Kandula Srinivasa Reddy Memorial College of Engineering
(Autonomous)

Kadapa-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)

(An ISO 9001-2008 Certified Institution)

Department of Civil Engineering

Certification Course

on

Beam design formulae with shear force and bending moment diagrams

Course Instructor: Dr. N. Amaranatha Reddy,
Associate Professor, Dept. Civil Engg., KSRMCE

Course Coordinator: Sri. M. C. Venkata Subbaiah
Assistant Professor, Dept. Civil Engg., KSRMCE

Date: 16/08/2021 to 28/08/2021

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

An ISO 14001:2004 & 9001: 2015 Certified Institution

Lr./KSRMCE/CE/2021-22/ Date: 09-08-2021

From
Sri. M C Venkata Subbaiah,
Asst. Professor,
Dept. of Civil Engineering,
KSRMCE,
Kadapa.

To
The Principal,
KSRMCE,
Kadapa.

Sub: Permission to Conduct Certificate Course – Reg.

Dear Sir,

The Department of Civil Engineering is planning to offer a certification course on "Beam design formulae with shear force and bending moment diagrams" to B. Tech. students. The course will start on 16th Aug. 2021 and will run for two weeks. In this regard, I am requesting you to accept the proposal to conduct certificate course.

Thanking you

Yours faithfully

(Sri. M C Venkata Subbaiah)

Forwarded to principal Sir

Permitted

V. S. S. Murthy

K.S.R.M. COLLEGE OF ENGINEERING

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An ISO 14001:2004 & 9001: 2015 Certified Institution

Cr./KSRMCE/CE/2021-22/ Date: 11/08/2021

Circular

The Department of Civil Engineering is offering a certification course on "Beam design formulae with shear force and bending moment diagrams". The course will start on 16-08-2021 and the course will run for two weeks. In this regard, interested students of KSRMCE are required to register for the Certification Course. The interested students can contact the course coordinator for registration.

The Course Coordinator
Sri. M C Venkata Subbaiah, Assistant Professor,
Dept. of Civil Engg.- KSRMCE.

HoD-CE

Cc to:

IQAC-KSRMCE

Registration form for "Certification course on Beam design formulae with shear force and bending moment diagrams"

Course Instructor : Dr. N. Amaranatha Reddy, Associate Professor, Dept. Civil Engg., KSRMCE

Course Coordinator : Sri. M. C. Venkata Subbaiah, Assistant Professor, Dept. Civil Engg., KSRMCE

Date : 16/08/2021
to 28/08/2021

reddysrinu@ksrmce.ac.in Switch account

Your email will be recorded when you submit this form

* Required

Student Roll No. *

Your answer

Student Name *

Your answer

Mail ID *

Your answer

Submit

Clear form

Never submit passwords through Google Forms.

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

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Department of Civil Engineering

Registration list of Certification course

on

Beam design formulae with shear force and bending moment diagrams

Sl. No.	Student Roll No.	Student Name	Mail ID
1	219Y5A0120	Gotlaveeti Sreenivasulu	219Y5A0120@ksrmce.ac.in
2	219Y5A0121	Gogula Avinash	219Y5A0121@ksrmce.ac.in
3	219Y5A0123	Jaripiti Vasu	219Y5A0123@ksrmce.ac.in
4	219Y5A0124	Kalingiri Rajesh	219Y5A0124@ksrmce.ac.in
5	219Y5A0125	Kallakinda Himasri	219Y5A0125@ksrmce.ac.in
6	219Y5A0126	Kamireddy Jaipal Reddy	219Y5A0126@ksrmce.ac.in
7	219Y5A0127	Kanthiri Hema	219Y5A0127@ksrmce.ac.in
8	219Y5A0128	Karamthod Sai Kumar Naik	219Y5A0128@ksrmce.ac.in
9	219Y5A0129	Kattameedi Bharath Reddy	219Y5A0129@ksrmce.ac.in
10	219Y5A0130	Kethavaram Gangadhar	219Y5A0130@ksrmce.ac.in
11	219Y5A0131	Koppu Sree Kavya	219Y5A0131@ksrmce.ac.in
12	219Y5A0132	Kore Sasi Rekha	219Y5A0132@ksrmce.ac.in
13	219Y5A0133	Kummari Dasthagiri	219Y5A0133@ksrmce.ac.in
14	219Y5A0134	Kunchapu Subhash	219Y5A0134@ksrmce.ac.in
15	219Y5A0135	Kuruba Lavanya	219Y5A0135@ksrmce.ac.in
16	219Y5A0136	Kuruva Bangaru Veeresh	219Y5A0136@ksrmce.ac.in
17	219Y5A0137	Lodi Naveen	219Y5A0137@ksrmce.ac.in
18	219Y5A0138	M Vishnu Vardhan	219Y5A0138@ksrmce.ac.in
19	219Y5A0139	Madhavaram Sreedhar	219Y5A0139@ksrmce.ac.in
20	219Y5A0140	Mala Maddileti	219Y5A0140@ksrmce.ac.in

21	219Y5A0142	Malishetty Guru Lakshmi	219Y5A0142@ksrmce.ac.in
22	219Y5A0143	Mallu Teja	219Y5A0143@ksrmce.ac.in
23	219Y5A0144	Manne Mallem Kondaiah	219Y5A0144@ksrmce.ac.in
24	219Y5A0145	Mekala Chennakesavulu	219Y5A0145@ksrmce.ac.in
25	219Y5A0146	Muthru Kiran Kumar Reddy	219Y5A0146@ksrmce.ac.in
26	219Y5A0147	Nallabothula Shiva Kishore	219Y5A0147@ksrmce.ac.in
27	219Y5A0148	Nannuru Shankar	219Y5A0148@ksrmce.ac.in
28	219Y5A0149	Nare Malleswari Devi	219Y5A0149@ksrmce.ac.in
29	219Y5A0154	Patte Jagan Mohan	219Y5A0154@ksrmce.ac.in
30	219Y5A0155	Pinjari Lalappa	219Y5A0155@ksrmce.ac.in
31	219Y5A0157	Ramireddy Pavan Kumar Reddy	219Y5A0157@ksrmce.ac.in
32	219Y5A0159	Ratala Chandra Sekhar	219Y5A0159@ksrmce.ac.in
33	219Y5A0162	Shaik Afzal Ahmmed	219Y5A0162@ksrmce.ac.in
34	219Y5A0163	Shaik Mahaboob Bee	219Y5A0163@ksrmce.ac.in
35	219Y5A0164	Shaik Mehanoor	219Y5A0164@ksrmce.ac.in
36	219Y5A0166	Shaik Nasar	219Y5A0166@ksrmce.ac.in
37	219Y5A0167	Shaik Thakkalla Yunus	219Y5A0167@ksrmce.ac.in

Coordinator

HoD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

Syllabus of Certification Course

Course Name: Beam design formulae with shear force and bending moment diagrams

Module I:

Simply Supported beam point load, uniformly distributed load and uniformly varying load

Module II:

Cantilever beam subjected to point load and uniformly distributed load

Module III:

Over hanging beam (one side and both sides) subjected to point load and uniformly distributed load

Text Books:

1. R K Rajput, Strength of Materials, S. Chand Publications, 2016
2. S. Ramamrutham & R. narayanan, Strength of Materials, Dhanpat Rai Publishing Company, 2020

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

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An ISO 14001:2004 & 9001: 2015 Certified Institution

Department of Civil Engineering

Certification course

on

Beam design formulae with shear force and bending moment diagrams

Date	Timing	Course Instructor	Topic to be covered
16/08/2021	1 PM to 6 PM	Dr. N. Amaranatha Reddy	Simply Supported beam point load
17/08/2021	1 PM to 6 PM	Dr. N. Amaranatha Reddy	uniformly distributed load
18/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	uniformly varying load
19/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	uniformly varying load
20/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	uniformly varying load
21/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	uniformly varying load
22/08/2021	9 AM to 6 PM	Dr. N. Amaranatha Reddy	Cantilever beam subjected to point load
23/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Cantilever beam subjected to point load
24/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Cantilever beam subjected to point load
25/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Cantilever beam subjected to point load
26/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Over hanging beam (one side and both sides) subjected to point load
27/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Over hanging beam (one side and both sides) subjected to point load
28/08/2021	4 PM to 6 PM	Dr. N. Amaranatha Reddy	Over hanging beam (one side and both sides) subjected to point load

Instructor:

Coordinator:

Department of Civil Engineering

Attendance sheet of Certification course on "Beam design formulae with shear force and bending moment diagrams"

Sl. No.	Student Roll No.	Student Name	16/08	17/08	18/08	19/08	20/08	21/08	22/08	23/08	24/08	25/08	26/08	27/08	28/08
1	219Y5A0120	Gotlaveeti Sreenivasulu													
2	219Y5A0121	Gogula Avinash													
3	219Y5A0123	Jaripiti Vasu													
4	219Y5A0124	Kalingiri Rajesh													
5	219Y5A0125	Kallakinda Himasri													
6	219Y5A0126	Kamireddy Jaipal Reddy													
7	219Y5A0127	Kanthiri Hema													
8	219Y5A0128	Karamthod Sai Kumar Naik													
9	219Y5A0129	Kattameedi Bharath Reddy													
10	219Y5A0130	Kethavaram Gangadhar													
11	219Y5A0131	Koppu Sree Kavya													
12	219Y5A0132	Kore Sasi Rekha													
13	219Y5A0133	Kummari Dasthagiri													
14	219Y5A0134	Kunchapu Subhash													
15	219Y5A0135	Kuruba Lavanya													

16	219Y5A0136	Kuruva Bangaru Veeresh	K.B.V	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV	KBV
17	219Y5A0137	Lodi Naveen	L.Naveen	L.Naveen	L. Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen	L.Naveen.
18	219Y5A0138	M Vishnu Vardhan	M.VV	MVV	MVV	MVV	MVV	MVV	MVV	MVV	A	MVV	MVV	MVV	MVV	
19	219Y5A0139	Madhavaram Sreedhar		A												
20	219Y5A0140	Mala Maddileti														
21	219Y5A0142	Malishetty Guru Lakshmi											A			
22	219Y5A0143	Mallu Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja	M.Teja
23	219Y5A0144	Manne Mallem Kondaiah				A										
24	219Y5A0145	Mekala Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu	M. Chennakesavulu
25	219Y5A0146	Muthru Kiran Kumar Reddy						A								
26	219Y5A0147	Nallabothula Shiva Kishore											A			
27	219Y5A0148	Nannuru Shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar	N.shankar
28	219Y5A0149	Nare Malleswari Devi														
29	219Y5A0154	Patte Jagan Mohan		A												
30	219Y5A0155	Pinjari Lalappa	P. lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	P.lalappa	A	P.lalappa	P.lalappa
31	219Y5A0157	Ramireddy Pavan Kumar Reddy														
32	219Y5A0159	Ratala Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar	Chandra Sekhar

33	219Y5A0162	Shaik Afzal Ahmmed															
34	219Y5A0163	Shaik Mahaboob Bee															
35	219Y5A0164	Shaik Mehanoor															
36	219Y5A0166	Shaik Nasar															
37	219Y5A0167	Shaik Thakkalla Yunus															

Coordinator

HoD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA - 516 003. (A.P.)

