Source: WSC – Year 2 - NIMI Question Bank

(Adopted for educational social service purpose only).

1 : What is the ratio of change in length to original length?

A : Linear strain B : Lateral strain C : Volumetric strain D : Poisson′s ratio

Ans:A

2 : What is the ratio between lateral strain and longitudinal strain?

A : Hooks law B : Young′s modulus C : Bulk modulus D : Poisson′s ratio

Ans: D

3 : Which symbol is used to express change in length?

A : L B : δl C : I D : e

Ans: B

4 : Which one is the stress?

A : Load per unit area B : Load and direction

C : Load and diameter D : Load and time

Ans: A

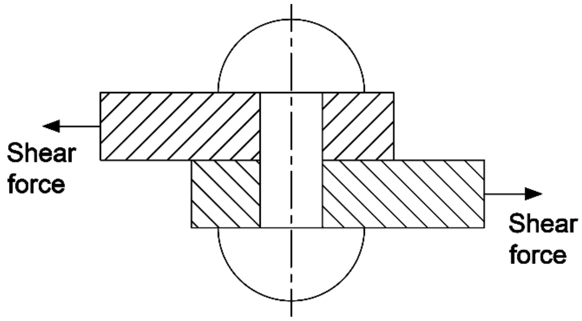
5 : Which force acts on rivets?

A : Tensile force B : Compressive force

C : Shear force D : Bending force

Ans: C

6 : Which type of stress?



Shear stress (Riveted joint)

A : Tensile stress

B : Compressive stress

C : Shear stress

D : Torsional stress

Ans: C

7 : What is the formula for bulk modulus?

A : Tensile stress/Tensile strain

B : Compressive stress/Compressive strain

C : Volumetric stress/Volumetric strain

D : Shear stress/Shear strain

Ans: C

8 : Which law states that within elastic limit stress is directly proportional to strain?

A :Newtons law

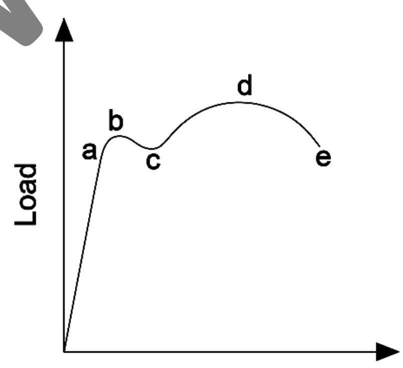
B : Hooks law

C : Joules law

D : Charles law

Ans: B

9 : What is the name of the point ′c′?



A : Yield point B : Elastic limit C : Ultimate load D : Fracture

Ans: A

10: What is the term used for maximum stress attained by a material before rupture?

A : Tensile stress B : Compressive stress

C : Working stress D : Ultimate stress

Ans: D

11 : What is the ratio between ultimate stress to working stress?

A : Bulk modulus B : Young′s modulus

C : Factor of safety D : Modulus of rigidity

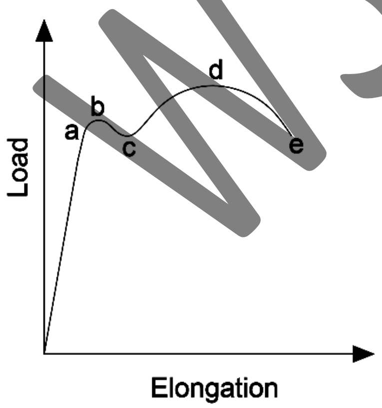
Ans: C

12 : What is the ratio of ultimate load to area of original cross section?

A : Factor of safety B : Yield point C : Ultimate stress D : Young's modulus

Ans: C

13 : What does the point 'b′ denotes in the stress-strain graph?

