# 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 Tolkald to phingpal six

Yours faithfully

(Sri. M C Venkata Subbaiah)

🜃 🎯 💓 /ksrmceofficial



#### 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

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.

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.

This form was created inside of KSRM College of Engineering. Report Abuse

Google Forms



#### K.S.R.M. COLLEGE OF ENGINEERING

#### (UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India-516 003

(中部天理)学

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

An ISO 14001:2004 & 9001: 2015 Certified Institution

#### **Department of Civil Engineering**

Registration list of Certification course

on

Beam design formulae with shear force and bending moment diagrams

SI. 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 Śree 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

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

An ISO 14001:2004 & 9001: 2015 Certified Institution

#### **Department of Civil Engineering**

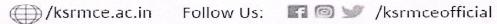
Certification course

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	2021 9 AM to 6 PM Dr. N. Amaranatha Reddy		Cantilever beam subjected to point loa			
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	27/08/2021 4 PM to 6 PM Dr. N. Amaranatha Redo		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: \(\frac{1}{2}\)



#### **Department of Civil Engineering**

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

SI. No.	Student Roll No.	Student Name	16/ 08	17/ 08	18/ 08	19/ 08	20/ 08	21/ 08	22/ 08	23/0 8	24/ 08	25/0 8	26/0 8	27/ 08	28/ 08
1	219Y5A0120	Gotlaveeti Sreenivasulu	6	6	64	6	6	6	6	60	6	6	Gr	6	50
2	219Y5A0121	Gogula Avinash	GAX	GA	GA	(A)	GA	6A	GA	6A)	(F)	GA	GA	69	GA
3	219Y5A0123	Jaripiti Vasu	Jagu	Valo	Joen	Scar	Solo	Low	Voll	been	Jas	Val	Jan	Jole	Von
4	219Y5A0124	Kalingiri Rajesh	RESE	200	Rael	250	Paul	250	Poly	Qoell	Posqu	esel	Parel	Coel	Padl
5	219Y5A0125	Kallakinda Himasri	Home	Hur	Hwa	Hua	Billy	tine	Afrin	1Du	Herr	- thing	Flore	Hen	Han
6	219Y5A0126	Kamireddy Jaipal Reddy	YPO	RSP	KOR	ESP	YUR	KUP	XJB	XX	Sho	1eDP	xJP	100	KJR
7	219Y5A0127	Kanthiri Hema	Have	Aus	Henc	Han	Harry	Huy	Here	Here	Hus	Heer	Here	Hern	Ha
8	219Y5A0128	Karamthod Sai Kumar Naik	إنساع	Sul	Sul	sul	sul	But	Qu'	Sal	Sul	Ed'	Sal	21	Ses
9	219Y5A0129	Kattameedi Bharath Reddy	100B	HAR	**	*B	48	K+B	KB		*B	4AB	**	*B	*B
10	219Y5A0130	Kethavaram Gangadhar	K-gon	10 may	1 good	10 308	tapus	10-gors	K884	b.gers	k-gorg	6.908	1c. 900)	Rogery	cool
11	219Y5A0131	Koppu Sree Kavya	Ens	Ewy	De	bur	bur	Knay	kwy	Kupe	Con	brun	Kuy	long	lens
12	219Y5A0132	Kore Sasi Rekha	Rivho	Dene	Entered Agency Control	Re Kha		Rethe	Retha	Rekha		Rethe	Pelaha	Rethe	Repa
13	219Y5A0133	Kummari Dasthagiri	Daller	Palle	alle	Col	Delle	Dals	Doll	Ochle	pose	Pole	Och	pale	pode
14	219Y5A0134	Kunchapu Subhash	de	A	A.	B	H	G	St	f	G	for	J	D	1
15	219Y5A0135	Kuruba Lavanya	Klavalia	Malaye	KINABI	y Klayby	Kilaway	K. Lavorg	- Lavas	Klaugh	e le bouer	<b>Y</b> ikavaby	12.10 varg	A. AVas	1 Java

16	219Y5A0136	Kuruva Bangaru Veeresh	K.B.	4 KBI	LUBV	1813V	KBV	KBY	KBV	277.01	1.5.				T
17	219Y5A0137	Lodi Naveen	200			-		-	4	100			RBU	KBI	
18	219Y5A0138	M Vishnu Vardhan	M.W		Navee		en L-Nava	IN THE RESERVE TO SERVE TO SER	A STATE OF THE PARTY OF THE PAR			1 L. Naver	L'Nave	en L·Na Veen	
19	219Y5A0139	Madhavaram Sreedhar	3						My	MW	A	MW	MM	M	1
20	219Y5A0140	Mala Maddileti	MART	1	8	28	8	28	-8	8	-8	-8	8	8	-
21	219Y5A0142	Malishetty Guru Lakshmi	P	Wars R	B	1 karas	Non	Mass	1	Atur	two C	Vac	ATTO	plan	
22	219Y5A0143	Mallu Teja		M. Tain	1	+	+	1	4	P	F	F	A	F	
23	219Y5A0144	Manne Mallem Kondaiaḥ	MG	M. iela	Kak.	A A	Var		11	M.Teja Var	^	100000000000000000000000000000000000000	M. Teja	•	T
24	219Y5A0145	Mekala Chennakesavulu	M. Chennikur	M. (honno)	M. Chenna	M. Chenn	M. Chenns	M. Chems	M. Chema	M. Chenna	in.	Har.	n.	M.	4
25	219Y5A0146	Muthru Kiran Kumar Reddy		My Kilhavan	Kelhaur	KI.KI		Kelhac	Kelhone	Killerc	(henns Keihari	Chenn	Chenno keshara	Cherry Keshva	(
26	219Y5A0147	Nallabothula Shiva Kishore	DA .		Di.	A)					MF	mer	u,Kr (	uki	
27	219Y5A0148	Nannuru Shankar	as de la cons		4. Lat 10. 10. 10. 10. 10. 10. 10. 10. 10. 10.	and the second		**	#	44	A	A	A	DA	-
28	219Y5A0149	Nare Malleswari Devi	anshara w	A A	V-stransau Ve	in shankor	Nsbankern	u-sharker 1	U. Sharker	rishorter	N-Soler A	s.slowcar n	ishantar n	s-shanbal r	u
29	219Y5A0154	Patte Jagan Mohan	P	<b>A</b>	Q	<b>A</b>	<b>D</b>		de l	de l			D	B	(
30	219Y5A0155	Pinjari Lalappa		? lalapaf	T labor	+	45	F-	F	B	B	B	B	B	
31		Ramireddy Pavan Kumar Reddy	Calappa !	RP 4				<b>^</b> -		lalaps f	-	?.lalappa	A P	lalograf	)
32	219Y5A0159	Ratala Chandra Sekhar	drough of	1.4	ladre C	elso was	Charles C	Charle C	1 P		HTP =	A.P	Carre C		P