K.S.R.M. COLLEGE OF ENGINEERING

(Autonomous)

Kadapa, Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

DEPARTMENT OF CIVIL ENGINEERING

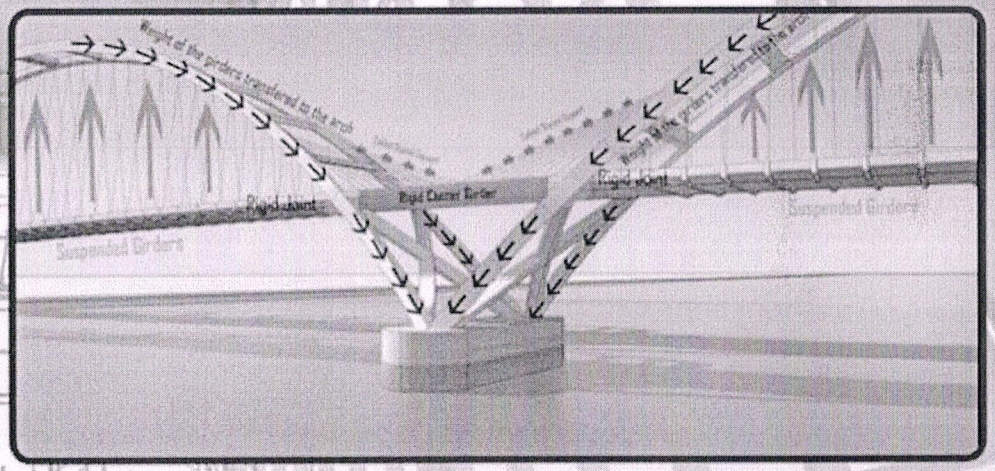
ESTD : 1980

KSNR
lives on..

CERTIFICATE COURSE ON BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING DIAGRAM

Date of event
16-08-2021 to 28-08-2021

Venue:
Civil Engineering Computer Lab



ksrmceofficial

Eligibility:
Civil Engineering UG Students

Course Instructor:
Dr. N. Amaranatha Reddy, Assoc. Prof., CED

Course Coordinator:
Sri. M. C. Venkata Subbaiah, Asst. Prof., CED

VAISA AD AGENCY

Dr. N. Amaranatha Reddy	Dr. V.S.S. Murthy	Prof. A. Mohan	Sri. K. Chandra Obul Reddy	Smt K. Rajeswari	Sri K. Madan Mohan Reddy	Sri K. Raja Mohan Reddy
HoD	Principal	Director	Management Member	Correspondent, Secretary, Treasurer	Vice-Chairman	Chairman

Report

of

Certification Course on Beam Design formulae with Shear Force and Bending Moment Diagrams

From 16/08/21 to 28/08/21

Target Group	**:**	**Students**
Details of Participants	**:**	**37 Students**
Co-coordinator(s)	**:**	**Sri. M C Venkata Subbaiah**
Organizing Department	**:**	**Civil Engineering**
Venue	**:**	**Computer Lab, Civil Engg.**

Description:

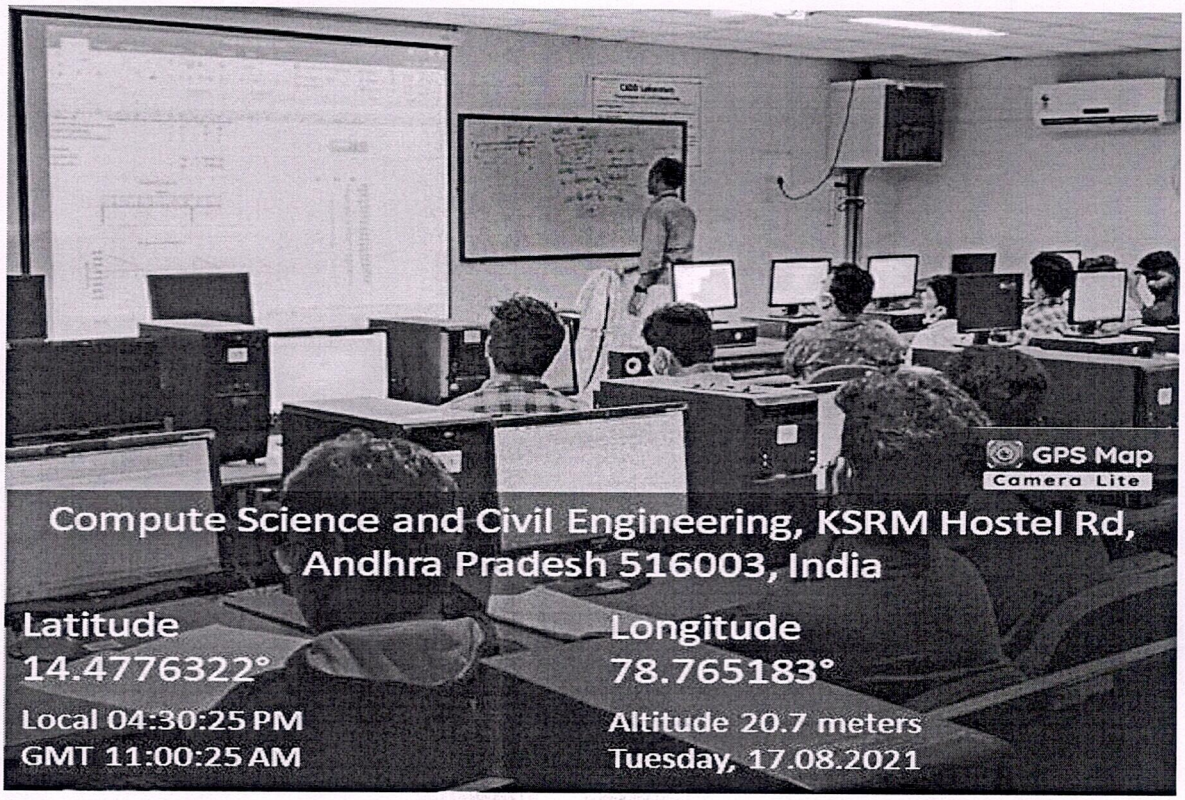
The Department of Civil Engineering conducted a certification course on "Beam Design formulae with Shear force and Bending moment diagrams" from 16th Aug. 2021 to 28th Aug. 2021. The course instructor is Dr. N. Amaranatha Reddy, Associate Professor, Department Civil Engineering and Coordinator is Sri M C Venkata Subbaiah, Assistant Professor, Department of Civil Engineering.

The main objective of this course is to introduce the fundamental concepts of shear force and bending moment and to determine the position and magnitude of maximum values of shear force and bending moment of beams under different loading conditions. The course is designed in such a way that the basic input parameter like loadings, span, position of loads and end condition of the beams are sufficient to draw the SFD and BMD. Even the loading diagram also linked dynamically fir the set of input parameters.

The course was designed by considering the students have basic knowledge in Microsoft Excel. The course covered all types of determinate beams viz. Simply supported beams, cantilevers beams and over hanging beams.

Photo:

The picture taken during the course is given below:



(Course Coordinator)

(HoD, Civil Engg.)

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA - 516 003. (A.P.)

K.S.R.M College of Engineering

(AUTONOMOUS)
KADAPA, ANDHRA PRADESH, INDIA-516003

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE OF COURSE COMPLETION

This certificate is presented to

K. Sree Kavya (Reg. No. 219Y5A0131), Student of KSRM College of Engineering (Autonomous) for successful completion of certification course on "**Beam design formulae with shear force and bending moment diagrams**" offered by Department of Civil Engineering, KSRMCE-Kadapa.

Course Duration:
From 16/08/21 to 28/08/21

Course Instructor:
Dr. N. Amaranatha Reddy ,
Associate Professor, CE, KSRMCE-Kadapa

Coordinator

Head of the Department

V. S. S. Murty

Principal

K.S.R.M College of Engineering

(AUTONOMOUS)
KADAPA, ANDHRA PRADESH, INDIA-516003

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE OF COURSE COMPLETION

This certificate is presented to

Jaripiti Vasu (Reg. No. 219Y5A0123), Student of KSRM College of Engineering (Autonomous) for successful completion of certification course on "**Beam design formulae with shear force and bending moment diagrams**" offered by Department of Civil Engineering, KSRMCE-Kadapa.

Course Duration:
From 16/08/21 to 28/08/21

Course Instructor:
Dr. N. Amaranatha Reddy ,
Associate Professor, CE, KSRMCE-Kadapa

Coordinator

Head of the Department

V. S. S. Murty
Principal

K.S.R.M College of Engineering

(AUTONOMOUS)
KADAPA, ANDHRA PRADESH, INDIA-516003

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE OF COURSE COMPLETION

This certificate is presented to

Kunchapu Subhash (Reg. No. 219Y5A0134), Student of KSRM College of Engineering (Autonomous) for successful completion of certification course on "**Beam design formulae with shear force and bending moment diagrams**" offered by Department of Civil Engineering, KSRMCE-Kadapa.

Course Duration:
From 16/08/21 to 28/08/21

Course Instructor:
Dr. N. Amaranatha Reddy ,
Associate Professor, CE, KSRMCE-Kadapa

Coordinator

Head of the Department

Principal

K.S.R.M College of Engineering

(AUTONOMOUS)
KADAPA, ANDHRA PRADESH, INDIA-516003

DEPARTMENT OF CIVIL ENGINEERING

CERTIFICATE OF COURSE COMPLETION

This certificate is presented to

Nannuru Shankar (Reg. No. 219Y5A0148), Student of KSRM College of Engineering (Autonomous) for successful completion of certification course on "**Beam design formulae with shear force and bending moment diagrams**" offered by Department of Civil Engineering, KSRMCE-Kadapa.

Course Duration:
From 16/08/21 to 28/08/21

Course Instructor:
Dr. N. Amaranatha Reddy ,
Associate Professor, CE, KSRMCE-Kadapa

Coordinator

Head of the Department

Principal

Feedback form for "Certification course on Beam design formulae with shear force and bending moment diagrams"

reddysrinu@ksrmce.ac.in Switch account

Your email will be recorded when you submit this form

* Required

Reg. No. *

Your answer

Name of The Student *

Your answer

Do you understand the application of Excel for BMD and SFD? *

- Option 1

Are the lecture hours sufficient to cover the topics? *

- Option 1

Rate the course instructor *

1-Low, 5-High

- 1 ○
- 2 ○
- 3 ○
- 4 ○
- 5 ○

Is this course useful for your Carrier? *

- ○ Yes
- ○ No

Rate the entire course? *

1-Low, 5-High

- 1 ○
- 2 ○
- 3 ○
- 4 ○
- 5 ○

Submit

Clear form

Department of Civil Engineering

Feedback of students on Certification Course on

Beam design formulae with shear force and bending moment diagrams

Sl. No.	Reg. No.	Name of The Student	Do you understand the application of Excel for BMD and SFD?	Are the lecture hours sufficient to cover the topics?	Rate the course instructor	Is this course useful for your Carrier?	Rate the entire course?
1	219Y5A0120	Gotlaveeti Sreenivasulu	Yes	Yes	4	Yes	5
2	219Y5A0121	Gogula Avinash	Yes	Yes	5	Yes	4
3	219Y5A0123	Jaripiti Vasu	Yes	Yes	5	Yes	5
4	219Y5A0124	Kalingiri Rajesh	Yes	Yes	5	Yes	5
5	219Y5A0125	Kallakinda Himasri	Yes	Yes	4	Yes	4
6	219Y5A0126	Kamireddy Jaipal Reddy	Yes	Yes	5	Yes	5
7	219Y5A0127	Kanthiri Hema	Yes	Yes	5	Yes	4
8	219Y5A0128	Karamthod Sai Kumar Naik	Yes	Yes	5	May be	5
9	219Y5A0129	Kattameedi Bharath Reddy	Yes	Yes	5	Yes	5
10	219Y5A0130	Kethavaram Gangadhar	Yes	Yes	4	Yes	5
11	219Y5A0131	Koppu Sree Kavya	Yes	Yes	4	Yes	5
12	219Y5A0132	Kore Sasi Rekha	Yes	Yes	5	Yes	5
13	219Y5A0133	Kummari Dasthagiri	Yes	Yes	5	Yes	4
14	219Y5A0134	Kunchapu Subhash	Yes	Yes	5	Yes	5
15	219Y5A0135	Kuruba Lavanya	Yes	Yes	5	Yes	5
16	219Y5A0136	Kuruva Bangaru Veeresh	Yes	Yes	5	Yes	5
17	219Y5A0137	Lodi Naveen	Yes	Yes	4	Yes	4
18	219Y5A0138	M Vishnu Vardhan	Yes	Yes	5	Yes	5
19	219Y5A0139	Madhavaram Sreedhar	Yes	Yes	5	Yes	5
20	219Y5A0140	Mala Maddileti	Yes	Yes	5	Yes	5
21	219Y5A0142	Malishetty Guru Lakshmi	Yes	Yes	5	May be	5
22	219Y5A0143	Mallu Teja	Yes	Yes	4	Yes	5
23	219Y5A0144	Manne Mallem Kondaiah	Yes	Yes	5	Yes	5
24	219Y5A0145	Mekala Chennakesavulu	Yes	Yes	5	Yes	5
25	219Y5A0146	Muthru Kiran Kumar Reddy	Yes	Yes	5	Yes	5

