Sanjay Ghodawat University, Kolhapur

2020-21

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

EXM/P/09/00

Year and Program: 2020-21, FY B. Tech	**School of Technology**	**Department: F.Y B. Tech**
Course Code: FYT108R1	**Course Title: Engineering Mechanics**	**Semester : I**
Day and Date:	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions are compulsory.
2) Use of Non programmable calculator is allowed.
3) Assume suitable data whenever required.

		Marks	Bloom's Level	CO
Q.1	**Answer/Solve the following (any Two)**			
a)	Define Force. State the characteristics of force and Explain resolution and composition of forces.	8	L2	CO1
b)	Four forces of magnitude 40kN, 10kN, 20kN and 35kN are acting at a point O. The angles made by 40kN force, 10kN force, 20kN force and 35kN force with x-axis are 60, 135, 210 and 330 degrees respectively. Determine the magnitude and direction of the resultant force.	8	L3	CO1
c)	A beam is loaded as shown in the fig. Determine the reactions at both supports.	8	L3	CO1

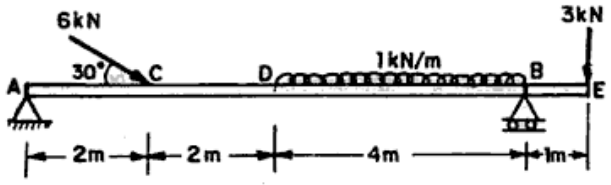


Fig.01

Q.2	**Answer/Solve the following (any two)**			
a)	Define and explain: (i) Angle of Repose (ii) Angle of friction (iii) Coefficient of friction	8	L2	CO2
b)	Determine the support reactions and force in members BD, CE and CD of the Howe truss shown in figure below using method of sections.	8	L3	CO2

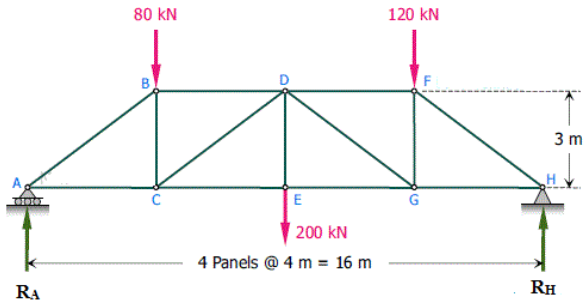


Fig.02

c) For the section shown in figure, determine M.I and Radius of gyration about two mutually perpendicular axes. 8 L3 CO2

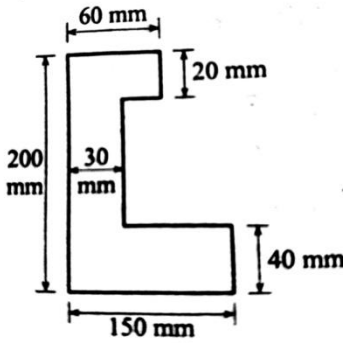


Fig.03

Q.3 Answer/Solve the following (any two)

a) Explain the Impulse Momentum principle and also define i) Direct impact ii) Oblique impact 9 L2 CO3

b) A stone is let fall the top of a tower 100m height. Determine (i) the time required for the stone to reach the ground, (ii) the velocity and position of stone after 3sec. after release, (iii) velocity with which the stone shall strike the ground. 9 L3 CO3

c) A body A of mass 1 kg moves rightward with velocity 5 m/sec and body B of mass 2 kg moves leftward with velocity 2 m/sec. after impact velocity of B is 2.5 m/sec rightward. Determine coefficient of restitution? 9 L3 CO4

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