33	219Y5A0162	Shaik Afzal Ahmmed	gn	810	8no	gho	gue	-8h	, gn	84	8 hay		8ha	8ho	Sha
34	219Y5A0163	Shaik Mahaboob Bee	5. nahat	5 marks	SHOW	A	Spale	5.m	Sand	S. mah	5. main	A	5 male	S.male	Sman
35	219Y5A0164	Shaik Mehanoor	eve	æ	Cos	Ce	Co	ذي	40	Se	8	20	0	Co	ER
36	219Y5A0166	Shaik Nasar	SNOW	S.Noor	SNOW	s.Nov	3.Nox	S-Naso	25. More	s. Nave	S.Nas-	5. Nall	s.Nose	S'Mars	Mos
37	219Y5A0167	Shaik Thakkalla Yunus	Yord	frug	Lung	times	York	Jano.	Knul	Xunes	Jones	Ling	Jones	Yust	but

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

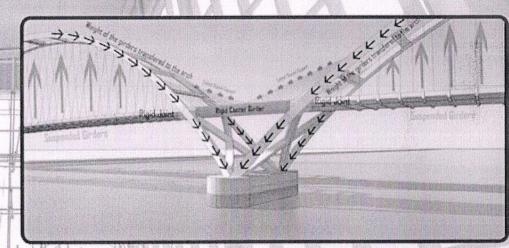


KSNR

### 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



Eligibility: Civil Engineering UG Students Course Instructor:

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

Sri. M. C. Venkata Subbaiah, Asst. Prof., CED



Dr. N. Amaranatha Reddy Dr. V.S.S. Murthy HoD

Principal

Prof. A. Mohan Sri. K. Chandra Obul Reddy Management Member Director

Smt K. Rajeswari Correspondent, Secretary, Treasurer

Sri K. Madan Mohan Reddy Vice-Chairman

Sri K. Raja Mohan Reddy Chairman



#### 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

#### 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:

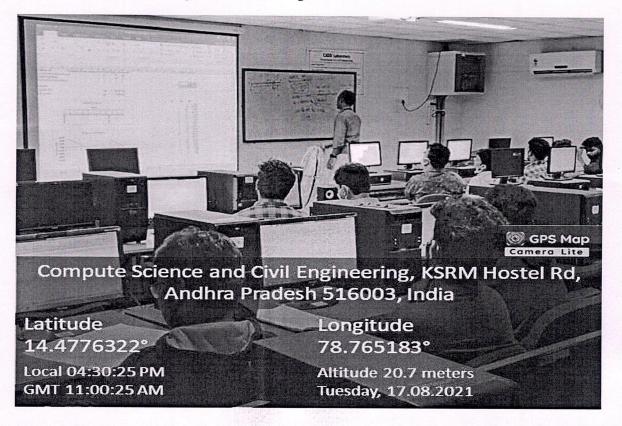
The Department of Civil Engineering conducted a certification course on "Beam Design formulae with Shear force and Bending moment diagrams" from 16th Aug. 2021 to 28th Aug. 2021. The course instructor is Dr. N. Amaranatha Reddy, Associate Professor, Department Civil Engineering and Coordinator is Sri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



(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

Principal Principal



(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

Principal

1 5.5 MW/5



(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



(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

11.5.5. NW/5

### 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



1-Low, 5-High  1	Rate the course instructor *	
2	1-Low, 5-High	
2	1 0	
3		
4	2 🔘	
Is this course useful for your Carrier? *  Yes  No  Rate the entire course? * 1-Low, 5-High  1 2 3 4 5 5	3 ()	
Is this course useful for your Carrier? *  Yes  No  Rate the entire course? * 1-Low, 5-High  1 2 3 4 5 5	1	
Is this course useful for your Carrier? *  Yes No  Rate the entire course? * 1-Low, 5-High  1	4 0	
<ul> <li>Yes</li> <li>No</li> </ul> Rate the entire course? * 1-Low, 5-High 1 ○ 2 ○ 3 ○ 4 ○ 5 ○	5 🔘	
<ul> <li>Yes</li> <li>No</li> </ul> Rate the entire course? * 1-Low, 5-High 1 ○ 2 ○ 3 ○ 4 ○ 5 ○		
<ul> <li>Yes</li> <li>No</li> </ul> Rate the entire course? * 1-Low, 5-High 1 ○ 2 ○ 3 ○ 4 ○ 5 ○		
Rate the entire course? * 1-Low, 5-High  1	Is this course useful for your Carrier? *	
Rate the entire course? * 1-Low, 5-High  2	O Yes	
Rate the entire course? * 1-Low, 5-High  1	○ No	
1-Low, 5-High  1		
1-Low, 5-High  1		
1		
2	1-Low, 5-High	
3	1 ()	
3	2 ()	
4 🔾		
5 🔾	3 ()	
	4 🔾	
Submit Clear form	5 🔾	
Submit Clear form		
	Submit	Clear form

Never submit passwords through Google Forms.

0

#### **Department of Civil Engineering**

#### Feedback of students on Certification Course on

Beam design formulae with shear force and bending moment diagrams

			Do you understand	Are the lecture			
			the application of	hours sufficient	Rate the	Is this course	Rate the
SI.			Excel for BMD and	to cover the	course	useful for your	entire
No.	Reg. No.	Name of The Student	SFD?	topics?	instructor	Carrier?	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	5 310	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

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



### BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS

ASSESSMENT TEST

Name of the Student:	Reg. Number:	\$1945A012
Time: 20 Min	(Objective Questions)	Max. Marks: 20