26	219Y5A0147	Nallabothula Shiva Kishore	Yes	Yes	5	Yes	5
27	219Y5A0148	Nannuru Shankar	Yes	Yes	4	Yes	4
28	219Y5A0149	Nare Malleswari Devi	Yes	Yes	4	Yes	4
29	219Y5A0154	Patte Jagan Mohan	Yes	Yes	5	Yes	5
30	219Y5A0155	Pinjari Lalappa	Yes	Yes	5	Yes	5
31	219Y5A0157	Ramireddy Pavan Kumar Reddy	Yes	Yes	5	Yes	5
32	219Y5A0159	Ratala Chandra Sekhar	Yes	Yes	5	Yes	5
33	219Y5A0162	Shaik Afzal Ahmmed	Yes	Yes	5	Yes	5
34	219Y5A0163	Shaik Mahaboob Bee	Yes	Yes	5	Yes	5
35	219Y5A0164	Shaik Mehanoor	Yes	Yes	5	Yes	5
36	219Y5A0166	Shaik Nasar	Yes	Yes	3	Yes	4
37	219Y5A0167	Shaik Thakkalla Yunus	Yes	Yes	5	Yes	4

Coordinator

HoD-Civil Engg.

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA 516 003. (A.P.)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
MARKS AWARD LIST

S.No	Roll Number	Name of the Student	Marks Obtained
1	219Y5A0120	Gotlaveeti Sreenivasulu	10
2	219Y5A0121	Gogula Avinash	11
3	219Y5A0123	Jaripiti Vasu	12
4	219Y5A0124	Kalingiri Rajesh	10
5	219Y5A0125	Kallakinda Himasri	14
6	219Y5A0126	Kamireddy Jaipal Reddy	10
7	219Y5A0127	Kanthiri Hema	5
8	219Y5A0128	Karamthod Sai Kumar Naik	12
9	219Y5A0129	Kattameedi Bharath Reddy	17
10	219Y5A0130	Kethavaram Gangadhar	17
11	219Y5A0131	Koppu Sree Kavya	13
12	219Y5A0132	Kore Sasi Rekha	14
13	219Y5A0133	Kummari Dasthagiri	11
14	219Y5A0134	Kunchapu Subhash	10
15	219Y5A0135	Kuruba Lavanya	16
16	219Y5A0136	Kuruva Bangaru Veeresh	11
17	219Y5A0137	Lodi Naveen	13
18	219Y5A0138	M Vishnu Vardhan	13
19	219Y5A0139	Madhavaram Sreedhar	16
20	219Y5A0140	Mala Maddileti	13
21	219Y5A0142	Malishetty Guru Lakshmi	16
22	219Y5A0143	Mallu Teja	13
23	219Y5A0144	Manne Mallem Kondaiah	17
24	219Y5A0145	Mekala Chennakesavulu	14
25	219Y5A0146	Muthru Kiran Kumar Reddy	13

26	219Y5A0147	Nallabothula Shiva Kishore	17
27	219Y5A0148	Nannuru Shankar	10
28	219Y5A0149	Nare Malleswari Devi	14
29	219Y5A0154	Patte Jagan Mohan	13
30	219Y5A0155	Pinjari Lalappa	11
31	219Y5A0157	Ramireddy Pavan Kumar Reddy	13
32	219Y5A0159	Ratala Chandra Sekhar	12
33	219Y5A0162	Shaik Afzal Ahmmed	16
34	219Y5A0163	Shaik Mahaboob Bee	15
35	219Y5A0164	Shaik Mehanoor	11
36	219Y5A0166	Shaik Nasar	16
37	219Y5A0167	Shaik Thakkalla Yunus	7

Coordinator

HoD

Head
Department of Civil Engineering
K.S.R.M. College of Engineering
(Autonomous)
KADAPA - 516 003. (A.P.)

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
ASSESSMENT TEST

Name of the Student: G. Sreenivasulu **Reg. Number:** 21945A0120

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is the primary purpose of designing beams in structural engineering?				[A] ✓
	A) To distribute loads evenly	B) To increase beam length	C) To reduce material costs	D) To create artistic structures	
2	In beam design, what are the two main types of loads that beams must support?				[A] X
	A) Compression and tension	B) Bending and shear	C) Torque and torsion	D) Torsion and compression	
3	Which formula is commonly used to calculate the maximum bending moment in a simply supported beam subjected to a point load at its center?				[B] ✓
	A) M = Wl/2	B) M = Wl/4	C) M = Wl	D) M = 2Wl	
4	What is the Shear Force at the support of a simply supported beam subjected to a uniform load?				[C] X
	A) Zero	B) Half the total load	C) Equal to the total load	D) Double the total load	
5	Which diagram represents the variation of shear force along the length of a beam?				[A] ✓
	A) Shear Force Diagram (SFD)	B) Bending Moment Diagram (BMD)	C) Axial Force Diagram (AFD)	D) Torsion Diagram (TD)	
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the maximum bending moment typically located?				[A] ✓
	A) At the fixed end	B) At the midpoint	C) At the free end	D) Uniformly distributed	
7	Which of the following statements is true regarding the sign conventions for shear force and bending moment?				[C] X
	A) Shear force is positive upwards, and bending moment is counterclockwise.	B) Shear force is positive downwards, and bending moment is clockwise.	C) Shear force is positive downwards, and bending moment is counterclockwise.	D) Shear force is positive upwards, and bending moment is clockwise.	
8	What is the relationship between the area under the Shear Force Diagram (SFD) and the applied loads on a beam?				[C] X
	A) The area equals the applied load.	B) The area equals twice the applied load.	C) The area equals the moment arm.	D) The area equals zero.	
9	Which type of beam is subjected to both a bending moment and a shear force but no				[A] X

	axial load?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above	
10	Which formula is used to calculate the maximum bending stress in a beam?				[C]
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply supported beam with a uniformly distributed load, where is the maximum shear force typically located?				[A]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
12	What is the shape of the Bending Moment Diagram (BMD) for a cantilever beam with a point load at its free end?				[B]
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13	Which property of a beam's cross-section is used to calculate the moment of inertia (I) in the bending stress formula?				[C]
	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	
14	The bending moment at any point along a beam is equal to the _____ of the shear force curve at that point.				[B]
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of shear force?				[D]
	A) kN	B) N/m	C) kNm	D) N	
16	Which type of beam is supported at more than two points and has multiple spans?				[C]
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) Overhanging beam	
17	In a simply supported beam with a uniformly distributed load, where is the maximum bending moment typically located?				[A]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the _____ at that section.				[A]
	A) Maximum shear force	B) Maximum bending moment	C) Slope of the beam	D) Area to the right of the section	
19	Which of the following factors does NOT affect the bending moment in a beam?				[A]
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross-section	
20	When calculating the maximum bending stress in a beam, what is the significance of the neutral axis?				[A]
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	C) It is the point where bending stress is zero.	D) It is the point where shear force is maximum.	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
ASSESSMENT TEST

Name of the Student: K. Rajesh **Reg. Number:** 21945A0124

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is the primary purpose of designing beams in structural engineering?				[A] ✓
	A) To distribute loads evenly	B) To increase beam length	C) To reduce material costs	D) To create artistic structures	
2	In beam design, what are the two main types of loads that beams must support?				[B] ✓
	A) Compression and tension	B) Bending and shear	C) Torque and torsion	D) Torsion and compression	
3	Which formula is commonly used to calculate the maximum bending moment in a simply supported beam subjected to a point load at its center?				[B] ✓
	A) M = Wl/2	B) M = Wl/4	C) M = Wl	D) M = 2Wl	
4	What is the Shear Force at the support of a simply supported beam subjected to a uniform load?				[B] ✓
	A) Zero	B) Half the total load	C) Equal to the total load	D) Double the total load	
5	Which diagram represents the variation of shear force along the length of a beam?				[C] ✓
	A) Shear Force Diagram (SFD)	B) Bending Moment Diagram (BMD)	C) Axial Force Diagram (AFD)	D) Torsion Diagram (TD)	
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the maximum bending moment typically located?				[D] ✓
	A) At the fixed end	B) At the midpoint	C) At the free end	D) Uniformly distributed	
7	Which of the following statements is true regarding the sign conventions for shear force and bending moment?				[C] ✓
	A) Shear force is positive upwards, and bending moment is counterclockwise.	B) Shear force is positive downwards, and bending moment is clockwise.	C) Shear force is positive downwards, and bending moment is counterclockwise.	D) Shear force is positive upwards, and bending moment is clockwise.	
8	What is the relationship between the area under the Shear Force Diagram (SFD) and the applied loads on a beam?				[A] ✓
	A) The area equals the applied load.	B) The area equals twice the applied load.	C) The area equals the moment arm.	D) The area equals zero.	
9	Which type of beam is subjected to both a bending moment and a shear force but no				[B] ✓

	axial load?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above	
10	Which formula is used to calculate the maximum bending stress in a beam?				[B]
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply supported beam with a uniformly distributed load, where is the maximum shear force typically located?				[B]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
12	What is the shape of the Bending Moment Diagram (BMD) for a cantilever beam with a point load at its free end?				[B]
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13	Which property of a beam's cross-section is used to calculate the moment of inertia (I) in the bending stress formula?				[C]
	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	
14	The bending moment at any point along a beam is equal to the _____ of the shear force curve at that point.				[B]
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of shear force?				[D]
	A) kN	B) N/m	C) kNm	D) N	
16	Which type of beam is supported at more than two points and has multiple spans?				[A]
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) Overhanging beam	
17	In a simply supported beam with a uniformly distributed load, where is the maximum bending moment typically located?				[C]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the _____ at that section.				[D]
	A) Maximum shear force	B) Maximum bending moment	C) Slope of the beam	D) Area to the right of the section	
19	Which of the following factors does NOT affect the bending moment in a beam?				[B]
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross-section	
20	When calculating the maximum bending stress in a beam, what is the significance of the neutral axis?				[B]
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	C) It is the point where bending stress is zero.	D) It is the point where shear force is maximum.	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
ASSESSMENT TEST

