SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

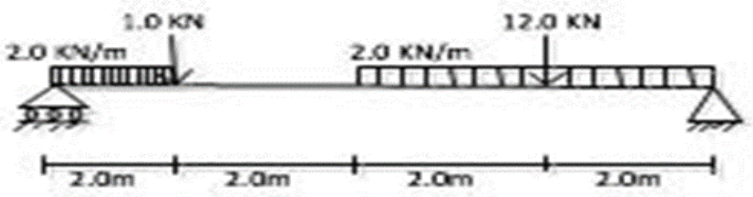
Subject with Code : SM-1(15A01303) **Course & Branch**: B.Tech - CE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R13

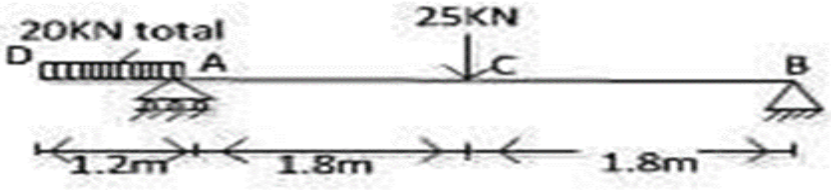
UNIT – 2

SHEAR FORCE AND BENDING MOMENT

1. A cantilever of length 3 m carries a uniformly distributed load of 2.5 kN/m length over the whole length and a point of 3.5 KN at the free end. Draw SFD and BMD for the cantilever.
2. A simply supported beam of length 8 m, carries point load of 4 KN and 7 KN at distances 3 m and 6 m from the left end. Draw SFD and BMD for the beam.
3. All cantilever of length 3 m carries a uniformly distributed load of 1.5 kN/m run over a length of 2 m from the free end. Draw SFD and BMD.
4. Simply supported beam of length 6 m carries a uniformly increasing load of 600 N/m at one end to 1500 N/m run at the other end. Draw SFD and BMD for the beam. And also calculate the position and magnitude of maximum bending moment.
5. Draw the SFD and BMD for the beam loaded as shown in the figure.

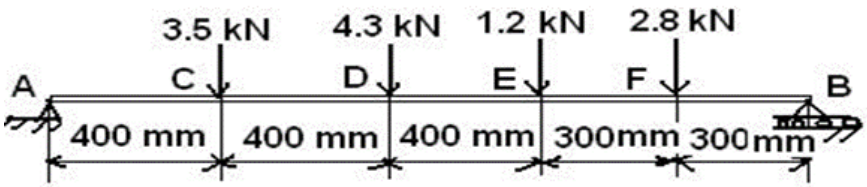


6. Draw the shear force and bending moment diagrams for the beam shown in the figure.



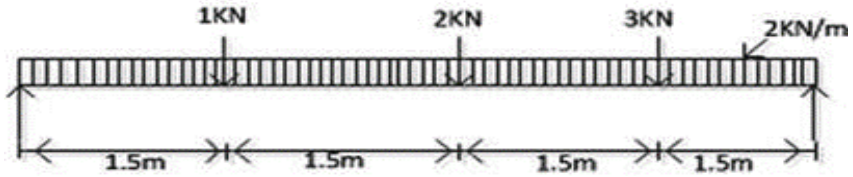
7. (a) Define beam. Sketch three different types of beams indicating name of beam.

   (b) Draw the shearing force and bending moment diagrams for the beam shown in figure.



8. (a) Define the 'Beam' and the type of action and deformation it undergoes.
   (b) Draw the S.F and B.M diagram for a S.S.B of span loaded with UDL of W KN/m.

9. Draw the shear force and bending moment diagrams showing the salient values for the Loaded beam shown in the figure.



10. Define the following terms

a) Concept of Shear force
b) Concept of Bending moment
c) Types of beams
d) Types of loads
e) Definition of beam & point of contra flexure.