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

	G .					
1	What is the primary purpose of designing beams in structural engineering?					
	A) To distribute	B) To increase	C) To reduce	D) To create artistic	[A]	
	loads evenly	beam length	material costs	structures	• 1	
2	In beam design, wh	at are the two main ty	pes of loads that bean	ns must support?		
	A) Compression	A) Compression B) Bending and C) Torque and D) Torsion and				
	and tension	shear	torsion	compression	1	
3	Which formula is c	ommonly used to calc	ulate the maximum b	ending moment in a		
	simply supported be	eam subjected to a poi	int load at its center?		[B]	
	A) $M = W1/2$	B) $M = Wl/4$	C) M = Wl	D) $M = 2W1$	1	
4	What is the Shear F uniform load?	orce at the support of	a simply supported b	eam subjected to a	[4]	
	1	B) Half the total	C) Equal to the	D) Double the total	IC1	
	A) Zero	load	total load	load		
5	Which diagram rep	resents the variation of	of shear force along th	e length of a beam?		
	Α) C1	B) Bending	C) Assist Farms	D) Tausian Diagnama	гл	
	A) Shear Force	Moment Diagram	C) Axial Force	D) Torsion Diagram	14	
	Diagram (SFD)	(BMD)	Diagram (AFD)	(TD)		
5	In a cantilever bear	n subjected to a conce	entrated moment at its	free end, where is the		
	maximum bending moment typically located?					
	A) At the fixed	B) At the midpoint	C) At the free end	D) Uniformly	1	
1	end			distributed		
7		Which of the following statements is true regarding the sign conventions for shear				
	force and bending i		T			
	A) Shear force is	B) Shear force is	C) Shear force is	D) Shear force is		
	positive upwards,	positive	positive	positive upwards, and		
	and bending	downwards, and	downwards, and	bending moment is		
	moment is	bending moment is	bending moment is	clockwise.		
	counterclockwise.	clockwise.	counterclockwise.			
3			a under the Shear Ford	ce Diagram (SFD) and		
	the applied loads or				[0]	
	A) The area	B) The area equals	C) The area equals	D) The area equals	C	
	equals the applied	twice the applied	the moment arm.	zero.		
	load.	load.			-	
9	Which type of bear	n is subjected to both	a bending moment an	nd a shear force but no	1	

	axial load?				
	A) Simply	B) Cantilever	C) Continuous	D) None of the above	
	supported beam	beam	beam		
10	Which formula is u	sed to calculate the m	naximum bending stre		0
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	
11	In a simply support shear force typicall		rmly distributed load,	where is the maximum	
71	THE POPULAR		C) Uniformly		- A
	A) At the midpoint	B) At the fixed support	distributed along the beam	D) At the free end	ı <i>7</i> Ţ
12	What is the shape of with a point load at		nt Diagram (BMD) fo	or a cantilever beam	B
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	11/2
13		1 /		the moment of inertia	
	(I) in the bending s				τ <b>Λ</b> 3
-4	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)	
14	The bending mome	ent at any point along	a beam is equal to the	of the shear	
	force curve at that	4시 : THE SECOND SEC	•		[B]
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of		, ,		r 67
	A) kN	B) N/m	C) kNm	D) N	[D]
6.	/	n is supported at more	e than two points and		
	A) Simply	B) Cantilever	C) Continuous	D) Overhanging	
	supported beam	beam	beam	beam	
17			rmly distributed load,	where is the maximum	
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	H-
18.	The area under the at that section	_	(SFD) to the left of a	a section is equal to the	гЛ
	A) Maximum	B) Maximum	C) Slope of the	D) Area to the right	1
	shear force	bending moment	beam	of the section	1
9			T affect the bending r		
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross- section	A
20	When calculating the neutral axis?	he maximum bending		at is the significance of	
	A) It experiences	B) It is parallel to	C) It is the point where bending	D) It is the point where shear force is	A



# $\frac{\text{BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT}}{\text{DIAGRAMS}} \\ \underline{\text{ASSESSMENT TEST}}$

Name of the Student: _	K. Kajeth	_Reg. Number: <u>21945A0124</u>
Time: 20 Min	(Objective Question	ons) Max. Marks: 20
Note: Answer the follow	ing Questions and each question	carries one mark.

						1	
1	What is the primary purpose of designing beams in structural engineering?						
	A) To distribute	B) To increase	C) To reduce	D) To create artistic	(A)		
	loads evenly	beam length	material costs	structures			
2	In beam design, wh	at are the two main ty	pes of loads that bean	ns must support?	-		
	A) Compression	B) Bending and	C) Torque and	D) Torsion and	[B]	1	
	and tension	shear	torsion	compression			
3	Which formula is c	ommonly used to calc	ulate the maximum be	ending moment in a			
	simply supported b	eam subjected to a poi	int load at its center?		[B]		
	A) $M = W1/2$	B) $M = W1/4$	C) M = W1	D) $M = 2W1$			
4	What is the Shear I	Force at the support of	a simply supported be	eam subjected to a			
	uniform load?	• •	1 3 11	•	47		
	7	B) Half the total	C) Equal to the	D) Double the total	(3)		
	A) Zero	load	total load	load			
5	Which diagram ren	resents the variation of				1	
		R) Rending					
	A) Shear Force	Moment Diagram	C) Axial Force	D) Torsion Diagram			
	Diagram (SFD)	(BMD)	Diagram (AFD)	(TD)			
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the						
	maximum bending moment typically located?						
	A) At the fixed			D) Uniformly	111		
	end	B) At the midpoint	C) At the free end	distributed			
7		ving statements is true	regarding the sign co	onventions for shear			
	force and bending						
	A) Shear force is	B) Shear force is	C) Shear force is	D) Cl			
	positive upwards,	positive	positive	D) Shear force is	[]		
	and bending	downwards, and	downwards, and	positive upwards, and			
	moment is	bending moment is	bending moment is	bending moment is		-	
	counterclockwise.	clockwise.	counterclockwise.	clockwise.		1	
8				ce Diagram (SFD) and			
	the applied loads of			3()			
	A) The area	B) The area equals		D) III	[A		
	equals the applied	twice the applied	C) The area equals	D) The area equals	L. 3		
			the moment arm.	zero.			
	load.	load.	the moment arm				