Name of the Student: K. Himasri **Reg. Number:** 21945A0125

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is the primary purpose of designing beams in structural engineering?				[A] ✓
	A) To distribute loads evenly	B) To increase beam length	C) To reduce material costs	D) To create artistic structures	
2	In beam design, what are the two main types of loads that beams must support?				[B] ✓
	A) Compression and tension	B) Bending and shear	C) Torque and torsion	D) Torsion and compression	
3	Which formula is commonly used to calculate the maximum bending moment in a simply supported beam subjected to a point load at its center?				[B] ✓
	A) M = Wl/2	B) M = Wl/4	C) M = Wl	D) M = 2Wl	
4	What is the Shear Force at the support of a simply supported beam subjected to a uniform load?				[B] ✓
	A) Zero	B) Half the total load	C) Equal to the total load	D) Double the total load	
5	Which diagram represents the variation of shear force along the length of a beam?				[C] ✗
	A) Shear Force Diagram (SFD)	B) Bending Moment Diagram (BMD)	C) Axial Force Diagram (AFD)	D) Torsion Diagram (TD)	
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the maximum bending moment typically located?				[A] ✓
	A) At the fixed end	B) At the midpoint	C) At the free end	D) Uniformly distributed	
7	Which of the following statements is true regarding the sign conventions for shear force and bending moment?				[D] ✗
	A) Shear force is positive upwards, and bending moment is counterclockwise.	B) Shear force is positive downwards, and bending moment is clockwise.	C) Shear force is positive downwards, and bending moment is counterclockwise.	D) Shear force is positive upwards, and bending moment is clockwise.	
8	What is the relationship between the area under the Shear Force Diagram (SFD) and the applied loads on a beam?				[A] ✓
	A) The area equals the applied load.	B) The area equals twice the applied load.	C) The area equals the moment arm.	D) The area equals zero.	
9	Which type of beam is subjected to both a bending moment and a shear force but no				[C] ✗

	axial load?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above	
10	Which formula is used to calculate the maximum bending stress in a beam?				[A] ✓
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply supported beam with a uniformly distributed load, where is the maximum shear force typically located?				[B] ✓
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
12	What is the shape of the Bending Moment Diagram (BMD) for a cantilever beam with a point load at its free end?				[B] ✓
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13	Which property of a beam's cross-section is used to calculate the moment of inertia (I) in the bending stress formula?				[A] ✗
	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	
14	The bending moment at any point along a beam is equal to the _____ of the shear force curve at that point.				[B] ✓
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of shear force?				[D] ✓
	A) kN	B) N/m	C) kNm	D) N	
16	Which type of beam is supported at more than two points and has multiple spans?				[B] ✗
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) Overhanging beam	
17	In a simply supported beam with a uniformly distributed load, where is the maximum bending moment typically located?				[A] ✓
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the _____ at that section.				[C] ✗
	A) Maximum shear force	B) Maximum bending moment	C) Slope of the beam	D) Area to the right of the section	
19	Which of the following factors does NOT affect the bending moment in a beam?				[B] ✓
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross-section	
20	When calculating the maximum bending stress in a beam, what is the significance of the neutral axis?				[C] ✓
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	C) It is the point where bending stress is zero.	D) It is the point where shear force is maximum.	

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
ASSESSMENT TEST

Name of the Student: J. Vasu **Reg. Number:** 21995A0123

Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is the primary purpose of designing beams in structural engineering?				[A]
	A) To distribute loads evenly	B) To increase beam length	C) To reduce material costs	D) To create artistic structures	
2	In beam design, what are the two main types of loads that beams must support?				[A] ✗
	A) Compression and tension	B) Bending and shear	C) Torque and torsion	D) Torsion and compression	
3	Which formula is commonly used to calculate the maximum bending moment in a simply supported beam subjected to a point load at its center?				[B]
	A) M = Wl/2	B) M = Wl/4	C) M = Wl	D) M = 2Wl	
4	What is the Shear Force at the support of a simply supported beam subjected to a uniform load?				[A] ✗
	A) Zero	B) Half the total load	C) Equal to the total load	D) Double the total load	
5	Which diagram represents the variation of shear force along the length of a beam?				[C] ✗
	A) Shear Force Diagram (SFD)	B) Bending Moment Diagram (BMD)	C) Axial Force Diagram (AFD)	D) Torsion Diagram (TD)	
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the maximum bending moment typically located?				[B] ✗
	A) At the fixed end	B) At the midpoint	C) At the free end	D) Uniformly distributed	
7	Which of the following statements is true regarding the sign conventions for shear force and bending moment?				[A]
	A) Shear force is positive upwards, and bending moment is counterclockwise.	B) Shear force is positive downwards, and bending moment is clockwise.	C) Shear force is positive downwards, and bending moment is counterclockwise.	D) Shear force is positive upwards, and bending moment is clockwise.	
8	What is the relationship between the area under the Shear Force Diagram (SFD) and the applied loads on a beam?				[A]
	A) The area equals the applied load.	B) The area equals twice the applied load.	C) The area equals the moment arm.	D) The area equals zero.	
9	Which type of beam is subjected to both a bending moment and a shear force but no				[D]

	axial load?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above	
10	Which formula is used to calculate the maximum bending stress in a beam?				[A]
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply supported beam with a uniformly distributed load, where is the maximum shear force typically located?				
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	[D]
12	What is the shape of the Bending Moment Diagram (BMD) for a cantilever beam with a point load at its free end?				[C] X
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13	Which property of a beam's cross-section is used to calculate the moment of inertia (I) in the bending stress formula?				
	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	[B] X
14	The bending moment at any point along a beam is equal to the _____ of the shear force curve at that point.				[B]
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of shear force?				[D]
	A) kN	B) N/m	C) kNm	D) N	
16	Which type of beam is supported at more than two points and has multiple spans?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) Overhanging beam	[C]
17	In a simply supported beam with a uniformly distributed load, where is the maximum bending moment typically located?				
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	[A]
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the _____ at that section.				
	A) Maximum shear force	B) Maximum bending moment	C) Slope of the beam	D) Area to the right of the section	[B]
19	Which of the following factors does NOT affect the bending moment in a beam?				
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross-section	[A] X
20	When calculating the maximum bending stress in a beam, what is the significance of the neutral axis?				
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	C) It is the point where bending stress is zero.	D) It is the point where shear force is maximum.	[B] X

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K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA-516003
DEPARTMENT OF CIVIL ENGINEERING
CERTIFICATE COURSE ON
BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS
ASSESSMENT TEST

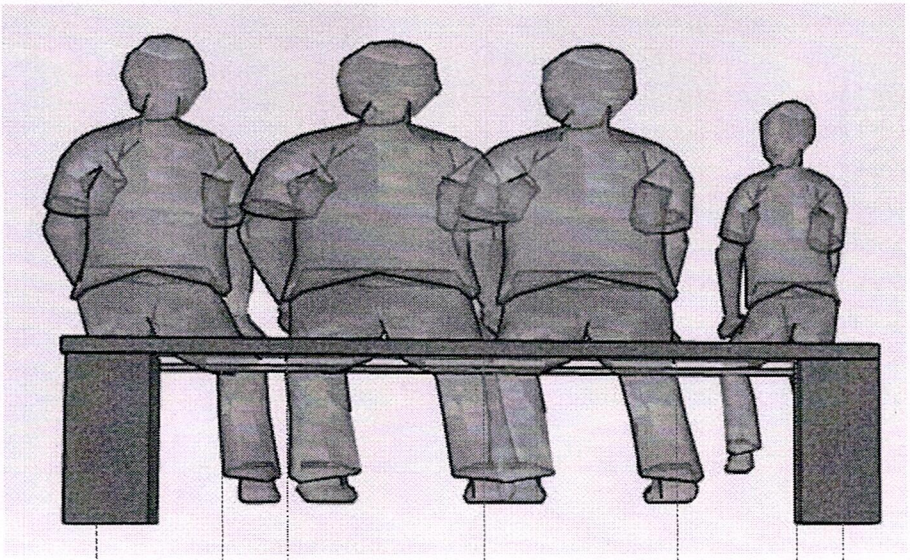
Name of the Student: G. Avinash **Reg. Number:** 219Y5A0121

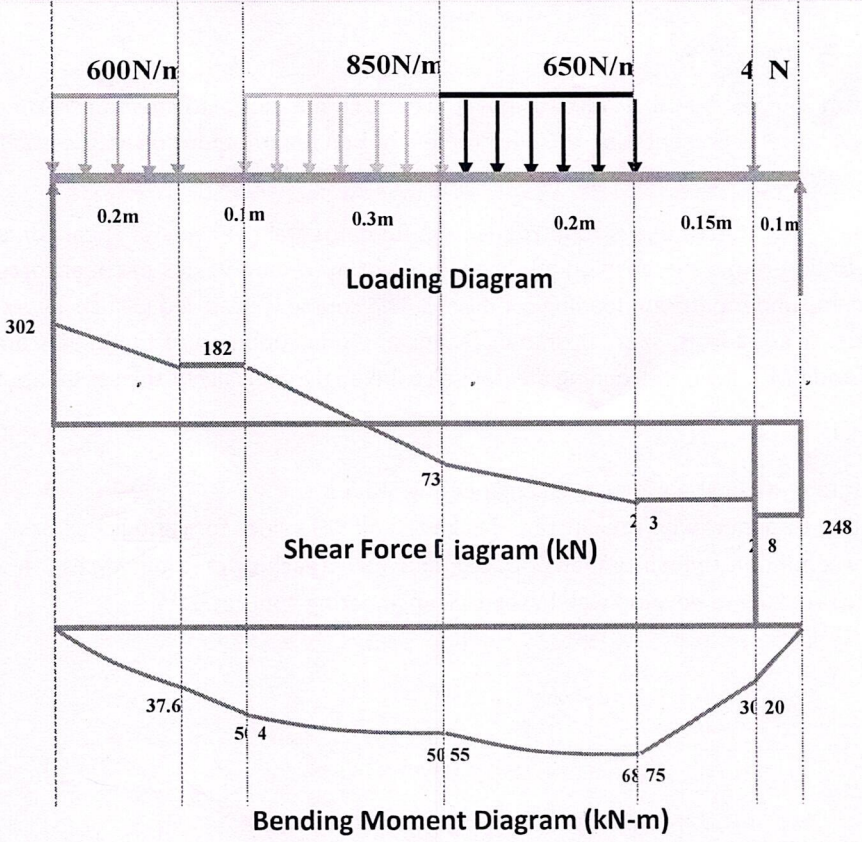
Time: 20 Min **(Objective Questions)** **Max. Marks: 20**

Note: Answer the following Questions and each question carries **one** mark.

