



SEMESTER END EXAMINATIONS - MAY 2023

Program : **B.E. -Common to all Programs**
Course Name : **Introduction to Civil Engineering**
Course Code : **ESC131**

Semester : **I**
Max. Marks : **100**
Duration : **3 Hrs**

Instructions to the Candidates:

- Answer one full question from each unit.
- Assume the missing data suitably.

UNIT - I

- a) List and explain the scope of any three fields of Civil Engineering. CO1 (10)

b) Justify the difference of these materials with respect to their properties CO1 (06)

 - Plain concrete and Reinforced concrete
 - RCC and PSC.

c) List the functions of construction management and explain any two in detail. CO1 (04)
- a) R.C.C. is not a composite material. Justify the statement by giving a proper definition and an example of a composite material. CO1 (05)

b) Explain the use of cement and mortars in construction works. CO1 (06)

c) Explain the societal impact of Civil Engineering fields in the socio economic development of the country. CO1 (09)

UNIT - II

- a) Brief out the concept of sustainability and enumerate the role of Civil engineering in achieving sustainability. CO2 (10)

b) What is meant by wholesome water? What are the requirements of wholesome water? CO2 (06)

c) Explain in brief any two surface sources of water. CO2 (04)
- a) With neat sketches, explain how the temperature control happens in a building. CO2 (10)

b) List the various water management systems and explain any three system in detail. CO2 (10)

UNIT - III

- a) Define and prove "Principle of Moments". CO3 (0)

b) Define the following terms:- CO3 (1)

 - Rigid body
 - Couple
 - Resultant
 - Equilibrant
 - Equivalent force couple system.

c) Explain the classification of coplanar force system with neat sketches. CO3 (0)

6. a) Explain different types of supports and different types of loads with neat sketches. CO3 (08)
 b) Find the resultant of a set of coplanar forces acting on a lamina as shown in Fig. 6(b) Each square has a side length of 0.5 m. Locate the resultant with respect to point 'O'. CO3 (08)

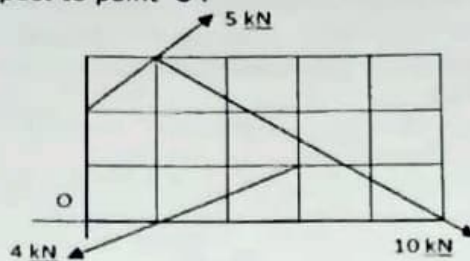


Fig.6(b)

- c) What is a Free Body Diagram? Write the conditions of equilibrium of different coplanar force systems? CO3 (04)

UNIT- IV

7. a) Derive an expression for the co-ordinates for the position of centroid of a triangle. CO4 (06)
 b) Define centroid? Determine the centroid of the given shaded area shown in the Fig. 7(b) CO4 (10)

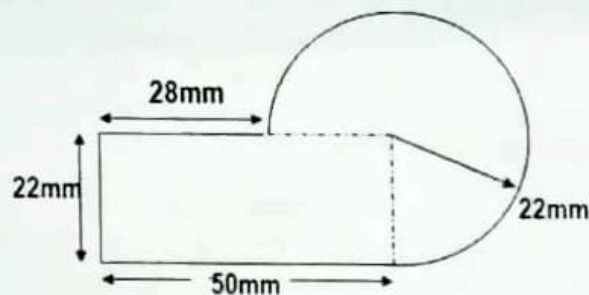


Fig.7(b)

- c) State laws of static friction. CO4 (04)

- a) Define the following terms. CO4 (04)
 (i) Angle of friction. (ii) Coefficient of friction.
 b) A block weighing 3000N is resting on a horizontal surface supports another block of 1500N as shown in the Fig. 8(b). Find the horizontal force F just to move the block to the left. Take coefficient of friction of all contact surfaces as 0.2. CO4 (08)

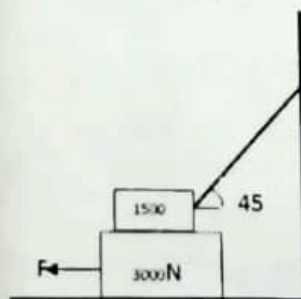


Fig.8(b)

- c) Derive an expression for the co-ordinates for the position of centroid of sector of circle. CO4 (04)

UNIT - V

9. a) For the plane area shown in Fig. 9 (a). Determine the moment of inertia CO5 (14)
and radius of gyration about X-axis.

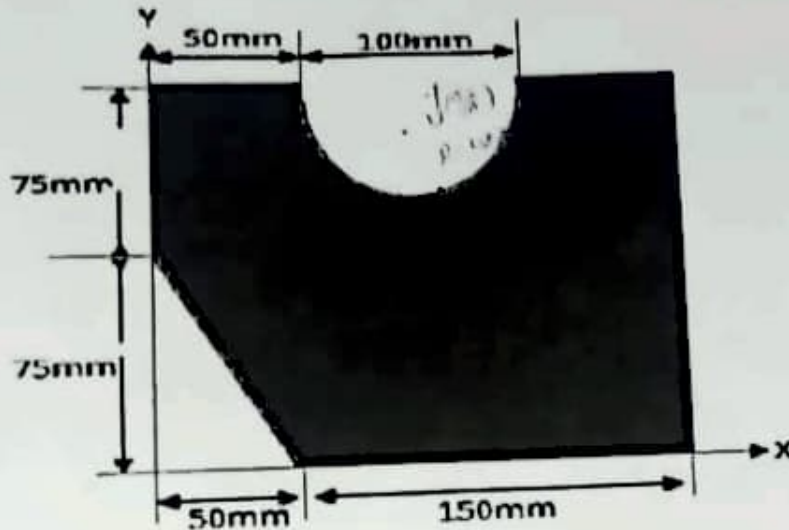


Fig. 9(a)

- b) State and prove perpendicular axis theorem. CO5 (06)
10. a) Derive an expression for moment of inertia of triangular lamina. CO5 (08)
b) State and prove parallel axis theorem. CO5 (06)
c) Derive an expression for moment of inertia of semicircular lamina. CO5 (06)

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