	axial load?					
	A) Simply	B) Cantilever	C) Continuous	D) None of the above		
	supported beam	beam	beam			,
10		ised to calculate the m			B	2
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	LIA	
11			ormly distributed load	, where is the maximum		
	shear force typicall	y located?			-	
	A) At the	B) At the fixed	C) Uniformly		[3]	
	midpoint	support	distributed along	D) At the free end		
		•	the beam		1000	/
12		of the Bending Mome	ent Diagram (BMD) fo	or a cantilever beam	.0	/
	with a point load at		1 a) p	In. a	[3]	
10	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle		
13			n is used to calculate	the moment of inertia		/
	(I) in the bending s	tress formula?	C) D - 1:- C	D) M-41 1 1	[4	
	A) Area (A)	B) Length (L)	C) Radius of	D) Material modulus		
1.4	The bending		gyration (r)	(E)		
14		ent at any point along	a beam is equal to the	e of the shear	r Da	2
	force curve at that		C) I	D) M	B	
1.5	A) Slope	B) Area under	C) Length	D) Maximum value		
15	What is the unit of	<del></del>	0.131	DVV	D	
1.0	A) kN	B) N/m	C) kNm	D) N	- CP3	
16		n is supported at mor			- A3	1
	A) Simply	B) Cantilever	C) Continuous	D) Overhanging	[A]	
1.7	supported beam	beam	beam	beam		
17			ormly distributed load	, where is the maximum		
	bending moment ty	/pically located?	C) II.:f1		[ ]	2
	A) At the	B) At the fixed	C) Uniformly	D) 44 th a first and		
	midpoint	support	distributed along	D) At the free end		
10			the beam	a section is equal to the		
18	at that section		(SFD) to the left of a	a section is equal to the		
	A) Maximum	B) Maximum	C) Slope of the	D) Area to the right		^
		bending moment	beam	of the section	/	
19		wing factors does NO		,		
17	willen of the follow	This racions does NO		D) Beam cross-	(1)	/
	A) Applied load	B) Beam length	C) Support conditions	section	[1]	/
20	When calculating t	he maximum handing		at is the significance of		
20	the neutral axis?	ne maximum bending	s sucss iii a beaiii, Wii	at is the significance of		
			C) It is the point	D) It is the point	B	1
	A) It experiences	B) It is parallel to	where bending	where shear force is		
	maximum stress.	the beam's length.	stress is zero.	maximum.		
N.			311C33 13 ZC1U.	maximum.		



# BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS ASSESSMENT TEST

Name of the Student:	14.	Himasyi	Reg. Number:	21945A0125
----------------------	-----	---------	--------------	------------

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

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

	7					
1	What is the primary	y purpose of designing	beams in structural e	engineering?		
	A) To distribute	B) To increase	C) To reduce	D) To create artistic	[/4	
	loads evenly	beam length	material costs	structures		
2	In beam design, wh	at are the two main ty	pes of loads that bean	ns must support?		
	A) Compression	B) Bending and	C) Torque and	D) Torsion and	173	
	and tension	shear	torsion	compression	-1	
	Which formula is c	ommonly used to calc	ulate the maximum b	ending moment in a		
	simply supported be	eam subjected to a poi	int load at its center?		[3	
	A) $M = W1/2$	B) $M = W1/4$	C) M = WI	D) $M = 2W1$		
1		Force at the support of	a simply supported b	eam subjected to a		
	uniform load?				[1]	
	A) Zero	B) Half the total	C) Equal to the	D) Double the total	[17]	
		load	total load	load		
5	Which diagram rep	resents the variation o	of shear force along th	e length of a beam?		
	A) Shear Force	B) Bending	C) Axial Force	D) Torsion Diagram	$C_1$	
	Diagram (SFD)	Moment Diagram	Diagram (AFD)	(TD)		
_	. ,	(BMD)				
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the					
	maximum bending moment typically located?  A) At the fixed D) Uniformly					
	end	B) At the midpoint	C) At the free end	distributed		
7		wing statements is true	regarding the sign co			
	force and bending i		oregarding the sign ex	on ventions for sinear		
	A) Shear force is	B) Shear force is	C) Shear force is			
	positive upwards,	positive	positive	D) Shear force is	B	
	and bending	downwards, and	downwards, and	positive upwards, and	1	
	moment is	bending moment is	bending moment is	bending moment is		
	counterclockwise.	clockwise.	counterclockwise.	clockwise.		
3	What is the relation	nship between the area	under the Shear Ford	ce Diagram (SFD) and		
	the applied loads or				^	
	A) The area	B) The area equals	C) The area equals	D) The area equals	[A]	
	equals the applied	twice the applied	the moment arm.	zero.		
	load.	load.				
9	Which type of beam is subjected to both a bending moment and a shear force but no					

	axial load?				
	A) Simply	B) Cantilever	C) Continuous	D) None of the above	
	supported beam	beam	beam		
10	Which formula is u	sed to calculate the m	aximum bending stres	ss in a beam?	[A
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	[Pt
11	In a simply support	ed beam with a unifor	rmly distributed load,	where is the maximum	
	shear force typicall	y located?			
	A) At the	B) At the fixed	C) Uniformly	. X	
	midpoint	support	distributed along	D) At the free end	
			the beam		
12			nt Diagram (BMD) fo	r a cantilever beam	
	with a point load at				1131
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle	
13			is used to calculate t	he moment of inertia	
	(I) in the bending s	tress formula'?	[ m n 11	D. V	B
	A) Area (A)	B) Length (L)	C) Radius of	D) Material modulus	0
			gyration (r)	(E)	
14			a beam is equal to the	of the shear	
	force curve at that p		·		
	A) Slope	B) Area under	C) Length	D) Maximum value	
15	What is the unit of				
	A) kN	B) N/m	C) kNm	D) N	141
16			than two points and	,	
	A) Simply	B) Cantilever	C) Continuous	D) Overhanging	13
	supported beam	beam	beam	beam	
17			rmly distributed load,	where is the maximum	
	bending moment ty	pically located?	C) II :C 1		- A
	A) At the	B) At the fixed	C) Uniformly	D) 44 th a francisco	[A
	midpoint	support	distributed along the beam	D) At the free end	
18	The area under the	Shear Force Diagram		section is equal to the	
10	at that section		(SI B) to the left of a	section is equal to the	.0
	A) Maximum	B) Maximum	C) Slope of the	D) Area to the right	100
	shear force	bending moment		of the section	
19	Which of the follow		T affect the bending n		
			C) Support	D) Beam cross-	
-	A) Applied load	B) Beam length	conditions	section	B
20	When calculating the	ne maximum bending		at is the significance of	100
	the neutral axis?				
	C) It is the point D) It is the point				
	A) T/	D) It : 11.1.	(C) It is the point	D) It is the point	
	A) It experiences maximum stress.	B) It is parallel to the beam's length.	where bending	where shear force is	0



# 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 Que	stions)	Max. Marks: 20
Note: Answer the follow	ving Questions and each quest	ion carries one mar	k

