks)  
 c. What is the value of P in the system shown in Fig.Q.8(c) to cause the motion to impend? Assume the pulley is smooth and coefficient of friction between the other contact surfaces is 0.20. (10 Marks)

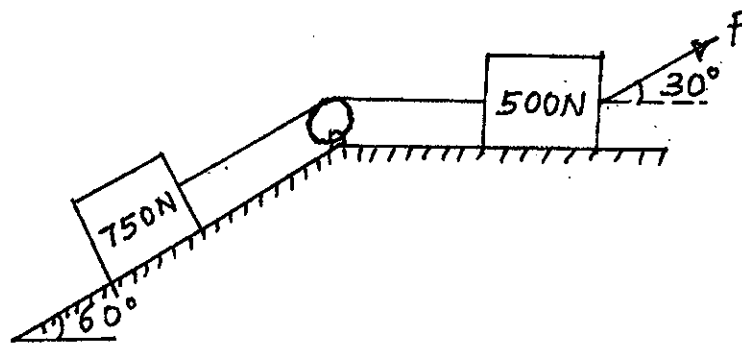


Fig.Q.8(c)

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