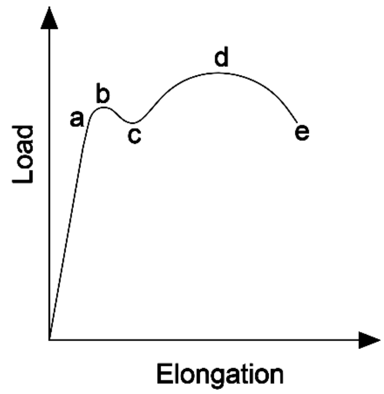


A : Elastic limit B : Yield point

C : Limit of proportionality D : Ultimate load

Ans: A

13 .1 What does the point ′a′ denotes in the stress-strain graph?



A : Elastic limit

B : Yield point

C : Limit of proportionality

D : Ultimate load

Ans: C

14 : What is the ratio of shear stress to shear strain?

A : Modulus of elasticity

B : Modulus of rigidity

C : Bulk modulus

D : Yield point

Ans: B

15 : What is the ratio between stress and strain?

A : Yield point

B : Factor of safety

C :Young's Modulus

D : Poisson′s ratio

Ans: C

16 : Which force acts on crank shaft?

A : Shear stress

B : Torsional stress

C : Tensile stress

D : Compressive stress

Ans: B

17 : Which is thermosetting plastic?

A : Vinyl polymers

B : Polystyrenes

C : Celluloid

D : Melamine resins

Ans: D

18 : What force will be required to punch a hole of 10 mm dia in a 1 mm thick plate, if the allowable shear stress is 50N/mm²? ($\pi = 22/7$)

A : 1757 N B : 1575 N C : 1571.4 N D : 1577 N

Ans: C ($\pi d t f_s$)

19: What is the tensile stress if a square rod of 10 mm side is tested for a tensile load of 1000 kg?

A : 1 kg/mm² B : 10 kg /mm² C : 100 kg/mm² D : 1000 kg/mm²

Ans: B

20 : What is the tensile strain if a force of 3.2 KN is applied to a bar of original length 2800 mm extends the bar by 0.5 mm?

A : 0.0001786 B : 0.0001687 C : 0.0001867 D : 0.0001968

Ans: A

21 : How much strain is developed in an iron rod of 1 metre length gets elongated by 1 cm, if a force of 100 kg is applied at one end?

A : 0.1 B : 0.01 C : 0.001 D : 0.0001

Ans: B

22 : What is the Youngs modulus if a wire of 2m long, 0.8 mm^2 in cross section increases its length by 1.6 mm on suspension of 8 kg weight from it?

A : 1.25 kg/mm² B : 12.5 kg /mm² C : 125 kg/mm² D : 12500 kg/mm²

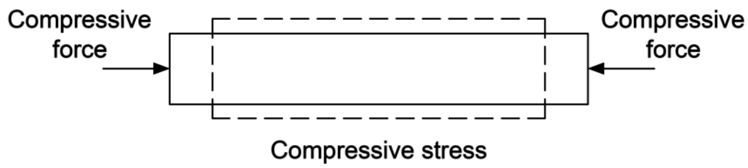
Ans: D

23 : What is the safe stress if the ultimate stress of a material is 35 kg/mm² and factor of safety is 5?

A : 0.143 B : 0.7 C : 1.43 D : 7

Ans: D (Factor of Safety= UTS/safe stress)

24 : Which type of stress?



A : Tensile stress

B : Compressive stress

C : Shear stress

D : Torsional stress

Ans: B

25 : What are the various types of heat treatment processes?

A : Annealing, Normalising, Hardening and Tempering

B : Normalising, Heating, Cooling and Painting

C : Hardening, Soaking, Painting and Packing

D : Tempering, Cooling, Packing and Painting

Ans: A

26 : What is the process of heat treatment of an object/material?

A : The process of heating and cooling to change the structure and properties

B : The process of heating to change the dimensions

C : The process of cooling to measure the dimensions

D : The process of heating and bending as per our requirement

Ans: A

27 : What are the various stages of heat treatment?

A : Heating, Cooling and Quenching

B : Quenching, Cooling and Heating

C : Heating, Soaking and Quenching

D : Soaking, Quenching and Cooling

Ans: C

28 : What is the name of the structure formed, if a steel is heated for about 723°C?

