Sanjay Ghodawat University, Kolhapur 2018-19

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017 EXM/P/09/01

Year and Program:2018-19 **School of Architecture** **Department of FY B.Arch**

Course Code: ARC105 **Course Title: Theory of Structure - I** **Semester – I**

Day and Date Monday 03/06/2019 **End Semester Examination (ESE)** **Time:** 3 Hrs. **Max Marks: 80** 10.30 am to 1.30 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**	Marks	Bloom's Level	CO
	a)	Explain the Following 1. Force and its characteristics 2. Lami's Theorem	06	L_1	CO1
	b)	The forces 20 N, 30 N, 40 N, 50 N and 60 N are acting at one of the angular points of a regular hexagon, towards the other five angular points, taken in order. Find the magnitude and direction of the resultant force.	07	L_3	CO1
		OR			
	b)	A system of forces is acting at the corners of a rectangular block as shown in Fig. 1.	07	L_3	CO1

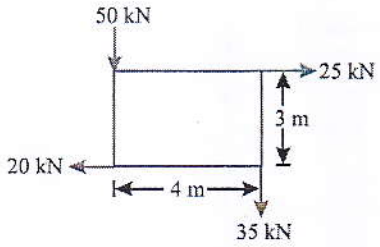

Fig.1.

Q.2	a)	Explain the steps involved in finding centroid of composite figures.	06	L_2	CO2
	b)	Determine the coordinate of the centroid of shaded area shown in fig.2	07	L_3	CO2

ESE

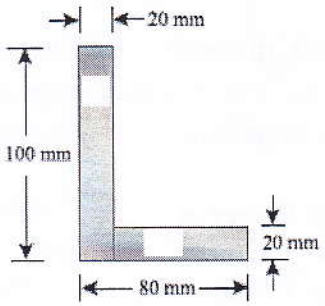

Fig.2.

OR

b) A semicircular area is removed from a trapezium as shown in Fig.3 (dimensions in mm). Determine the centroid of the remaining area — 07 — L_3 — CO2

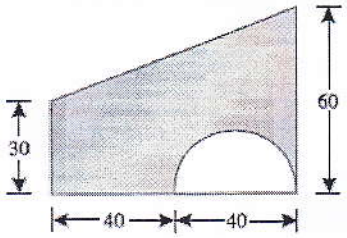

fig. 3.

Q.3 a) Explain the Following — 07 — L_3 — CO3

1. Parallel axis theorem
2. Polar moment of inertia

b) Find M.I. about centroidal axis of the shaded area shown in fig. 4 below — 07 — L_3 — CO3

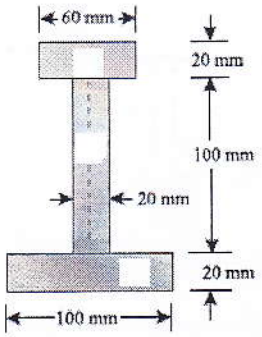

Fig.4

Q.4 a) Explain in detail types of beams and types of loads — 06 — L_2 — CO4

b) Determine the support reaction for the beam loaded and supported as shown in fig.5. — 07 — L_3 — CO4

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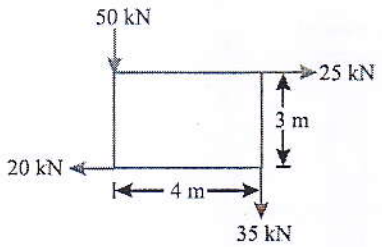

Fig.1.

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ESE

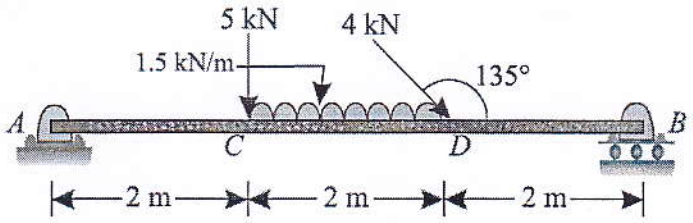

Fig.5

OR

b) Determine Reaction R_A and R_B at support A and B of horizontal beam AB as shown in fig.6 — 07 — L_3 — CO4

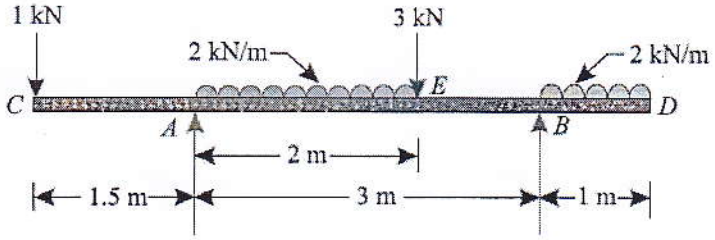

Fig.6.

Q.5 a) Explain the methods of truss analysis. — 07 — L_2 — CO5

OR

b) Explain the classifications of the truss — 07 — L_2 — CO5

b) Determine forces in all member of the truss shown in fig. 7 by suitable method. — 07 — L_3 — CO5

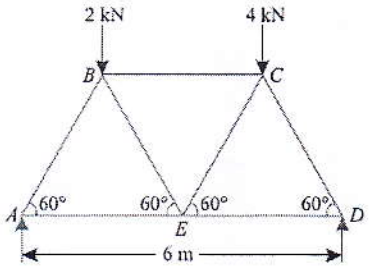

Fig.7

Q.6 a) Explain in detail property of zero force member — 06 — L_2 — CO6

OR

b) Explain assumptions made in the analysis of truss. — 06 — L_2 — CO6

b) Explain in detail construction of space and vector diagram in graphical method of truss analysis — 07 — L_2 — CO6

ESE