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QUESTION BANK (OBJECTIVE)

Subject with Code : SM-1(13A01301) **Course & Branch**: B.Tech - CE

Year & Sem: II-B.Tech & I-Sem **Regulation:** R13

UNIT –2

SHEAR FORCE & BENDING MOMENT

1) A beam is a structural member which is subjected to [ ]

a) Axial tension or compression b) Transverse loads and couples

c) Twisting moment d) No load

2) Which of the following are statically determinate beams? [ ]

a) Only simply supported beams b) Cantilever, overhanging and simply supported

b) Fixed beams d) Continuous beams

3) A cantilever is a beam whose [ ]

a) Both ends are supported either on rollers or hinges b) One end is fixed and other end is free

c) Both ends are fixed d) Whose both or one of the end has overhang

4) In a cantilever carrying a uniformly varying load starting from zero at the free end,

The shear force diagram is [ ]

a) A horizontal line parallel to x-axis b) A line inclined to x-axis
c) Follows a parabolic law d) Follows a cubic law

5) In a cantilever carrying a uniformly varying load starting from zero at the free end, the Bending moment diagram is [ ]

a) A horizontal line parallel to x-axis b) A line inclined to x-axis
b) Follows a parabolic law d) Follows a cubic law

6) In a simply supported beam, bending moment at the end [ ]

a) Is always zero if it does not carry couple at the end

b) Is zero, if the beam has uniformly distributed load only

c) Is zero if the beam has concentrated loads only

d) May or may not be zero

7) For any part of the beam, between two concentrated load Shear force diagram is a[ ]

a) Horizontal straight line b) Vertical straight lin

c) Line inclined to x-axis d) Parabola

8) For any part of a beam between two concentrated load, Bending moment diagram is a[ ]

a) Horizontal straight line b) Vertical straight line

c) Line inclined to x-axis d) Parabola

9) For any part of a beam subjected to uniformly distributed load, Shear force diagram is[ ]

a) Horizontal straight line b) Vertical straight line

c) Line inclined to x-axis d) Parabola

10) For any part of a beam subjected to uniformly distributed load, bending moment diagram is

a) Horizontal straight line b) Vertical straight line

c) Line inclined to x-axis d)Parabola

11) A sudden jump anywhere on the Bending moment diagram of a beam is caused by[ ]

a) Couple acting at that point b) Couple acting at some other point

c) Concentrated load at the point d) u.d.l or u.v.l on the beam

12) In a simple supported beam having length = l and subjected to a concentrated load (W) at mid-point. [ ]

a) Maximum Bending moment = Wl/4 at the mid-point

b) Maximum Bending moment = Wl/4 at the end

c) Maximum Bending moment = Wl/8 at the mid-point

d) Maximum Bending moment = Wl/8 at the end

13) In a simply supported beam subjected to uniformly distributed load (w) over the entire length (l), total load=W, maximum Bending moment is [ ]

a) Wl/8 or $wl^2/8$ at the mid-point

b) Wl/8 or $wl^2/8$ at the end

c) Wl/4 or $wl^2/4$

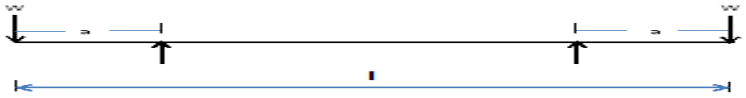
d) Wl/2

14) In a cantilever subjected to a concentrated load (W) at the free end and having length =l, Maximum bending moment is [ ]

a) Wl at the free end b) Wl at the fixed end

c) Wl/2 at the fixed end d) Wl at the free end

15) An axle is subjected to loads as shown [ ]



Maximum bending moment is

a) Wl b) W(l-a) c) Wa d) W(l+a)

16) At a point in a simply supported or overhanging beam where Shear force changes sign and = 0, Bending moment is [ ]

a) Maximum b) Zero c) Either increasing or decreasing d) Infinity

17) In a cantilever subjected to a combination of concentrated load, uniformly distributed load and uniformly varying load, Maximum bending moment is [ ]

a) Where shear force=0 b) At the free end C) At the fixed end d) At the mid-point

18) Point of contra-flexure is a [ ]

a) Point where Shear force is maximum b) Point where Bending moment is maximum

c) Point where Bending moment is zero

d) Point where Bending moment=0 but also changes sign from positive to negative

19) Point of contra-flexure is also called [ ]

a) Point of maximum Shear force b) Point of maximum Bending moment

c) Point of inflexion d) Fixed end

20) The slope of shear force line at any section of the beam is also called [ ]

a) Bending moment at that section b) Rate of loading at that section

c) Maximum Shear force d) Maximum bending moment

21) 1. In a simply supported beam carrying a uniformly distributed load over the left half span, the point of contra flexure will occur in [ ]

(a) Left half span of the beam (b) Right half span of the beam.