	*						
1	What is the primary purpose of designing beams in structural engineering?						
	A) To distribute	B) To increase	C) To reduce	D) To create artistic	[A]		
	loads evenly	beam length	material costs	structures			
2	In beam design, wh	at are the two main ty	pes of loads that bean	ns must support?			
	A) Compression	B) Bending and	C) Torque and	D) Torsion and	[4]		
	and tension	shear	torsion	compression	( '		
3	Which formula is c	ommonly used to calc	ulate the maximum b	ending moment in a			
	simply supported be	eam subjected to a poi	int load at its center?		13		
	A) $M = W1/2$	B) $M = W1/4$	C) M = WI	D) $M = 2W1$			
4	What is the Shear F	orce at the support of	a simply supported b	eam subjected to a			
	uniform load?				Γ / 1		
	1 A) 7 ara	B) Half the total	C) Equal to the	D) Double the total	[A]		
	A) Zero	load	total load	load			
5	Which diagram rep	resents the variation of	of shear force along th	e length of a beam?			
	A) Shear Force	B) Bending	C) Axial Force	D) Torsion Diagram	[2]		
	Diagram (SFD)	Moment Diagram	Diagram (AFD)	(TD)			
	1	(BMD)					
6	In a cantilever beam subjected to a concentrated moment at its free end, where is the						
	maximum bending moment typically located?						
	A) At the fixed	B) At the midpoint	C) At the free end	D) Uniformly			
	end			distributed			
7		ving statements is true	e regarding the sign co	onventions for shear			
	force and bending i						
	A) Shear force is	B) Shear force is	C) Shear force is	D) Shear force is	· K		
	positive upwards,	positive	positive	positive upwards, and	A		
	and bending	downwards, and	downwards, and	bending moment is			
	moment is	bending moment is	bending moment is	clockwise.			
	counterclockwise.	clockwise.	counterclockwise.	D: (CED) 1			
8			a under the Shear Ford	ce Diagram (SFD) and			
	the applied loads or				1		
	A) The area	B) The area equals	C) The area equals	D) The area equals	1 At		
	equals the applied	twice the applied	the moment arm.	zero.	/		
	load.	load.			[7]		
9	Which type of beam is subjected to both a bending moment and a shear force but no						

	axial load?			1		
	A) Simply supported beam	B) Cantilever beam	C) Continuous beam	D) None of the above		
10		sed to calculate the m	naximum bending stre	ess in a beam?	ГАЗ	
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	[A]	
11	In a simply support shear force typicall		rmly distributed load,	, where is the maximum		
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	IR	
12	What is the shape of with a point load at		nt Diagram (BMD) fo	or a cantilever beam	[6]	X
	A) Triangle	B) Parabola	C) Rectangle	D) Semicircle		
13	Which property of (I) in the bending s		n is used to calculate	the moment of inertia	[6]	
4	A) Area (A)	B) Length (L)	C) Radius of gyration (r)	D) Material modulus (E)		X
14	force curve at that p	point.	a beam is equal to the		[8]	
1.5	A) Slope	B) Area under	C) Length	D) Maximum value -		
15	What is the unit of		Lavior	Lavar	101	
	A) kN	B) N/m	C) kNm	D) N .	1,7,3	
16	Which type of beam is supported at more than two points and has multiple spans?					
	A) Simply	B) Cantilever	C) Continuous	D) Overhanging	10	
	supported beam	beam	beam	beam		
17	In a simply support bending moment ty		rmly distributed load,	, where is the maximum		
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	A	
18	at that section		(SFD) to the left of a	section is equal to the	г <b>ө</b> л	
	A) Maximum	B) Maximum	C) Slope of the	D) Area to the right		
	shear force	bending moment	beam	of the section		
19	Which of the follow	ving factors does NO	T affect the bending r	noment in a beam?		
7	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross- section	H	X
20	When calculating the neutral axis?	ne maximum bending		at is the significance of		
	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.		×

ts

#### BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT

DIAGRAMS ASSESSMENT TEST

	( 1	1		
Name of the Student:	91	winash	Reg. Number: _	21945AD12

<u>Time: 20 Min</u> (Objective Questions) Max. Marks: 20 Note: Answer the following Questions and each question carries **one** mark.

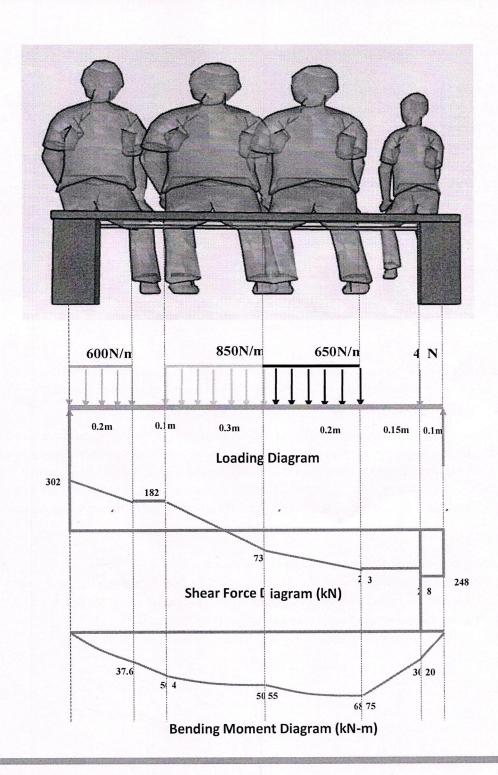
	Y				
1			g beams in structural e		0
	A) To distribute	B) To increase	C) To reduce	D) To create artistic	14
	loads evenly	beam length	material costs	structures	
2	In beam design, wh	at are the two main ty	pes of loads that bean	ns must support?	
	A) Compression	B) Bending and	C) Torque and	D) Torsion and	1/2
	and tension	shear	torsion	compression	/
3	Which formula is c	ommonly used to calc	culate the maximum be	ending moment in a	M
	simply supported be	eam subjected to a po	int load at its center?		
	A) $M = W1/2$	B) $M = W1/4$	C) M = Wl	D) $M = 2W1$	7
1		orce at the support of	a simply supported b	eam subjected to a	
	uniform load?				[13
(	A) Zero	B) Half the total	C) Equal to the	D) Double the total	19
	A) Zero	load	total load	load	
5	Which diagram rep	resents the variation of	of shear force along th	e length of a beam?	
	A) Cl	B) Bending	C) Avial Farms	D) Tarsian Diagram	1C1
	A) Shear Force	Moment Diagram	C) Axial Force	D) Torsion Diagram	[C]
	Diagram (SFD)	(BMD)	Diagram (AFD)	(TD)	
6	In a cantilever bear	n subjected to a conce	entrated moment at its	free end, where is the	
	maximum bending	moment typically loc	ated?		[6]
Y	A) At the fixed			D) Uniformly	
	end	B) At the midpoint	C) At the free end	distributed	
7	Which of the follow	ving statements is true	e regarding the sign co	onventions for shear	
	force and bending i				
1	A) Shear force is	B) Shear force is	C) Shear force is	D) Chase force is	0
	positive upwards,	positive	positive	D) Shear force is	[1]
	and bending	downwards, and	downwards, and	positive upwards, and	
	moment is	bending moment is	bending moment is	bending moment is	
A	counterclockwise.	clockwise.	counterclockwise.	clockwise.	
8	STATE OF THE PARTY			ce Diagram (SFD) and	
	the applied loads or				
	A) The area	B) The area equals	C) TI	D) TI 1	A
	equals the applied	twice the applied	C) The area equals	D) The area equals	11
	I CUUAIS UIC ADDITICA				1
	load.	load.	the moment arm.	zero.	

