



**(Papers) SSC Junior Engineer Exam Paper - 2017 "held on 01 March 2017 "Morning Shift (General Engineering)**

QID : 801 -

The ratio  $\frac{\text{surface convection resistance}}{\text{internal conduction resistance}}$  is known as \_\_\_\_\_.

$\frac{\text{सतह संवहन प्रतिरोध}}{\text{आंतरिक चालक प्रतिरोध}}$  का अनुपात क्या कहलाता है?

**Options:**

- 1) Grashoff number
- 2) Biot number
- 3) Stanton number
- 4) Prandtl number

**Correct Answer:** Biot number

QID : 802 - An ideal air compressor cycle (with clearance) on p-v diagram can be represented by \_\_\_\_\_ processes.

**Options:**

- 1) one adiabatic, two isobaric, and one constant volume
- 2) two adiabatic and two isobaric
- 3) two adiabatic, one isobaric, and one constant volume
- 4) one adiabatic, one isobaric, and two constant volume

**Correct Answer:** two adiabatic and two isobaric

**QID : 803** - In a shell and tube heat exchanger, baffles are provided on the shell side to \_\_\_\_\_.

**Options:**

- 1) Prevent the stagnation of shell side fluid
- 2) Improve heat transfer
- 3) Provide support for tubes
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 804** - The ratio of the thickness of thermal boundary layer to the thickness of hydrodynamic boundary layer is equal to  $(Prandtl\ number)^n$ , where n is\_\_\_\_\_.

**Options:**

- 1) - 1/3
- 2) - 2/3
- 3) 1
- 4) - 1

**Correct Answer:** - 1/3

**QID : 805** - In regarding nucleate boiling \_\_\_\_\_.

**Options:**

- 1) The temperature of the surface is greater than the saturation temperature of the liquid
- 2) Bubbles are created by expansion of entrapped gas or vapour at small cavities in the surface
- 3) The temperature is greater than that of film boiling
- 4) All options are correct

**Correct Answer:** The temperature is greater than that of film boiling

**QID : 806** - Boundary layer is defined as \_\_\_\_\_.

**Options:**

- 1) A thin layer at the surface where gradients of both velocity and temperature are small
- 2) A thin layer at the surface where velocity and velocity gradients are large
- 3) A thick layer at the surface where velocity and temperature gradients are large
- 4) A thin layer at the surface where gradients of both velocity and temperature are large

**Correct Answer:** A thin layer at the surface where gradients of both velocity and temperature are large

**QID : 807** - Two insulating materials of thermal conductivity K and 2K are available for lagging a pipe carrying a hot fluid. If the radial thickness of each material is the same \_\_\_\_\_.

**Options:**

- 1) Material with higher thermal conductivity should be used for the inner layer and one with layer and one with lower thermal conductivity for the outer

2) Material with lower thermal conductivity should be used for the inner layer and one with higher thermal conductivity for the outer

3) It is immaterial in which sequence the insulating materials are used

4) None of these

**Correct Answer:** Material with lower thermal conductivity should be used for the inner layer and one with higher thermal conductivity for the outer

**QID : 808** - Critical thickness of insulation for spheres is given by \_\_\_\_\_.

**Options:**

1)  $k/h$

2)  $k/4h$

3)  $h/2k$

4)  $2k/h$

**Correct Answer:**  $2k/h$

**QID : 809** - Which surface will have the least emissivity ?

**Options:**

1) Smooth glass

2) Plaster

3) Aluminium foil

4) Concrete

**Correct Answer:** Aluminium foil

**QID : 810** - The process of heat transfer from one particle of the body to another without the actual motion of the particle, is known as \_\_\_\_\_ .

**Options:**

1) Conduction

2) Convection

3) Radiation

4) All options are correct

**Correct Answer:** Conduction

**QID : 811** - The process of heat transfer from a hot body to a cold body in a straight line, without affecting the intervening medium, is known as \_\_\_\_\_.

**Options:**

1) Conduction

2) Convection

3) Radiation

4) All options are correct

**Correct Answer:** Radiation

**QID : 812** - Heat is transferred from an electric bulb by \_\_\_\_\_.

**Options:**

- 1) Conduction
- 2) Convection
- 3) Radiation
- 4) All options are correct

**Correct Answer:** Radiation

**QID : 813** - Assumption made in the Fourier's law is that the heat flow

- A. Is in steady state
- B. Through a solid medium in one dimension

**Options:**

- 1) Only (A)
- 2) Only (B)
- 3) Both (A) and (B)
- 4) None of these

**Correct Answer:** Both (A) and (B)

**QID : 814** - If thermal conductivity of a material of wall varies as  $K_0 (1 + \alpha t)$ , then the temperature at the centre of the wall as compared to that in case of constant thermal conductivity, will be \_\_\_\_\_.