(c) Quarter points of the beam (d) Does not exist

22) A sudden increase or decrease in shear force diagram between any two points indicates that there is [ ]

(a) No loading between the two points (b) Point loads between the two points

(c) U.D.L. between the two points (d) None of these

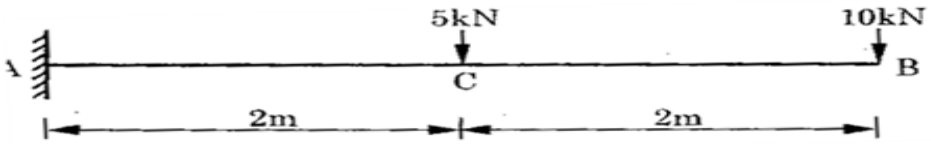
23) When the bending moment is parabolic curve between two points, it indicates that there is

(a) No loading between the two points (b) Point loads between the two points [ ]

(c) U.D.L. between the two points (d) Uniformly varying load between the two points

24) In Fig. (a), max. S.F. will be [ ]

(a) 5 Kn (b) 10 kN (c) 15 kN (d) 30 kN



Fig(a)

25) In Fig.(a), max B.M. will be [ ]

(a) 40 kN-m (b) 50 kN-m c) 60 kN-m (d) 80 kN-m

26) In Fig. (a), slope of S.F.D. between B and C will be [ ]

(a) Zero (b) 10 kN (c) 15 kN (d) 20 kN

27) In Fig. (a), slope of B.M.D. between B and C will be [ ]

(a) Zero (b) 5 kN (c) 20 kN (d) 15 kN

28) In Fig. (b), at point B, the value of B.M will be [ ]

(a) 5 kN b) 10 kN c) Zero (d) None of these

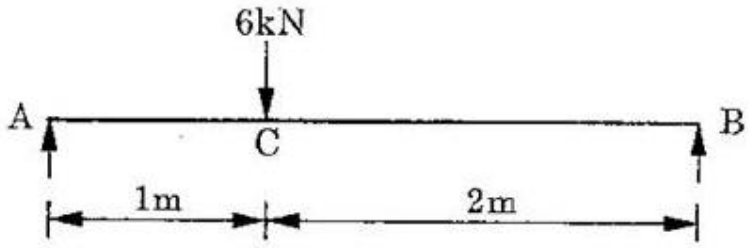


Fig. (b)

29) In Fig. (b), the reaction at support A will be [ ]

(a) 6 kN (b) 2 kN c) 4 kN (d) None of these

30) In Fig. (b), the maximum B.M. will be at [ ]

(a) Support A (b) Support B (c) Centre of beam (d) Under the load

31) In Fig. (b), the maximum B.M. will be [ ]

(a) 6 kN-m (b) 4 kN-m (c) 2 kN-m (d) 8 kN-m

32) In Fig. (c), the slope of B.M.D. will be more for [ ]

(a) Portion AC (b) Portion BC (c) Will be equal (d) None of these

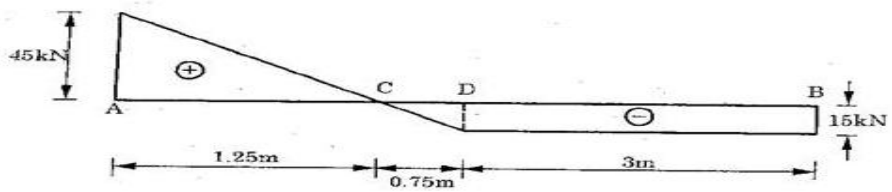


Fig. (c) S.F.D

33) Fig. (c) gives the S.F.D. for a [ ]

(a) Cantilever beam (b) Simply supported beam (c) Overhanging beam (d) Insufficient data

34) Corresponding to Fig. (c), the loading on the portion AD of the beam will be [ ]

(a) Uniformly distributed load (b) Uniformly varying load

(c) Point loads (d) Cannot be said

35) Corresponding to Fig. (c), the maximum bending moment will be at [ ]

(a) A (b) B (c) C (d) D

36) The beam having one end free and one end fixed is called as _____ [ ]

a. Cantilever beam b. Continuous beam c. Overhang beam d. Simply supported beam

37) In axial thrust diagram, at which point bending moment is zero? [ ]

a. Point of contra-flexure b. Point of inflection c. Both a. and b. d. None of the above

38) Uniformly varying load between two sections in shear force diagram is represented by [ ]

a. cubic curve b. inclined line c. horizontal line d. parabolic curve

39) In bending moment diagram, if no load acts between two sections, then it is represented by

a. horizontal line b. inclined line c. vertical line d. all of the above [ ]

40) The graphical representation of variation of axial load on y axis and position of cross section along x axis is called as _____ [ ]

a. Bending moment diagram b. Shear force diagram

c. Stress-strain diagram d. Trust diagram