1	What is the primary purpose of designing beams in structural engineering?				[B] X
	A) To distribute loads evenly	B) To increase beam length	C) To reduce material costs	D) To create artistic structures	
2	In beam design, what are the two main types of loads that beams must support?				[B]
	A) Compression and tension	B) Bending and shear	C) Torque and torsion	D) Torsion and compression	
3	Which formula is commonly used to calculate the maximum bending moment in a simply supported beam subjected to a point load at its center?				[A] X
	A) M = Wl/2	B) M = Wl/4	C) M = Wl	D) M = 2Wl	
4	What is the Shear Force at the support of a simply supported beam subjected to a uniform load?				[B]
	A) Zero	B) Half the total load	C) Equal to the total load	D) Double the total load	
5	Which diagram represents the variation of shear force along the length of a beam?				[C] X
	A) Shear Force Diagram (SFD)	B) Bending Moment Diagram (BMD)	C) Axial Force Diagram (AFD)	D) Torsion Diagram (TD)	
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the maximum bending moment typically located?				[D] X
	A) At the fixed end	B) At the midpoint	C) At the free end	D) Uniformly distributed	
7	Which of the following statements is true regarding the sign conventions for shear force and bending moment?				[B] X
	A) Shear force is positive upwards, and bending moment is counterclockwise.	B) Shear force is positive downwards, and bending moment is clockwise.	C) Shear force is positive downwards, and bending moment is counterclockwise.	D) Shear force is positive upwards, and bending moment is clockwise.	
8	What is the relationship between the area under the Shear Force Diagram (SFD) and the applied loads on a beam?				[A]
	A) The area equals the applied load.	B) The area equals twice the applied load.	C) The area equals the moment arm.	D) The area equals zero.	
9	Which type of beam is subjected to both a bending moment and a shear force but no				[D]

	axial load?				
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above	
10	Which formula is used to calculate the maximum bending stress in a beam?				[A]
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply supported beam with a uniformly distributed load, where is the maximum shear force typically located?				[B]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
12	What is the shape of the Bending Moment Diagram (BMD) for a cantilever beam with a point load at its free end?				[B]
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13	Which property of a beam's cross-section is used to calculate the moment of inertia (I) in the bending stress formula?				[C]
	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	
14	The bending moment at any point along a beam is equal to the _____ of the shear force curve at that point.				[B]
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of shear force?				[D]
	A) kN	B) N/m	C) kNm	D) N	
16	Which type of beam is supported at more than two points and has multiple spans?				[B] X
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) Overhanging beam	
17	In a simply supported beam with a uniformly distributed load, where is the maximum bending moment typically located?				[A]
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the _____ at that section.				[A] X
	A) Maximum shear force	B) Maximum bending moment	C) Slope of the beam	D) Area to the right of the section	
19	Which of the following factors does NOT affect the bending moment in a beam?				[A] X
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross-section	
20	When calculating the maximum bending stress in a beam, what is the significance of the neutral axis?				[A] X
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	C) It is the point where bending stress is zero.	D) It is the point where shear force is maximum.	




600N/m
850N/m
650N/m
4 N
0.2m
0.1m
0.3m
0.2m
0.15m
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Loading Diagram
302
182
73
2 3
248
2 8
Shear Force D iagram (kN)
37.6
5 4
50 55
68 75
3 20
Bending Moment Diagram (kN-m)

What you will learn:

- ⇒ Basic terminology used in shear force and bending moment
- ⇒ Concept of Shear force and Bending moment
- ⇒ Different kinds of supports
- ⇒ Different kinds of loads acting on beams
- ⇒ Different kinds of beams
- ⇒ Draw Shear Force and Bending Moment Diagram of simply supported beam
- ⇒ Draw Shear Force and Bending Moment Diagram of Cantilever beam
- ⇒ Draw Shear Force and Bending Moment Diagram of Propped Cantilever beam
- ⇒ Draw Shear Force and Bending Moment Diagram of Overhanging beam
- ⇒ Draw Shear Force and Bending Moment Diagram of Fixed beam
- ⇒ Draw Shear Force and Bending Moment Diagram of Continuous beam

Prerequisite of the Course:

- ⇒ No much kind of prior knowledge is required
- ⇒ Your interest and timely attending session will the utmost requirement

Description about the course:

By the end of this course, you will be able to know the basic commands of Microsoft Excel and its operation to executive graphical representation of shear force and bending moment diagrams of different beams under subjected loading conditions.

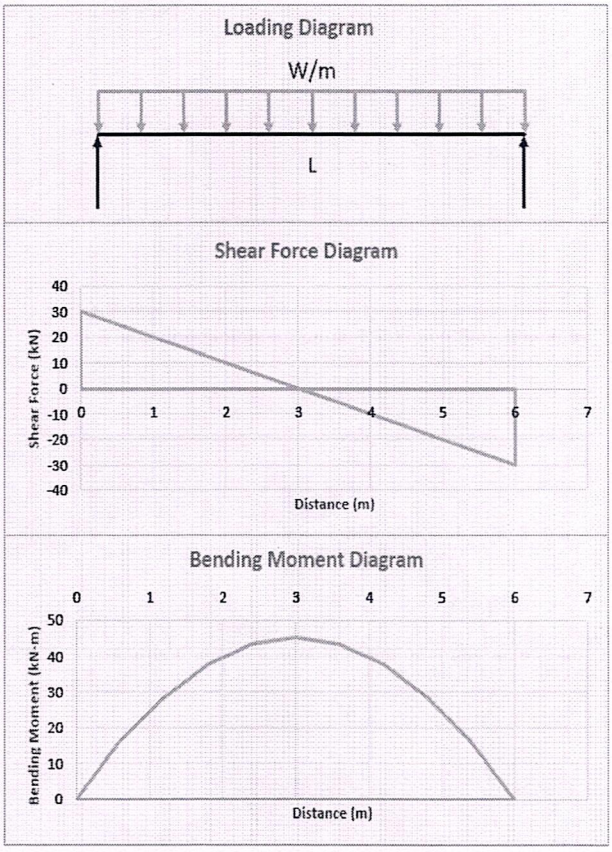
The main objective of this course is to introduce the fundamental concepts of shear force and bending moment and to determine the position and magnitude of maximum values of shear force and bending moment of beams under different loading conditions. The course is designed in such a way that the basic input parameter like loadings, span, position of loads and end condition of the beams are sufficient to draw the SFD and BMD. Even the loading diagram also linked dynamically fir the set of input parameters.

Target audiences:

- ⇒ Under graduate Civil & Mechanical Engineering Students
- ⇒ Structural Designers who seek instant design SF and BM values for various beams at field
- ⇒ Faculty community who intended to adopt innovative teaching methodologies
- ⇒ Students seeking to develop web based civil engineering applications

Course Content:

Problem-1 Simply Supported Beam – Uniformly Distributed Load



Mathematical expressions

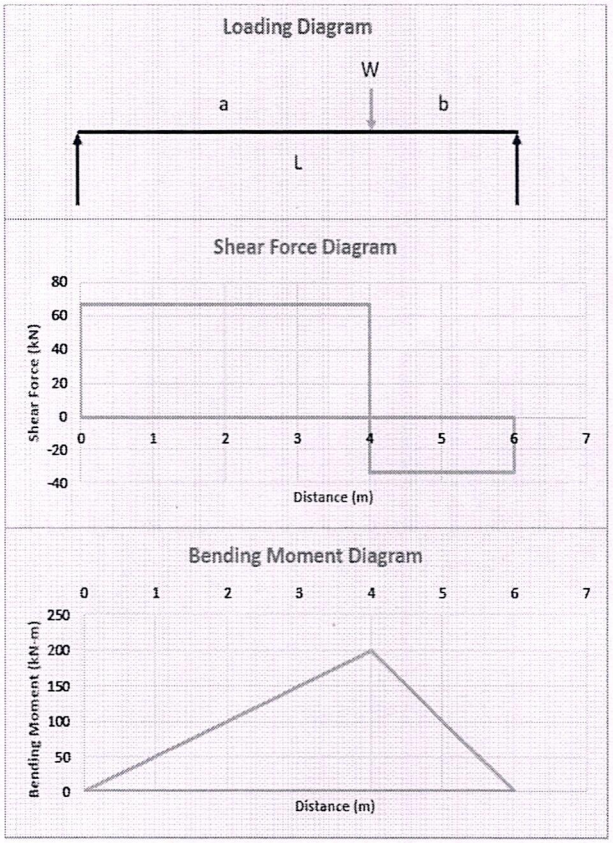
$$R = V = \frac{wL}{2}$$

$$V_x = w\left(\frac{L}{2} - x\right)$$

$$M_{max}\,(@Center) = \frac{wL^2}{8}$$

$$M_x = \frac{wx}{2}(L - x)$$

Problem-2 Simply Supported Beam – Concentrated load at Any Point



Mathematical expressions

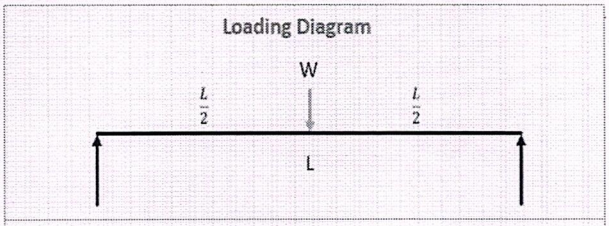
$$R_1 = V_1(\text{max when a} < \text{b}) = \frac{Pb}{L}$$

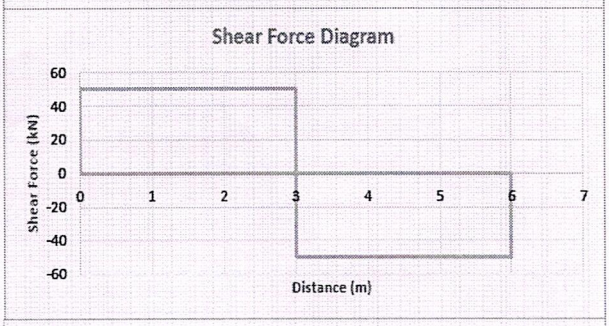
$$R_2 = V_2(\text{max when a} > \text{b}) = \frac{Pa}{L}$$

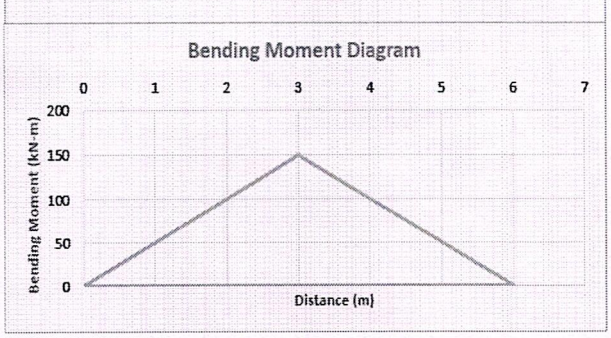
$$M_{max}\,(\text{at point of load}) = \frac{Pab}{L}$$

$$M_x\,(\text{when x<b}) = \frac{Pbx}{L}$$

Problem-3 Simply Supported Beam – Center Point Load







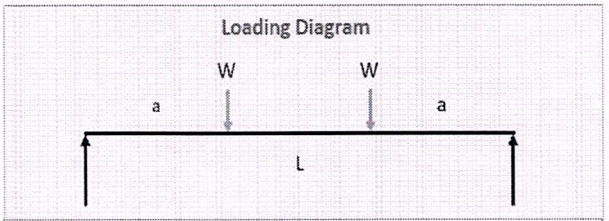
Mathematical expressions

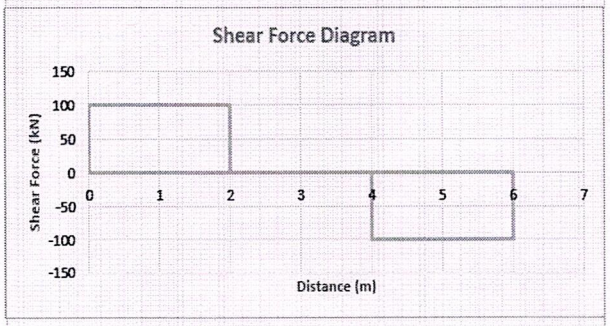
$$R = V = \frac{W}{2}$$

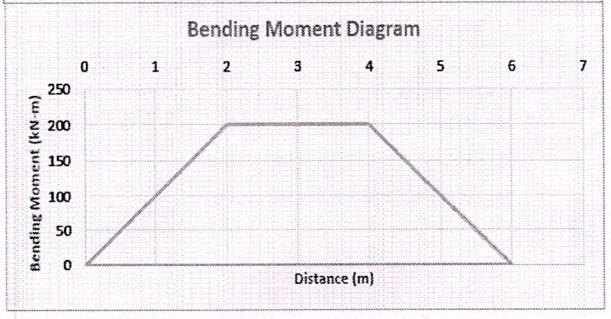
$$M_{max}\,(@\,\text{Point of load}) = \frac{wL}{4}$$

$$M_x\left(\text{when } x < \frac{L}{2}\right) = \frac{wx}{2}(L - x)$$

Problem-4 Simply Supported Beam – Two Equal Concentrated Loads Symmetrically placed







