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Design of Steel Structures

Basics

Part 1 and 2

A two dimensional structure is known as _____ while a 3 dimensional structure is known as _____

(A) surface, skeleton

(B) skeleton, surface

(C) space, surface

(D) surface, space

ANSWER: (D) surface, space

Skeleton structure is the one in which

(A) Members are connected in only one dimension with each other

(B) Members are represented by a line

(C) Structure is hollow and members possess only length and width

(D) Weight of the member is negligible

ANSWER: (B) Members are represented by a line

Advantages of steel structure is/are

(A) Long life and durability of structure

(B) High strength

(C) Easy reassembling and replacement

(D) All of the above

ANSWER: (D) All of the above

I sections or beams are used to resist

(A) Compressive forces

(B) Tensile forces

(C) Bending stresses

(D) All of the above

ANSWER: (D) All of the above

I sections are available in ___ series

(A) 3

(B) 4

(C) 5

(D) 6

ANSWER: (C) 5

State whether the following statement is true or false

"Steel channel sections are subjected to torsion mostly"

(A) True
(B) False

ANSWER: (A) True

ISA 100 x 100 x 10 mm stands for

(A) Two legs 100 mm long and 10 mm thick angle section

(B) Two 100 mm flanges and 10 mm thick web of I section

(C) Two 100 mm flanges and 10 mm web of channel section

(D) None of the above

ANSWER: (A) Two legs 100 mm long and 10 mm thick angle section

T sections are designated as

(A) ISNT 100

(B) ISNT 100 x 8

(C) ISNT 100 x 75 x 8

(D) 100 ISNT 8

ANSWER: (A) ISNT 100

I sections or beams are designated as

(A) [series][width of flange][web width][thickness]

(B) [series][flange width][web width]

(C) [series][thickness][width]

(D) [series][depth][weight/m length]

ANSWER: (D) [series][depth][weight/m length]

Indian standard angle sections are available in __ series

(A) 1

(B) 2

(C) 3

(D) 4

ANSWER: (B) 2

Rolled steel flats are designated as

(A) [series][width][thickness]

(B) [series][thickness][width]

(C) [width][series][thickness]

(D) [thickness][series][width]

ANSWER: (C) [width][series][thickness]

T sections are available in various ___ series

(A) 2

(B) 4

(C) 5

(D) 7

ANSWER: (C) 5

Weight of fixture attached to the structure including its self weight is called

(A) Superimposed load

(B) Dead load

(C) Dead load + Live load

(D) None of the above

ANSWER: (B) Dead load

_____ is the load on the structure other than dead load

(A) Wind load

(B) Uniformly distributed static load

(C) Superimposed load

(D) All of the above

ANSWER: (D) All of the above

Following load/s may be included in live load

(A) Wind load and snow load

(B) Dynamic load and erection load

(C) Seismic load and temperature stresses

(D) All of the above

ANSWER: (D) All of the above

Working stress is defined as

(A) Minimum stress to which the structure can be subjected

(B) Average stress to which the structure can be subjected

(C) Allowable stress to which the structure can be subjected

(D) Maximum stress to which the structure can be subjected

ANSWER: (C) Allowable stress to which the structure can be subjected

State whether the following statement is true or false

"Permissible stress induced in a structure is also known as working stress and no damage is caused to structure due to it"

(A) True

(B) False

ANSWER: (A) True

Bearing stress is known as

(A) Maximum load a structure can sustain

(B) Minimum load a structure can sustain

(C) Ratio of working stress to yield stress

(D) Stress developed when load is transferred to another surface in contact

ANSWER: (D) Stress developed when load is transferred to another surface in contact

Factor of safety in design of steel structure is the ratio of

(A) Yield stress to working stress

(B) Working stress to yield stress

(C) Bearing stress to yield stress

(D) Yield stress to bearing stress

ANSWER: (D) Yield stress to bearing stress

State whether the following statement is true or false

"Under an axial load, the ratio of lateral strain to longitudinal strain is called Poisson's ratio"

(A) True

(B) False

ANSWER: (A) True

Poisson's ratio for steel within elastic limit ranges from

(A) 0.12 to 0.23

(B) 0.34 to 0.46

(C) 0.30 to 0.36

(D) 0.25 to 0.33

ANSWER: (D) 0.25 to 0.33

The strength at which failure of steel takes place under repeated application of load is called as

(A) Fatigue strength

(B) Impact strength

(C) Shear strength

(D) None of the above

ANSWER: (A) Fatigue strength

Impact strength of a structure is its ability to

(A) Resist change in shape

(B) Absorb energy at high rate of loading

(C) Absorb repeated impact

(D) Resist crushing due to impact

ANSWER: (B) Absorb energy at high rate of loading