TEST-2 (STRENGTH OF MATERIL)

Objective Type Questions:-

Q.1 The unit of S.I units is
a) N/ mm^2 b) kN/ mm^2
c) N/ m^2 d) any one of these

Q.2 The deformation per unit length is called
a) tensile stress b) compressive stress
c) shear stress d) strain

Q.3 The unit of strain is
a) N-mn b) N/ mn
c) mm d) no unit

Q.4 Strain is equal to
a) l/ & l b) &l / l
c) l.&l d) l+&l

Q.5 When a body is subjected to two equal and opposite pushes, as a result of which of body and to reduce its length, the stress and strain induced is compressive
a) True b) False

Q.6 When a body subjected to two and opposite pulls, as a result of which of body tends extend its length, the stress and strain induced is
a) compressive stress, tensile strain
b) tensile stress, compressive strain
c) tensile stress, tensile strain
d) compressive stress, compressive strain

Q.7 When a body is subjected to two equal and opposite forces, acting tangentially across the section, as a result of which the body tends to shear off across the section, the stress and induced is
a) tensile stress, tensile strain
b) compressive stress, compressive strain
c) shear stress, tensile strain
d) shear stress, shear strain

Q.8 Which of the following is a proper sequence?
a) proportional limit, elastic limit, yielding, failure
b) elastic limit, proportional limit, yielding failure
c) yielding, proportional limit, elastic , limit, failure
d) None of these above

Q.9 Hook's law holds good up to
a) yield point
b) elastic limit
c) plastic limit
d) breaking point

Q.10 Whenever a material is loaded within elastic limit , stress is ……strain.
a) equal to
b) directly proportional to
c) inversely proportional to

Q.11 The ratio of linear stress to the linear strain is called.
a) modulus of rigidly
b) modulus of elastic
c) bulk modulus

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d) Poisson's ratio

Q.12 The unit of modulus of elasticity is same as those of
a) stress, strain and pressure
b) stress, force and modulus of rigidity
c) strain, force and pressure
d) stress, pressure and modulus of rigidity

Q.13 When a change in length takes place, the strain is known as
a) linear strain
b) lateral strain
c) volumetric strain
d) shear strain

Q.14 The change in length due to a tensile or compressive force acting on a body is given by
a) $\frac{P.I.A}{E}$ b) $\frac{PL}{AE}$
c) $\frac{E}{P.I.A}$ d) $\frac{AE}{PI}$

Q.15 The modulus of elasticity for mild steel is approximately equal to
a) 10kN/mm^2 b) 80kN/mm^2
c) 100kN/mm^2 d) 210kN/mm^2

Q.16 Young's modulus may be defined as the ratio of
a) linear stress to lateral strain
b) lateral strain to linear strain
c) linear stress to linear strain
d) shear stress to shear strain

Q.17 The unit of young's modulus is same as that of stress.
a) True b) False

Q.18 Two bars of different materials and same size are subjected to the same tensile force. If the behave unit elongation in the ratio 2 : 5 , then the ratio of modulus of elasticity of the two materials with be
a) 2 : 5 b) 5 : 2
c) 4 : 3 d) 3 : 4

Q.19 When a bar of length l and diameter d is rigidly fixed at the upper end and hanging freely, there the total elongation produced in the bar due to its own weight is
a) $\frac{wl}{2E}$ b) $\frac{wl^2}{2E}$
c) $\frac{wl^3}{2E}$ d) $\frac{wl^4}{2E}$

Q.20 The deformation of a bar under its own weight is …… The deformation, if the same body subjected to a direct load equal to weight of the body.
a) equal to b) half
c) double d) quadruple

Q.21 The elongation of a conical bar under its own weight is……that of prismatic bar of the same length.
a) equal to b) half
c) one-third d) two-third

Q.22 The length of a conical bar is l, diameter of base is d and weight per unit volume is w. It is fixed at its upper end and hanging freely. The elongation of the bar under the action of its own weight will be.
a) $\frac{wl^2}{2E}$ b) $\frac{wl^2}{4E}$
c) $\frac{wl^2}{6E}$ d) $\frac{wl^2}{8E}$