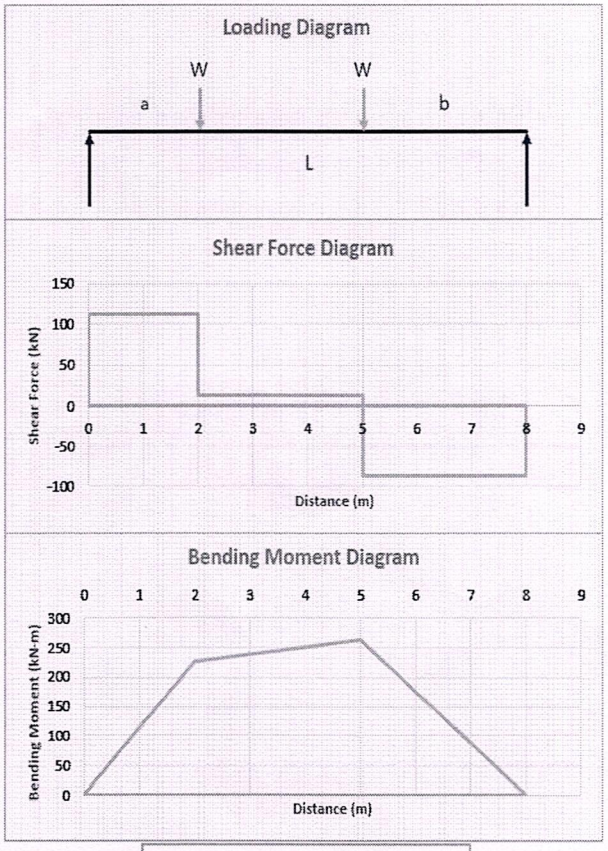
Mathematical expressions

$$R = V = W$$

$$M_{max}\,(\text{between loads}) = Wa$$

$$M_x\,(\text{when } x < a) = Wx$$

Problem-5 Simply Supported Beam – Two Equal Concentrated Loads Unsymmetrically placed



Mathematical expressions

$$R_1 = V_1(\max \text{ when } a < b) = \frac{W}{L}(L - a + b)$$

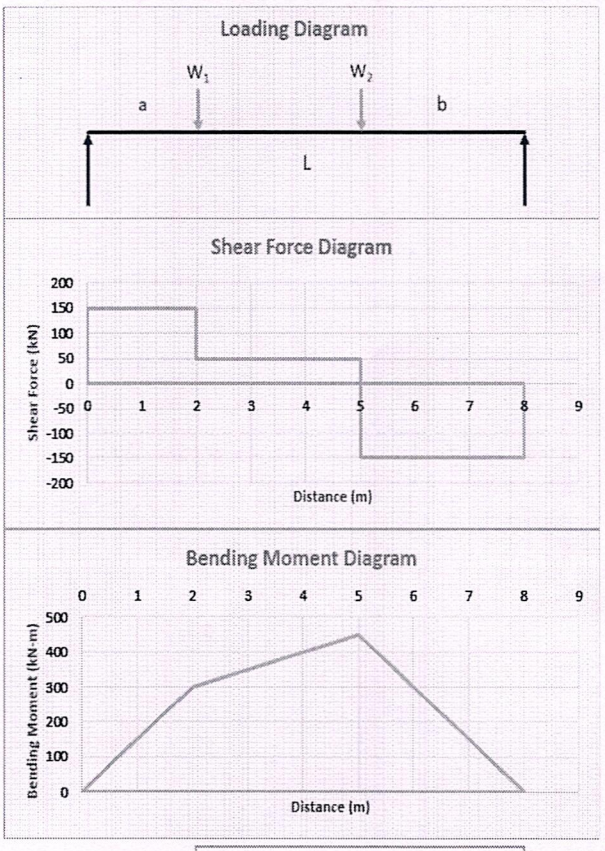
$$R_2 = V_2(\max \text{ when } a > b) = \frac{W}{L}(L - b + a)$$

$$V_x\left[\text{When } x > a \;\&\; < (L\text{-}b)\right] = \frac{W}{L}(b - a)$$

$$M_x\left[\text{when } x < a\right] = R_1 x$$

$$M_x\left[\text{when } x > a \;\&\; < (L\text{-}b)\right] = R_1 x - W(x - a)$$

Problem-6 Simply Supported Beam – Two Unequal Concentrated Loads Symmetrically placed



Mathematical expressions

$$R_1 = V_1 = \frac{W_1(L - a) + W_2 b}{L}$$

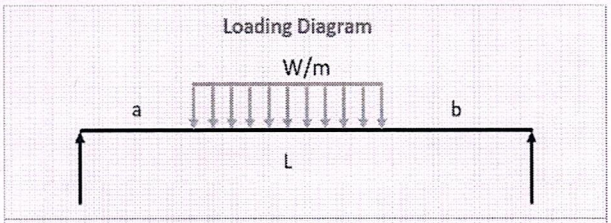
$$R_2 = V_2 = \frac{W_1 a + W_2(L - b)}{L}$$

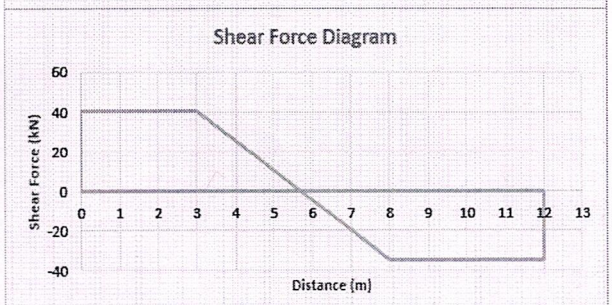
$$V_x\left[\text{When } x > a \;\&\; < (L\text{-}b)\right] = R_1 - W_1$$

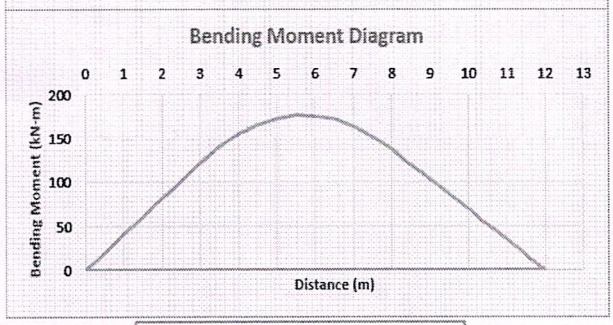
$$M_x\left[\text{when } x < a\right] = R_1 x$$

$$M_x\left[\text{when } x > a \;\&\; < (L\text{-}b)\right] = R_1 x - W_1(x - a)$$

Problem-7 Simply Supported Beam – Uniform Load Partially Distributed







Mathematical expressions

$$R_1 = V_1(\max \ when \ a < b) = \frac{w(L-a-b)}{2L}\left[2b + (L-a-b)\right]$$

$$R_2 = V_2(\max \ when \ a > b) = \frac{w(L-a-b)}{2L}\left[2a + (L-a-b)\right]$$

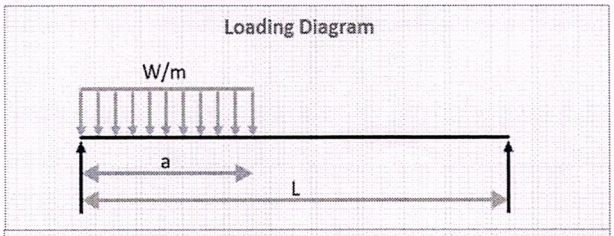
$$V_x\left[When\ x > a\ \&\ <\ (L-b)\right] = R_1 - w(x-a)$$

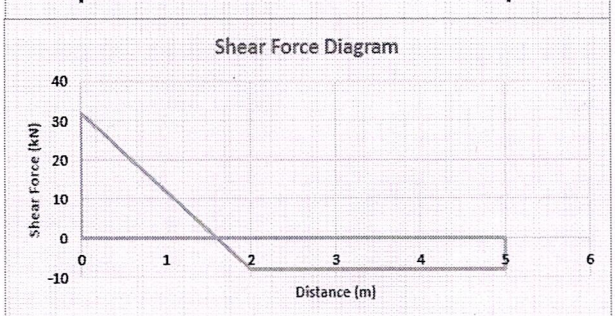
$$M_x\left[when\ x < a\right] = R_1 x$$

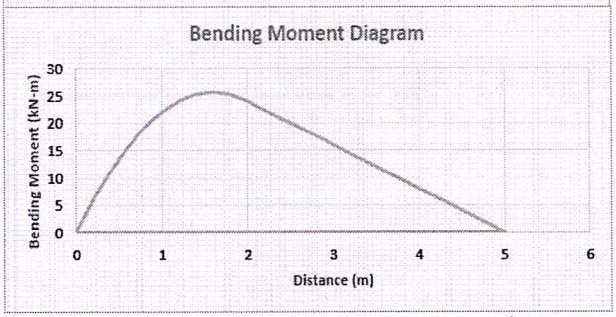
$$M_x\left[when\ x >\ (L-b)\right] = R_2(L-x)$$

$$M_x\left[when\ x\ >\ a\ \&\ <\ (L-b)\right] = R_1 x - \frac{w}{2}(x-a)^2$$

Problem-8 Simply Supported Beam – Uniform Load Partially Distributed at one end







Mathematical expressions

$$R_1 = V_1 = \frac{wa}{2L}\left[2L - a\right]$$

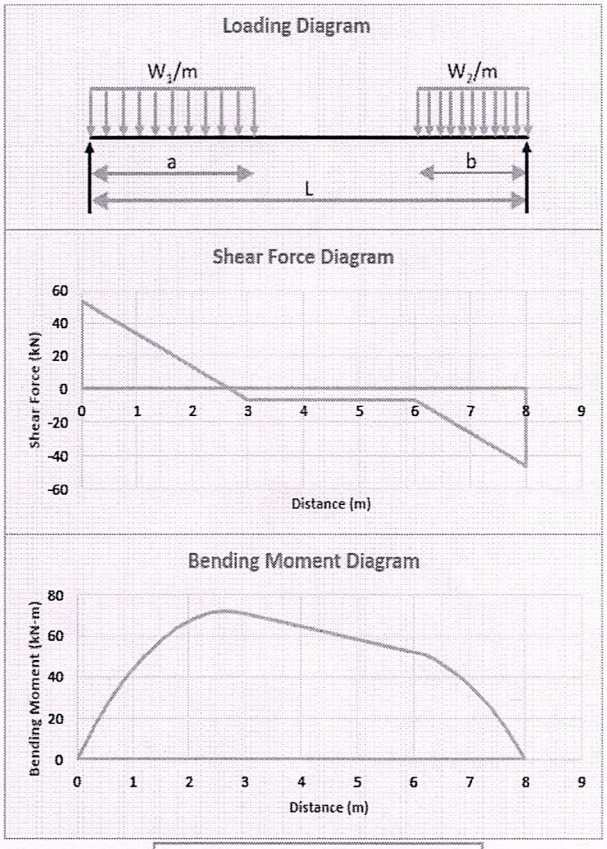
$$R_2 = V_2 = \frac{wa^2}{2L}$$

$$V_x\left[\text{When x < a }\right] = R_1 - wx$$

$$M_x\left[\text{when x < a}\right] = R_1 x - \frac{wx^2}{2}$$

$$M_x\left[\text{when x > a}\right] = R_2(L-x)$$

Problem-9 Simply Supported Beam – Uniform Load Partially Distributed at each End



Mathematical expressions

$$R_1 = V_1 = \frac{w_1 a(2L-a) + w_2 b^2}{2L}, \quad R_2 = V_2 = \frac{w_2 b(2L-b) + w_1 a^2}{2L}$$

$$V_x\left[When\ x < a\right] = R_1 - w_1 x, \quad M_x\left[when\ x < a\right] = R_1 x - \frac{w_1 x^2}{2}$$