	axial load?					
	A) Simply	B) Cantilever	C) Continuous	D) No C4bb		
	supported beam	beam	beam	D) None of the above		
10		ised to calculate the n	naximum bending stre	ess in a beam?	A	
	A) $\sigma = M / I$	B) $\sigma = P / A$	C) $\tau = V / A$	D) $\tau = F / A$	7/13	
11	In a simply support		ormly distributed load	, where is the maximum		
	shear force typicall	ly located?			D	
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	B	
12	What is the shape of with a point load at	of the Bending Mome	ent Diagram (BMD) fo	or a cantilever beam	[0]	
			C) Pastangla	D) Semicircle	[R]	
12	A) Triangle	B) Parabola	C) Rectangle	the moment of inertia		
13	(I) in the bending s		ii is used to calculate	uic moment of mertia		
	(1) III the bending s	diess formula?	C) Radius of	D) Material modulus		
	A) Area (A)	B) Length (L)	gyration (r)	(E)		
14	The bending mome	ent at any point along				
17	force curve at that		a ocam is equal to the	e or the shear	R	
R	A) Slope	B) Area under	C) Length	D) Maximum value	11/5	
15	What is the unit of		10)200800		-0	
	A) kN	B) N/m	C) kNm	D) N	II)	
16		m is supported at mor				
1	A) Simply	B) Cantilever	C) Continuous	D) Overhanging	[B	
	supported beam	beam	beam	beam	1	
17	In a simply support		ormly distributed load	, where is the maximum		
4	bending moment ty	pically located?				
	A) At the midpoint	B) At the fixed support	C) Uniformly distributed along the beam	D) At the free end	JAT	
18	The area under the Shear Force Diagram (SFD) to the left of a section is equal to the at that section.					
	A) Maximum	B) Maximum	C) Slope of the	D) Area to the right	41]	
	shear force	bending moment	beam	of the section		
19	Which of the follow	wing factors does NO		moment in a beam?		
	A) Applied load	B) Beam length	C) Support conditions	D) Beam cross- section	[H]	
20	When calculating the neutral axis?	When calculating the maximum bending stress in a beam, what is the significance of				
	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.	A	



#### CERTIFICATE COURSE ON BEAM DESIGN FORMULAE WITH SHEAR FORCE AND BENDING MOMENT DIAGRAMS

Instructors: Dr. N. Amaranutha Reddy, Associate Professor Coordinator: Srl. M. C. Venkata Subbaiah, Assistant Professor





Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M C Venkuta Subhaiah, Assistant Professor

#### 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



Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkuta Subhalah, Assistant Professor

#### Course Content:

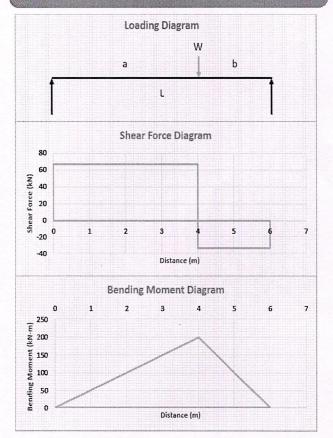
	Description	Page.
P-1	Simple Beam - Uniformly Distributed Load	
P-2	Simple Beam - Uniform Load Partially Distributed	
P-3	Simple Beam - Uniform Load Partially Distributed at One End	
P-4	Simple Beam - Uniform Load Partially Distributed at Each End	
P-5	Simple Beam - Load Increasing Uniformly to One End	
P-6	Simple Beam - Load Increasing Uniformly to Center	
P-7	Simple Beam - Concentrated Load at Center	
P-8	Simple Beam - Concentrated Load at Any Point	
P-9	Simple Beam - Two Equal Concentrated Loads Symmetrically Placed	
P-10	Simple Beam - Two Equal Concentrated Loads Unsymmetrically Placed	
P-11	Simple Beam - Two Unequal Concentrated Loads Unsymmetrically Placed	
P-12	Cantilever Beam - Uniformly Distributed Load	
P-13	Cantilever Beam - Concentrated Load at Free End	
P-14	Cantilever Beam - Concentrated Load at Any Point	
P-15	Beam Fixed at One End, Supported at Other - Uniformly Distributed Load	
P-16	Beam Fixed at One End, Supported at Other - Concentrated Load at Center	
P-17	Beam Fixed at One End, Supported at Other - Concentrated Load at Any Point	
P-18	Beam Overhanging One Support - Uniformly Distributed Load	
P-19	Beam Overhanging One Support - Uniformly Distributed Load on Overhang	
P-20	Beam Overhanging One Support - Concentrated Load at End of Overhang	



Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkuta Subhaiah, Assistant Professor

## Problem-1 Simply Supported Beam - Uniformly Distributed Load

## **Problem-2** Simply Supported Beam Concentrated load at Any Point



#### Mathematical expressions

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

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

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

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

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

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

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

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



Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkuta Subbaiah, Assistant Professor

## Problem-3 Simply Supported Beam — Center Point Load

## Loading Diagram L **Shear Force Diagram** 60 40 Shear Force (kN) 20 0 -20 -40 -60 Distance (m) **Bending Moment Diagram** 200 E-N 150 Bending Moment 100 50 0 Distance (m)

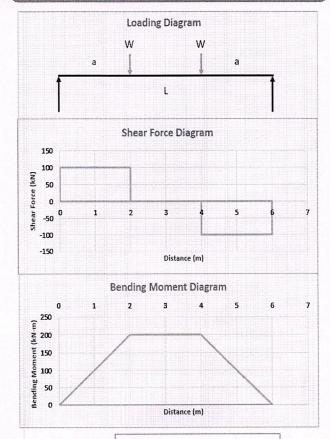
#### Mathematical expressions

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

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

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

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



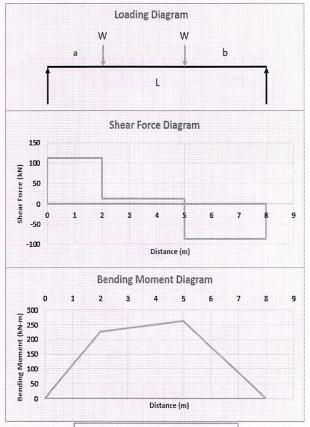
$$R = V = W$$
 $M_{\text{max}}$  (between loads) =  $Wa$ 
 $M_x$  (when  $x < a$ ) =  $Wx$ 

