



K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

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| | InSem Examination-I Winter 2023 | | |
| | Exam Seat No.: | | |
| | Academic Year:2023-2024 | Semester:I | |
| | Name of Programme:B.Tech | Pattern:2023 | |
| | Name of Course:Engineering Mechanics | Course Code:2300113A | |
| | Max. Marks:30 | Duration:1hr | |

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains four pages.
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome

Question No. 1 Attempt following Question

a)

State

i) Law of parallelogram

(3) CO2

ii) Varignons theorem

iii) Lamis theorem

OR

b) Define equilibrium and write the conditions of equilibrium for concurrent and non-concurrent force system.

(3) CO2

c)

Determine the magnitude and direction of the resultant force for the given force system shown in figure 1(c)

(6) CO2

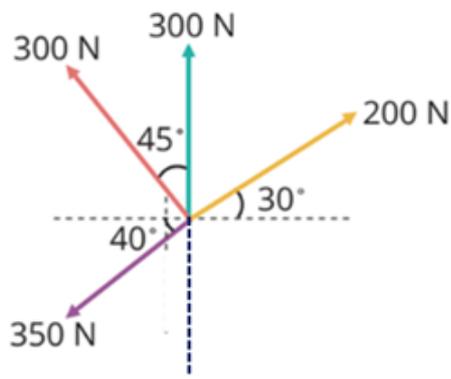
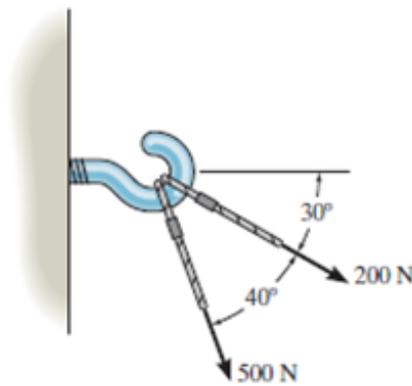


Figure 1 (c)

OR

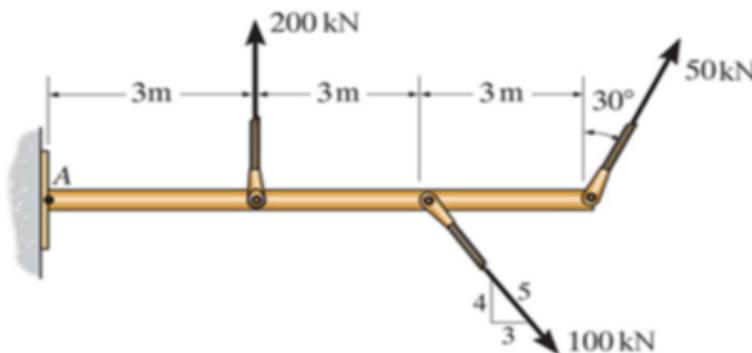
- d) Two forces act on the hook shown in figure 1.(d) ,determine the magnitude and direction of the resultant force with respect to x-axis



(6) CO2

Figure 1.(d)

- e) Determine the resultant of given force system shown in figure 1 (e). in magnitude and direction. Also find its location with respect to point A



(6) CO2

Figure 1 (e)

OR

- f) Determine the magnitude and direction of resultant force of given force system shown in figure 1.f and locate position of resultant from point A

(6) CO2

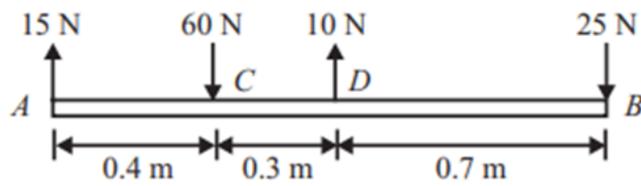


Figure 1.f

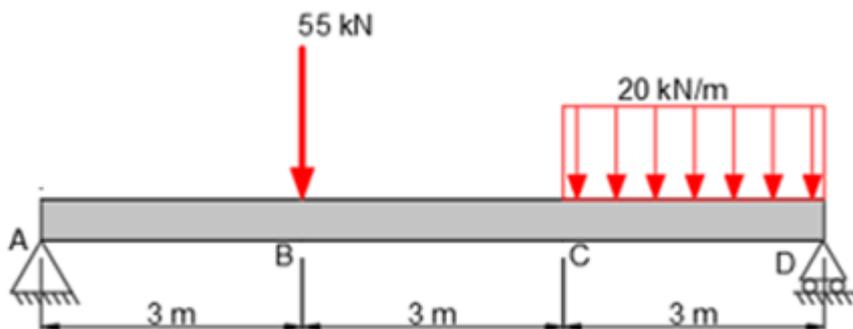
Question No. 2 Attempt following Question

- a) Define point load, uniformly distributed load, and uniformly varying load with neat sketch. (3) CO3

OR

- b) Write the assumptions in analysis of truss. (3) CO3

- c) Determine the support reactions at A and B of the beam loaded and supported as shown in figure 2 (c)

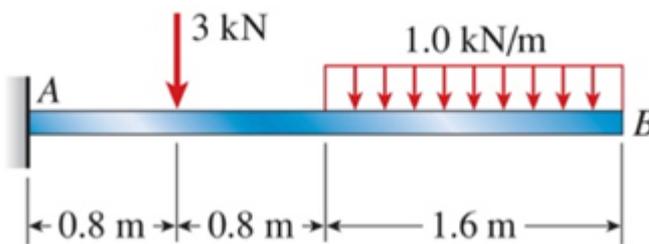


(6) CO3

Figure 2 (c)

OR

- d) Determine the support reactions and support moment at A of the beam loaded and supported as shown in figure 2 .(d)



(6) CO3

Figure 2 .(d)

- e) Using the method of joints, determine the force in each member of the truss shown figure 2.(e) (6) CO3

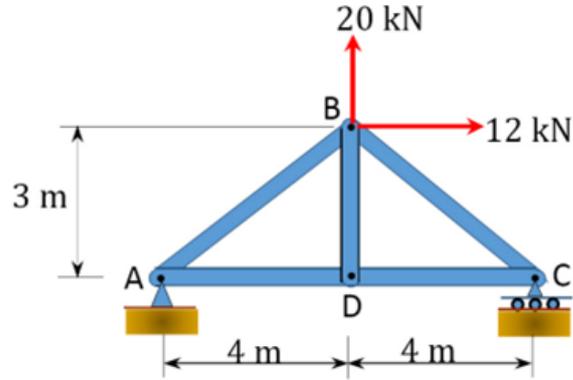
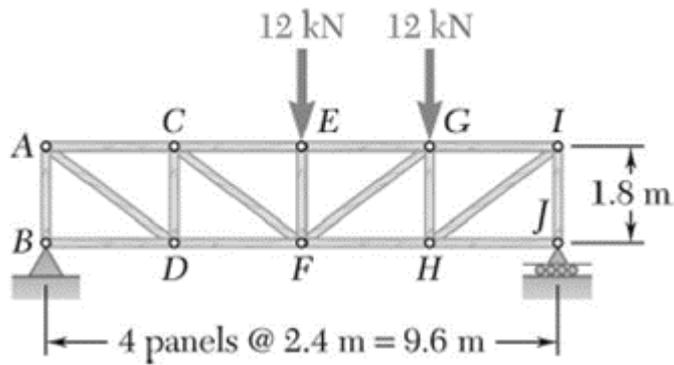


Figure 2.(e)

OR

- f) Determine the force in members EG, FG and FH of the truss shown in figure 2 (f) using method of section.



(6) CO3

Figure 2 (f)