Q.23 Strain rosettes are used to
a) measure shear strain
b)measure linear strain
c) measure volumetric strain
d) relieve strain

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Q.24 A bar of length L meters extends by l mm under a tensile force of P. The strain produced in the bar is.

a) l/L b) 0.1l/L
c) 0.01l/L d) 0.001l/L

Q.25 The extension of a circular bar tapering uniformly from diameter d1 at one end diameter d2 at other end, and subjected to an axial pull of P is ……. The extension of a circular bar of diameter subjected to the same load P.

a) equal to
b) less than
c) greater than

Q.26 The ultimate tensile stress for mild steel is…… the unlimited compressive stress.

a) equal to
b) less than
c) more than

Q.27 The maximum stress produced in a bar of tapering section is at

a) smaller and b) larger end
c) middle d) anywhere

Q.28 Modular ratio of the two materials is the ratio of

a) linear stress to linear strain
b) shear stress t shear strain
c) their modulus of elasticity's
d) their modulus of rigidities

Q.29 A rod is enclosed centrally in a tube and the assembly is tightened by rigid washer. If the assembly is subjected to a compressive load, than

a) rod is under compression
b) tube is under compression
c) both rod and tube are under compression
d) tube is under tension and rod is under compression

Q.30 A bolt is made to pass through a tube and both of them are tightly fitted with the help of pushers and nuts. If the nut is tightened, then

a)both and tube are under tension
b) bolt and tube are under compression
c) bolt is under compression and tube is under tension
d) bolt is under tension and tube is under compression

Q.31 When a bar is subjected to a change of temperature and its deformation is prevented, the stress in the bar is/

a) tensile stress b) compressive stress
c) shear stress d) thermal stress

Q.32 A steel bar of 5 mm is heated from 15 deg. C to 40degC. And it is free to expand. The bar will induce.

a)no stress b)shear stress
c)tensile stress d) compressive stress

Q.33 When a bar is cooled to- 5 deg. C , it will develop

a) no stress b) shear stress
c) tensile stress d) compressive stress

Q.34 A bar of copper and steel form a composite system, which is heated to a temperature of 40 deg. .The stress induced in the copper bar will be

a) tensile b) compressive
c) shear d) zero

Q.35 The thermal stress in a bar is ……. Proportional to the change in temperature.

a) directly b) indirectly

Q.36 The thermal stress……..upon the cross-sectional area of the bar.

a) depends b) does not depend

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Q.37 If there is a fall in the temperature of a composite body , then a member having green coefficient of linear expansion will be subjected to compressive stress.
a) True b) False

Q.38 The thermal or temperature stress is a function of.
a) increase of temperature
b) modulus of elasticity
c) coefficient of linear expansion
d) all of these

Q.39 Which of the following statement is correct.
a) The stress is the pressure per unit area.
b) The strain is expressed in mm.
c) Hook's law holds good up to the breaking point.
d) Stress is directly proportional to strain within elastic limit.

Q.40 The deformation of the bar per unit length in the direction of the force is known as
a) linear strain b) lateral strain
c) volumetric strain d) shear strain

Q.41 Every direct stress is always accompanied by a strain in its own direction and an opposite k of strain in every direction, at right angles to it. Such a strain is known as
a) linear strain b) lateral strain
c) volumetric strain d) shear strain

Q.42 The ratio of the lateral strain to the strain is called.
a) modulus of elasticity
b) modulus of rigidity
c) bulk modulus
d) Poisson's ratio

Q.43 Poisson's ratio is the ratio of linear strain to the volumetric strain.
a) True b) False

Q.44 A steel bar 2m long, 20 mm wide and 10mm thick is subjected to a pull of 2kN . If the same is subjected to a push of 2kN, the Poisson's ratio of the bar in the tension will be ……..the Poisson ratio for the bar in compression.
a) equal to
b) less than
c) greater than

Q.45 The Poisson's ratio for steel vanish from
a) 0.23-0.27 b) 0.25-0.37
c) 0.31-0.34 d) -.32-0.42

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