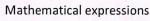


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M C Venkata Subhaiah, Assistant Professor

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

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





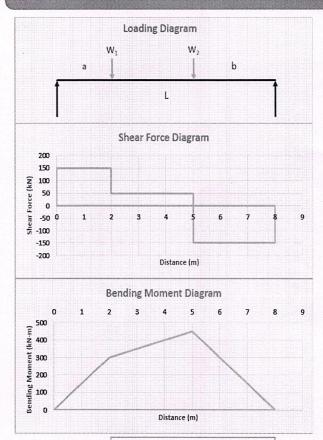
$$R_1 = V_1(\text{max when a} < b) = \frac{W}{L}(L - a + b)$$

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

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

$$M_x[\text{when x} < a] = R_1x$$

 $M_x$  [when x > a & < (L-b)] =  $R_1x - W(x - a)$ 



$$R_{1} = V_{1} = \frac{W_{1}(L - a) + W_{2}b}{L}$$

$$R_{2} = V_{2} = \frac{W_{1}a + W_{2}(L - b)}{L}$$

$$V_{x} [\text{When } x > a & < (L-b)] = R_{1} - W_{1}$$

$$M_{x} [\text{when } x < a] = R_{1}x$$

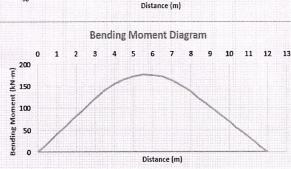
$$M_{x} [\text{when } x > a & < (L-b)] = R_{1}x - W_{1}(x - a)$$



Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M C Venkata Subhaiah, Assistant Professor

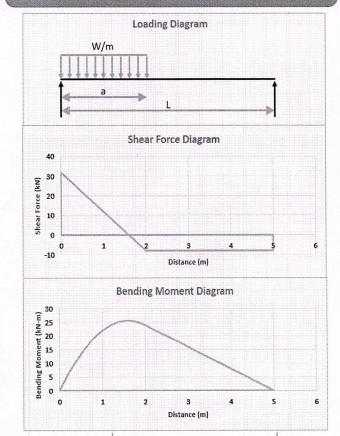
## **Problem-7** Simply Supported Beam – Uniform Load Partially Distributed

## 



## Distance (m) Mathematical expressions

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



$$R_{1} = V_{1}(\max when \ a < b) = \frac{w(L - a - b)}{2L} [2b + (L - a - b)]$$

$$R_{2} = V_{2}(\max when \ a > b) = \frac{w(L - a - b)}{2L} [2a + (L - a - b)]$$

$$V_{x}[When \ x > a \& < (L - b)] = R_{1} - w(x - a)$$

$$M_{x}[when \ x < a] = R_{1}x$$

$$M_{x}[when \ x > (L - b)] = R_{2}(L - x)$$

$$M_{x}[when \ x > a \& < (L - b)] = R_{1}x - \frac{w}{2}(x - a)^{2}$$

$$R_{1} = V_{1} = \frac{wa}{2L} [2L - a]$$

$$R_{2} = V_{2} = \frac{wa^{2}}{2L}$$

$$V_{x} [\text{When } x < a] = R_{1} - wx$$

$$M_{x} [\text{when } x < a] = R_{1}x - \frac{wx^{2}}{2}$$

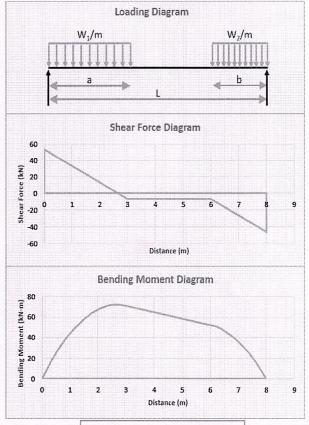
$$M_{x} [\text{when } x > a] = R_{2}(L - x)$$

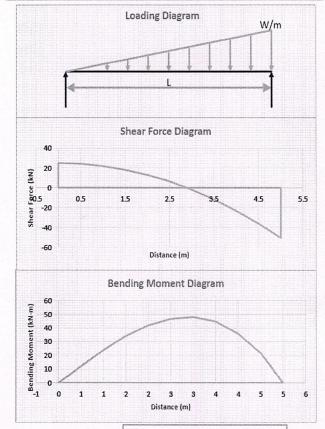


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkata Subhalah, Assistant Professor

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

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





Mathematical expressions

$$R_{1} = V_{1} = \frac{w_{1} a(2L - a) + w_{2} b^{2}}{2L}, R_{2} = V_{2} = \frac{w_{2} b(2L - b) + w_{1} a^{2}}{2L}$$

$$V_{x} [When x < a] = R_{1} - w_{1}x, M_{x} [when x < a] = R_{1}x - \frac{w_{1} x^{2}}{2L}$$

$$V_{x}[When \ x > a \ \& \ < (L-b)] = R_{1} - w_{1}a$$

$$V_x[When \ x \ge (L-b)] = R_2 - w_2(L-x)$$

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

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

$$R_{1} = V_{1} = \frac{wL}{6}$$

$$R_{2} = V_{2} = \frac{wL}{3}$$

$$V_{x} = R_{1} - \frac{wx^{2}}{2L}$$

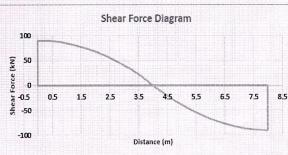
$$M_{x} = R_{1}x - \frac{wx^{3}}{6L}$$

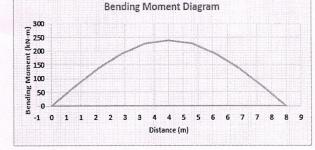


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkata Subhalah, Assistant Professor