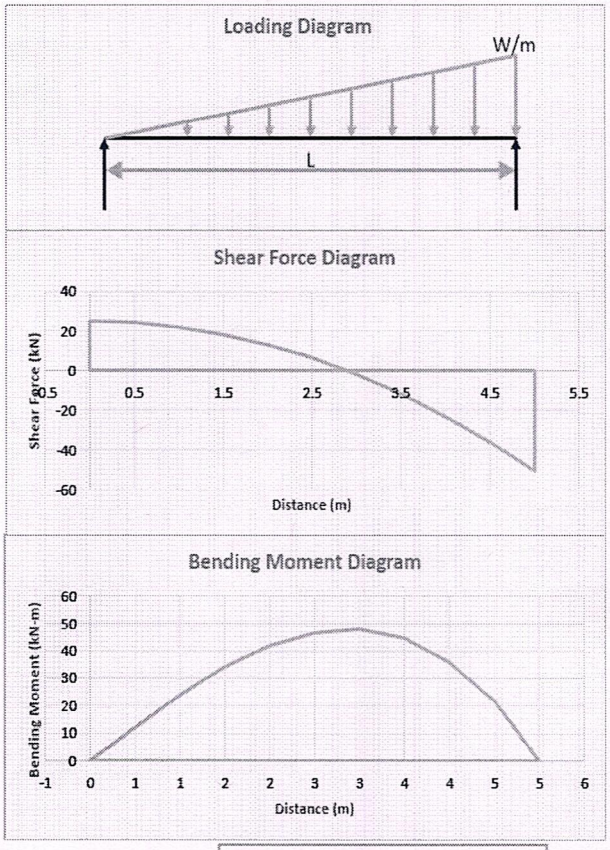
$$V_x\left[When\ x > a\ \&\ < (L-b)\right] = R_1 - w_1 a$$

