



Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2018-19

EXM/P/09/01

Year and Program: 2018-19

School of Architecture

Department of FY B.Arch

Course Code: 18ARC105

Course Title: Theory of
Structure - I

Semester - I

Day and Date

Wednesday 5 Dec 18

End Semester Examination
(ESE)

Time: Max Marks: 80

10:00 am to 1:00 pm

Instructions:

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	Solve the following	Mark s	Bloom's Level	CO
a)	Explain the Law of parallelogram of forces	06	L ₂	CO1
b)	The angle between the two concurrent forces is 90° and their resultant is 2500 N. The resultant makes an angle of 45° with one of the force. Determine the magnitude of each force.	07	L ₃	CO1
OR				
b)	For the force system shown in fig.1a, find the resultant and its point of application w.r.t. point A along the bar.	07	L ₃	CO1

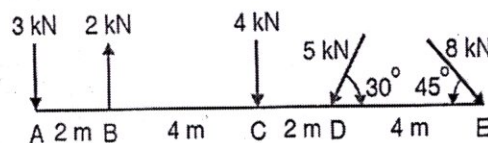


Fig.1a

Q.2	a) Explain the following term 1. Gravity axis 2. Centroid 3. Centre of gravity 4. Centre of mass	06	L ₂	CO2
	b) Determine the coordinate of the centroid of shaded area shown in fig.2a.	07	L ₃	CO2

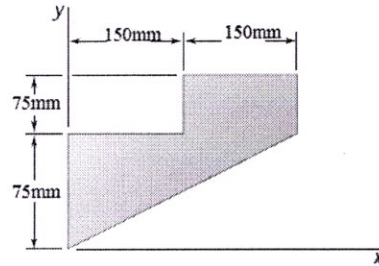


Fig.2a

OR

- b) Determine the coordinates of centroid of the shaded area as shown in fig. 2b. 07 L₃ CO2

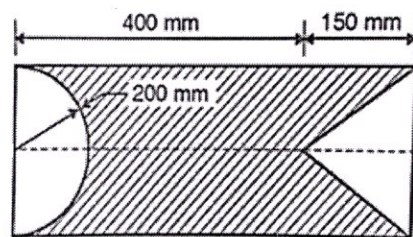


fig. 2b.

- Q.3 a) Explain the Following 07 L₃ CO3
1. Parallel axis theorem
 2. Polar moment of inertia
- b) Find M.I. about centroidal axis of the shaded area shown in fig. 3a 07 L₃ CO3
- below

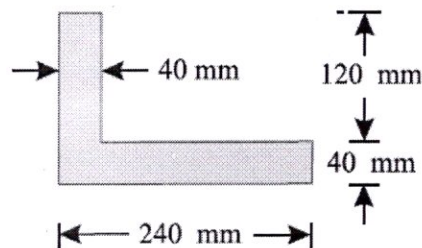


Fig.3a

OR

- b) Determine M.I. about X-X axis only of the shaded area shown in fig. 3b below 07 L₃ CO3

pg 27

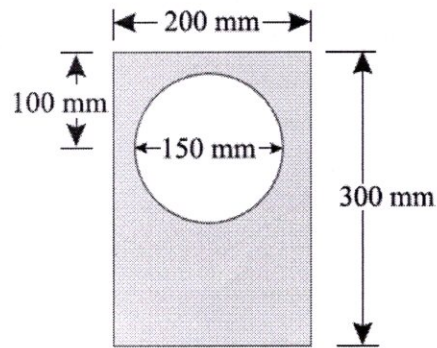


Fig.3b

- Q.4 a) Explain in details types of beams and types of loads 06 L₂ CO4
- b) Determine the support reaction for the beam loaded and supported as shown in fig.4a. 07 L₃ CO4

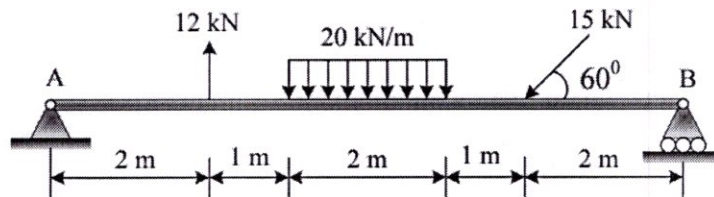


Fig.4a.

OR

- b) Determine Reaction R_A and R_B at support A and B of horizontal beam AB as shown in fig.4b 07 L₃ CO4

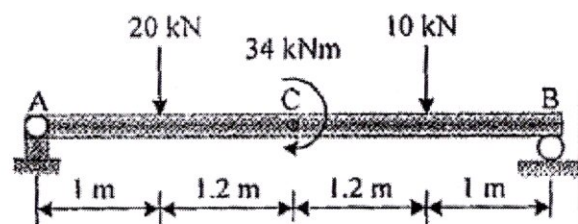


Fig.4b

- Q.5 a) Explain the classifications of the truss 06 L₂ CO5
- OR
- a) Explain the methods of analysis 06 L₂ CO5
- b) Determine forces in all member of the truss shown in fig. 5pa by any method. 07 L₃ CO5

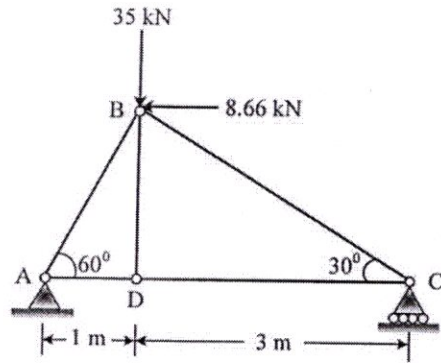


Fig.5a

Q.6 a) Explain in detail construction of space and vector diagram in graphical method of truss analysis

07

L₂

CO6

OR

a) Explain assumptions made in the analysis of truss.

07

L₂

CO6

b) Explain in detail property of zero force member

07

L₂

CO6

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