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

# Loading Diagram W/m





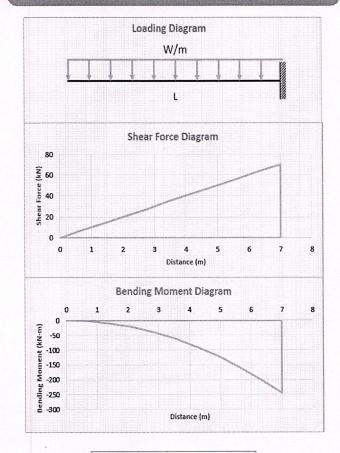
## Mathematical expressions

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

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

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

## Problem-12 Cantilever Beam – Uniformly Distributed Load



$$R = V = wL$$

$$V_x = wx$$

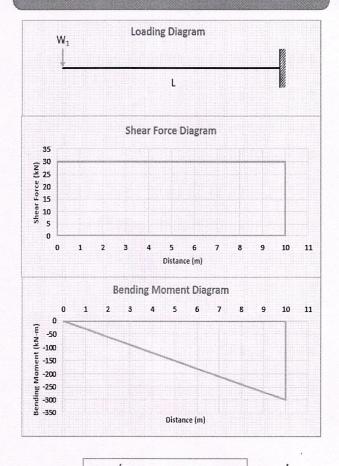
$$M_x = \frac{wx^2}{2}$$

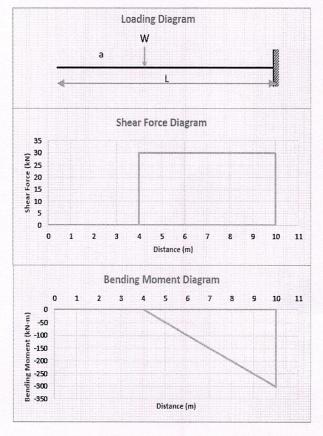


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkata Subhaiah, Assistant Professor

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

Problem-14 Cantilever Beam – Concentrated Load at Any Point





Mathematical expressions

$$R = V = W$$

$$V_x = W$$

$$M_x = Wx$$

$$R = V = W$$
  
 $M_x$  (when  $x > a$ ) =  $W(x - a)$ 



Instructors: Dr. N. Amuranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkuta Subbaiah, Assistant Professor

## **Problem-15** Propped Cantilever Beam - Uniformly Distributed Load

## 

## Mathematical expressions

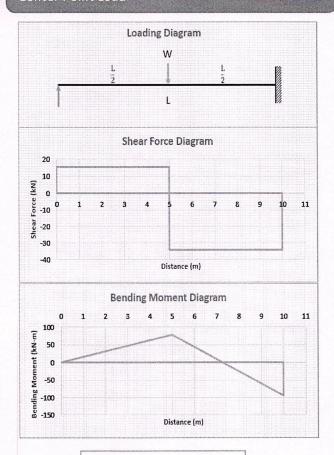
$$R_{1} = V_{1} = \frac{3wL}{8}$$

$$R_{2} = V_{2} = \frac{5wL}{8}$$

$$V_{x} = R_{1} - wx$$

$$M_{x} = R_{1}x - \frac{wx^{2}}{2}$$

## Problem-16 Propped Cantilever Beam – Center Point Load



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

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

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

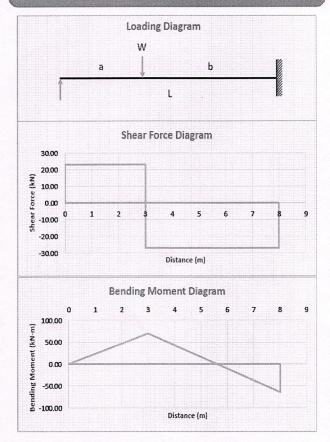
$$M_x(\text{when } x > \frac{L}{2}) = W\left[\frac{L}{2} - \frac{11x}{16}\right]$$

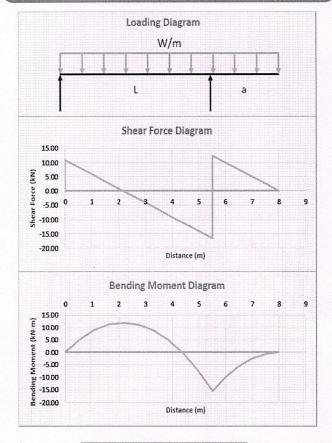


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M C Venkata Subhaiah, Assistant Professor

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

## Problem-18 One side Overhanging beam – Uniformly Distributed Load





## Mathematical expressions

$$R_{1} = V_{1} = \frac{Wb^{2}}{2L^{3}} (a + 2L)$$

$$R_{2} = V_{2} = \frac{Wa}{2L^{3}} (3L^{2} - a^{2})$$

$$M_{x} (\text{when } x < L) = R_{1}x$$

$$M_{x} (\text{when } x > L) = R_{1}x - W(x - a)$$

$$R_{1} = \frac{W}{2L}(L^{2} - a^{2})$$

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

$$V_{x} \text{ (between supports)} = R_{1} - wx$$

$$V_{x_{1}} \text{ (for overhanging)} = w(a - x_{1})$$

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

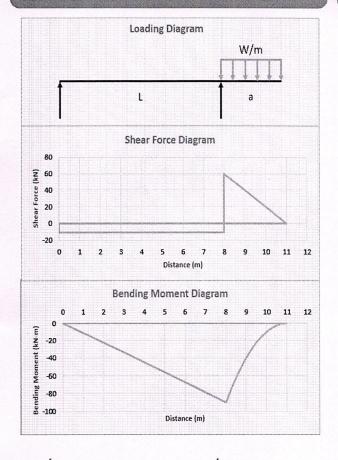
$$M_{x_{1}} \text{ (for overhanging)} = \frac{w}{2}(a - x_{1})^{2}$$

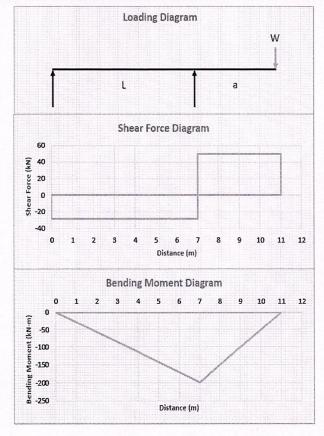


Instructors: Dr. N. Amaranatha Reddy, Associate Professor Coordinator: Sri. M. C. Venkata Subhalah, Assistant Professor

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

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





#### Mathematical expressions

$$R_{1} = \frac{Wa^{2}}{2L}$$

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

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

$$M_{x_{1}} \text{ (for overhang)} = \frac{w}{2}(a - x_{1})^{2}$$

$$R_{1} = \frac{Wa}{L}$$

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

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

$$M_{x_{1}}(\text{for overhang}) = W(a-x_{1})$$