A :Cementide B : Austenite C : Martensite D : Ferrite

Ans: B

29 : Which heat treatment process is done to refine the grain structure of the steel?

A : Annealing B : Normalising C : Hardening D : Tempering

Ans: B

30: What is the name of heat treatment process done to relieve strain and stress?

A : Normalising B : Annealing C : Hardening D : Tempering

Ans: B

31 : Which process produce equilibrium conditions?

A : Annealing and Hardening B : Normalising and Tempering

C : Annealing and Normalising D : Normalising and Tempering

Ans: C

32 : Which process steel is heated in a carbonaceous atmosphere for the penetration of carbon?

A : Case hardening B : Nitriding C : Carburising D : Induction hardening

Ans: C

33 : Which is the suitable nitriding process for all alloyed and unalloyed steels?

A : Silver nitriding B : Nitriding in salt-bath

C :Nitriding in Quenching tank D : Gas nitriding

Ans: B

34 : What is the name of the heat treatment process, where the metal is heated and quenched in water or oil?

A : Hardening

B : Normalising and Tempering

C : Annealing

D : Tempering

Ans: A

35 : Which is a kind of surface hardening process?

A :Cementide

B : Ferrite

C : Nitriding

D : Tempering

Ans: C

36 : How much time is allowed normally in soaking zone for a 10mm thick metal piece while hardening?

A : 5 minute

B : 10 minute

C : 15 minute

D : 20 minute

Ans: A

37 : What is colour of a metal piece when heated to 250°C while doing the tempering process?

A : Blue

B : Brown

C : Purple

D : Pale

Ans: B

38 : What is the purpose of tempering a steel?

A : To reduce the brittleness

B : To remove the ductility

C : To increase the hardness

D : To increase the brittleness

Ans: A

39 : What is the ratio between the distance moved by the effort to the distance moved by the load?

A : Mechanical advantage

B : Velocity ratio, VR

C : Efficiency

D : Fulcrum

Ans : B

40 : What is the mechanical advantage, MA (load/effort) if a load of 1000 kg is lifted by a simple machine and effort applied is 250 kg?
A : 6
B : 8
C : 3
D : 4

Ans : D

41: What is the velocity ratio, VR of a wheel and axle if the radii of wheel and axle are 375 mm and 75 mm respectively?
A : 3
B : 4
C : 5
D : 6

Ans : C

42 : What is the velocity ratio, VR of a simple machine of a mass 120 kg is lifted to a height of 5 metre by a force of 60 kg moving 15 metre. Calculate velocity ratio?
A : 1
B : 2
C : 3
D : 4

Ans : C

43 : What is the efficiency of a simple screw jack having velocity ratio is 314.2 and mechanical advantage is 220?
A : 0.6
B : 0.65
C : 0.7
D : 0.75

Ans : C

44 : How much load is lifted if an effort of 25 kg is applied to a simple machine having velocity ratio of 4 and efficiency 75%?

A : 65 kg
B : 70 kg
C : 75 kg
D : 80 kg

Ans : C

45 : What is the name of fixed or supporting point of a lever?
A : Mechanical advantage
B : Fulcrum
C : Effort
D : Load

Ans : C

46 : What effort required to lift a load of 150 kg in a wheel and axle, if the velocity ratio is 2.5 and the efficiency of the Workshop Calculation and Science machine is 75%?
A : 70 kg
B : 80 kg
C : 90 kg
D : 100 kg

Ans : B

47 : What is the distance of the load from the fulcrum called?
A : Effort arm
B : Load arm
C : Power arm
D : Effort

Ans : B

48 : Which is example for first order lever?
A : A wheel barrow
B : A pair of scissors
C : Fire tongs
D : Lime squeezer

Ans : B

49 : Which is example for second order lever?
A : Common balance
B : A pair of scissors
C : Bottle opener
D : Human forearm

Ans : C

50: Which is example for third order lever?
A : Common balance
B : Forceps
C : A pair of scissors
D : Lime squeezer

Ans : B