$$V_x\left[When\ x > (L-b)\right] = R_2 - w_2 (L-x)$$

$$M_x\left[when\ x > a\ \&\ < (L-b)\right] = R_1 x - \frac{w_1 a}{2}(2x-a)$$

$$M_x\left[when\ x > (L-b)\right] = R_2 (L-x) - \frac{w_2}{2}(L-x)^2$$

Problem-10 Simply Supported Beam – Load Increasing Uniformly from one End



Mathematical expressions

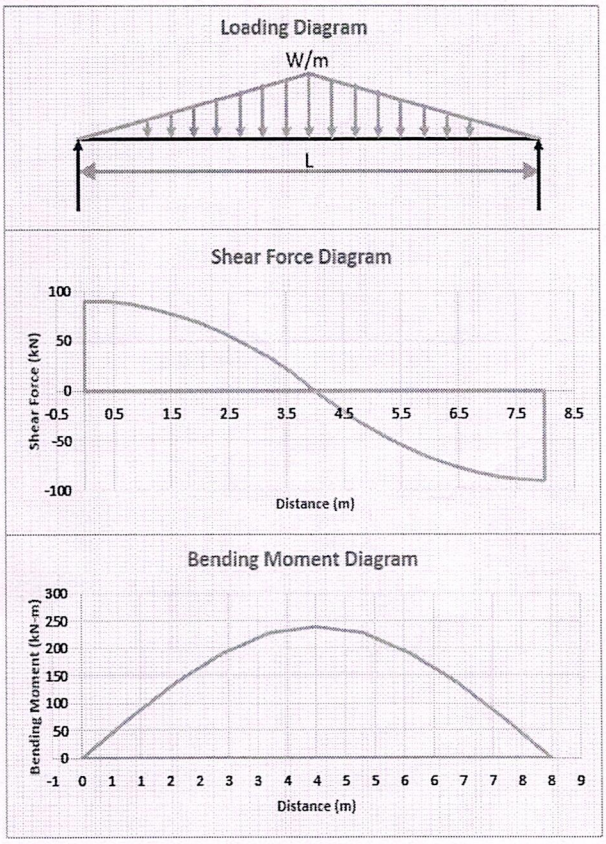
$$R_1 = V_1 = \frac{wL}{6}$$

$$R_2 = V_2 = \frac{wL}{3}$$

$$V_x = R_1 - \frac{wx^2}{2L}$$

$$M_x = R_1 x - \frac{wx^3}{6L}$$

Problem-11 Simply Supported Beam – Load Increasing Uniformly to Center



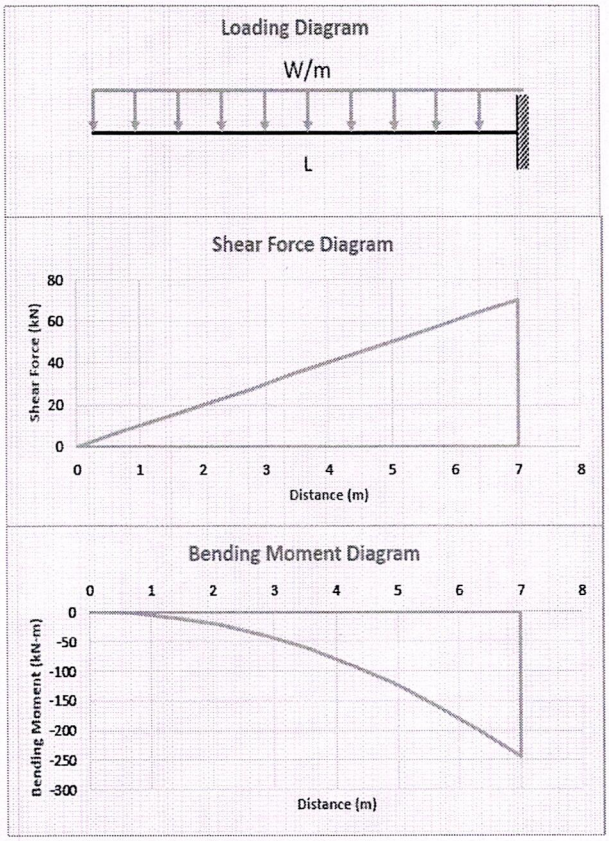
Mathematical expressions

$$R = V = \frac{wL}{4}$$

$$V_x \left[\text{When } x < \frac{L}{2} \right] = R - \frac{wx^2}{L}$$

$$M_x \left[\text{when } x < \frac{L}{2} \right] = Rx - \frac{wx^3}{3L}$$

Problem-12 Cantilever Beam – Uniformly Distributed Load



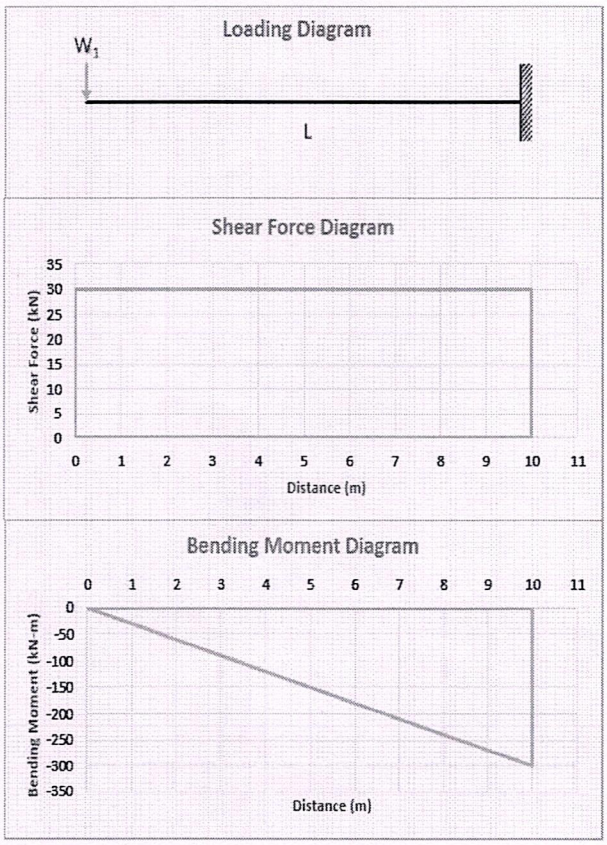
Mathematical expressions

$$R = V = wL$$

$$V_x = wx$$

$$M_x = \frac{wx^2}{2}$$

Problem-13 Cantilever Beam – Concentrated Load at the Free End



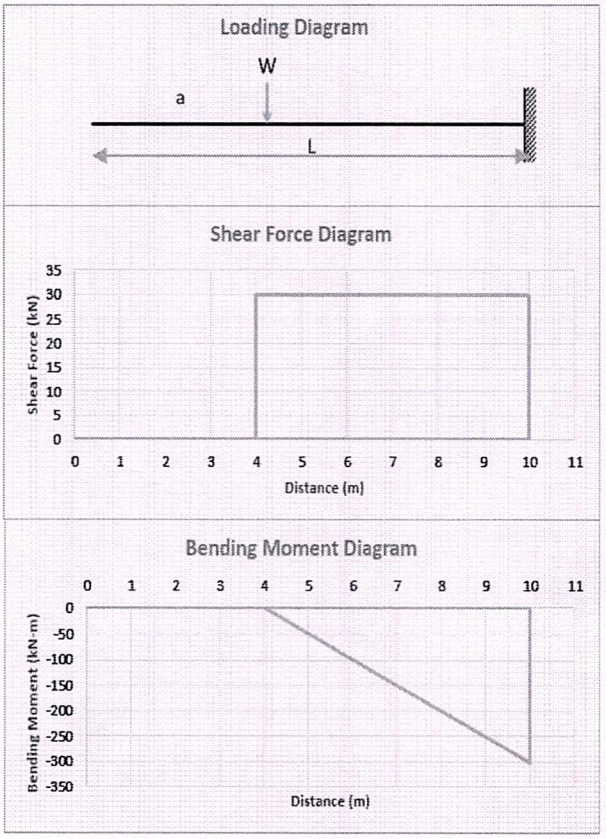
Mathematical expressions

$$R = V = W$$

$$V_x = W$$

$$M_x = Wx$$

Problem-14 Cantilever Beam – Concentrated Load at Any Point

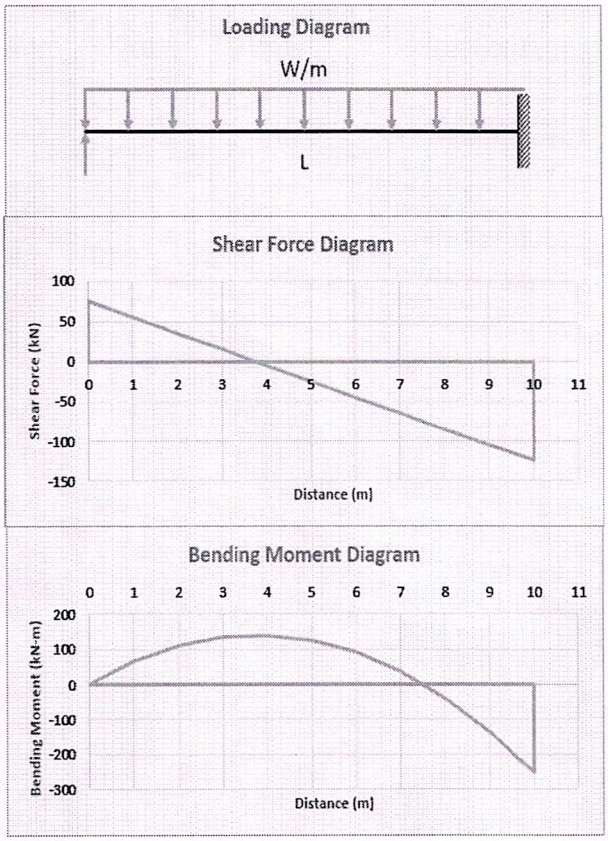


Mathematical expressions

$$R = V = W$$

$$M_x \text{ (when x > a)} = W(x - a)$$

Problem-15 Propped Cantilever Beam – Uniformly Distributed Load



Mathematical expressions

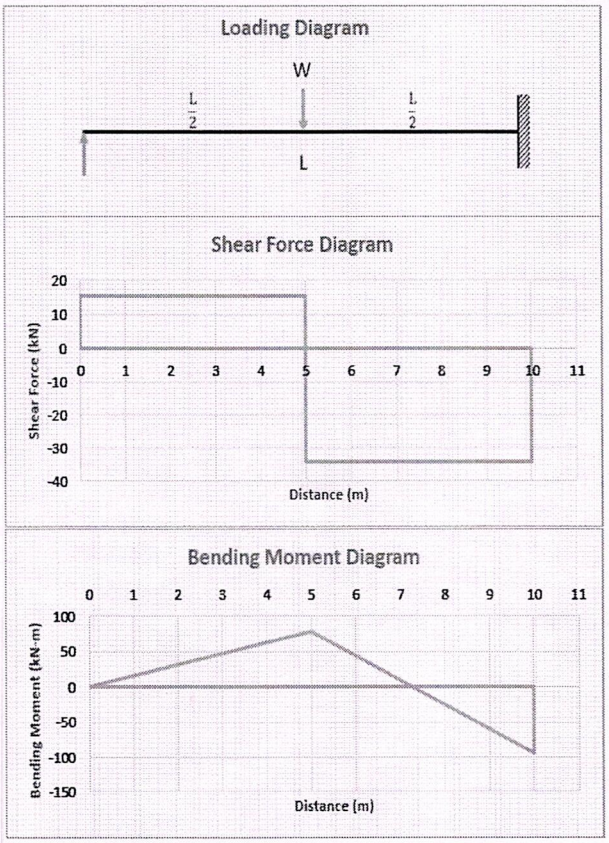
$$R_1 = V_1 = \frac{3wL}{8}$$

$$R_2 = V_2 = \frac{5wL}{8}$$

$$V_x = R_1 - wx$$

$$M_x = R_1 x - \frac{wx^2}{2}$$

Problem-16 Propped Cantilever Beam – Center Point Load



Mathematical expressions

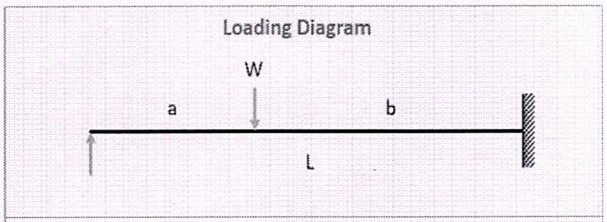
$$R_1 = V_1 = \frac{5W}{16}$$

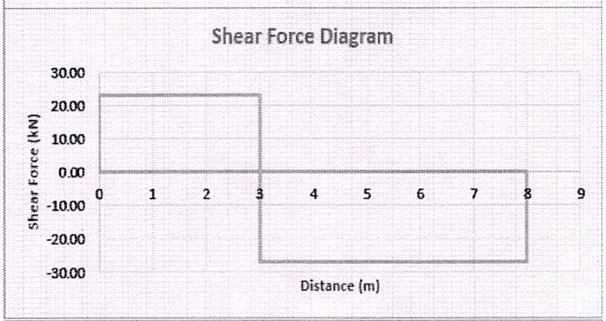
$$R_2 = V_2 = \frac{11W}{16}$$

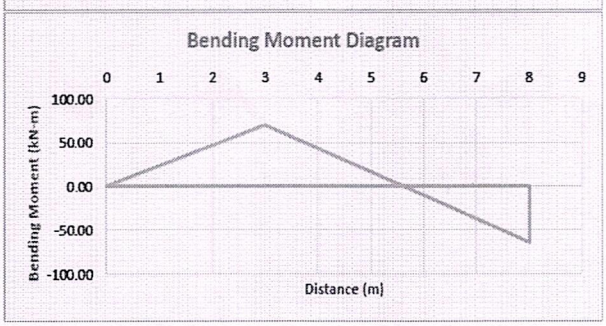
$$M_x(\text{when } x < \frac{L}{2}) = \frac{5Wx}{16}$$

$$M_x(\text{when } x > \frac{L}{2}) = W\left[\frac{L}{2} - \frac{11x}{16}\right]$$

Problem-17 Propped Cantilever Beam – Concentrated load at any point







Mathematical expressions

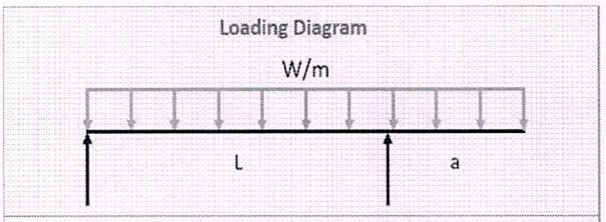
$$R_1 = V_1 = \frac{Wb^2}{2L^3}(a+2L)$$

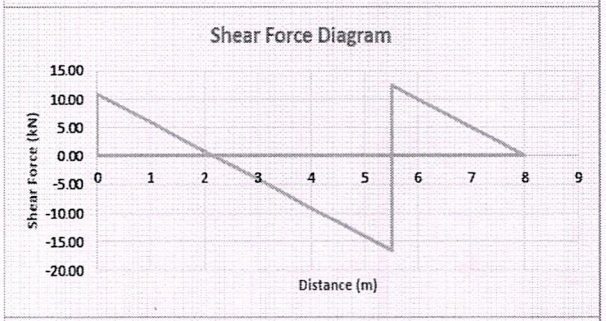
$$R_2 = V_2 = \frac{Wa}{2L^3}(3L^2 - a^2)$$

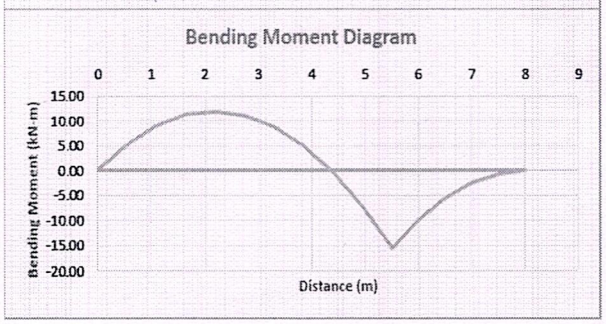
$$M_x \text{ (when x < L)} = R_1 x$$

$$M_x \text{ (when x > L)} = R_1 x - W(x-a)$$

Problem-18 One side Overhanging beam – Uniformly Distributed Load







Mathematical expressions

$$R_1 = \frac{W}{2L}(L^2 - a^2)$$

$$R_2 = \frac{W}{2L}(L^2 + a^2)$$

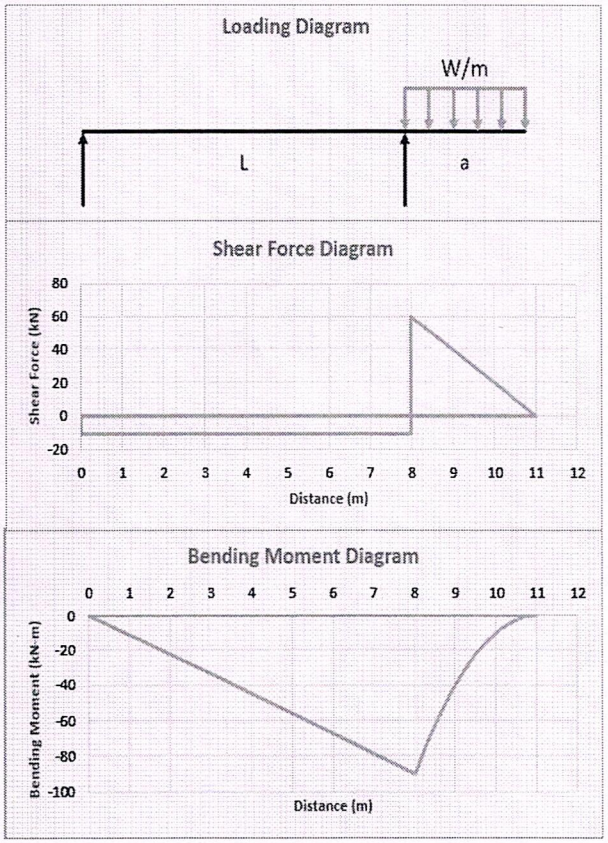
$$V_x \text{ (between supports)} = R_1 - wx$$

$$V_{x_1} \text{ (for overhanging)} = w(a - x_1)$$

$$M_x \text{ (between supports)} = \frac{wx}{2L}(L^2 - a^2 - xl)$$

$$M_{x_1} \text{ (for overhanging)} = \frac{w}{2}(a - x_1)^2$$

Problem-19 One side Overhanging beam – Uniformly Distributed Load on Overhang



Mathematical expressions

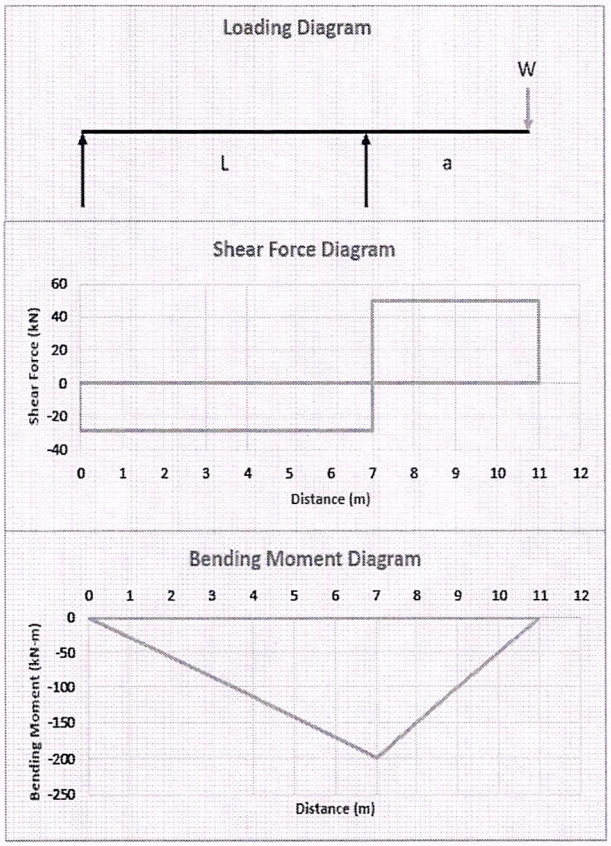
$$R_1 = \frac{Wa^2}{2L}$$

$$R_2 = \frac{Wa}{2L}(2L + a)$$

$$M_x \text{ (between supports)} = \frac{wa^2 x}{2L}$$

$$M_{x_1} \text{ (for overhang)} = \frac{w}{2}(a - x_1)^2$$

Problem-20 One side Overhanging beam – Concentrated Load at End of Overhang



Mathematical expressions

$$R_1 = \frac{Wa}{L}$$

$$R_2 = \frac{W}{L}(L + a)$$

$$M_x \text{ (between supports)} = \frac{Wax}{L}$$

$$M_{x_1} \text{ (for overhang)} = W(a - x_1)$$