**Options:**

- 1) More
- 2) Less
- 3) Same
- 4) Depend on other factors

**Correct Answer:** More

**QID : 815** - With increase in temperature, thermal conductivity of air \_\_\_\_\_.

**Options:**

- 1) Increases
- 2) Decreases
- 3) Remains the same
- 4) None of these

**Correct Answer:** Increases

**QID : 816** - Liquid metal having highest thermal conductivity is of \_\_\_\_\_.

**Options:**

- 1) Sodium
- 2) Potassium

- 3) Lead
- 4) Mercury

**Correct Answer:** Sodium

**Candidate Answer:** Mercury

**QID : 817** - Minimum thermal diffusivity is of \_\_\_\_\_.

**Options:**

- 1) Aluminium
- 2) Rubber
- 3) Iron
- 4) Lead

**Correct Answer:** Rubber

**QID : 818** - Critical radius of a hollow cylinder is defined as \_\_\_\_\_.

**Options:**

- 1) Outer radius which gives maximum heat flow
- 2) Outer radius which gives minimum heat flow
- 3) Inner radius which gives minimum heat flow
- 4) Inner radius which gives maximum heat flow

**Correct Answer:** Outer radius which gives maximum heat flow

**QID : 819** - Heat exchangers are used in

- A. Condensers and boilers in steam plants
- B. Radiators
- C. Intercoolers and preheaters
- D. Condensers and evaporators in refrigerators and air conditioners

**Options:**

- 1) Only A
- 2) Only B
- 3) Only C
- 4) A, B, C and D

**Correct Answer:** A, B, C and D

**QID : 820** - Automobile radiator is a heat exchanger of \_\_\_\_\_ type.

**Options:**

- 1) Counter flow
- 2) Parallel flow
- 3) Cross flow
- 4) Regenerator

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**Correct Answer:** Cross flow

**QID : 821** - For a closed system, difference between the heat added to the system and work done by the gas, is equal to the change in\_\_\_\_\_.

**Options:**

- 1) Enthalpy
- 2) Entropy
- 3) Internal energy
- 4) Temperature

**Correct Answer:** Internal energy

**QID : 822** - The sequence of process that eventually returns the working substance to its original state, is known as \_\_\_\_\_.

**Options:**

- 1) Event
- 2) Thermodynamic cycle
- 3) Thermodynamic property
- 4) None of these

**Correct Answer:** Thermodynamic cycle

**QID : 823** - According to Kelvin-Planck's statement, a perpetual motion machine of \_\_\_\_\_.

**Options:**

- 1) First kind is possible
- 2) First kind is impossible
- 3) Second kind is impossible
- 4) Second kind is possible

**Correct Answer:** Second kind is impossible

**QID : 824** - According to kinetic theory of gases, at absolute zero \_\_\_\_\_.

**Options:**

- 1) Specific heat of molecules reduces to zero
- 2) Kinetic energy of molecules reduces to zero
- 3) Volume of gas reduce to zero
- 4) Pressure of gas reduce to zero

**Correct Answer:** Kinetic energy of molecules reduces to zero

**QID : 825** - According to Gay-Lussac's law for perfect gases, the absolute pressure of given mass varies directly as \_\_\_\_\_.

**Options:**

- 1) Temperature
- 2) Absolute temperature
- 3) Absolute temperature, if volume remains constant
- 4) Product of absolute temperature and volume

**Correct Answer:** Absolute temperature, if volume remains constant

**QID : 826** - Three states of matter are distinguished with respect to molecules by the \_\_\_\_\_.

**Options:**

- 1) Atoms in molecules
- 2) Number
- 3) Orientation
- 4) Character of motion

**Correct Answer:** Character of motion

**QID : 827** - Equal volume of all gases, at the same temperature and pressure, contain equal number of molecules. This is according to \_\_\_\_\_.

**Options:**

- 1) Charle's law
- 2) Avagardo's law
- 3) Joule's law
- 4) Gay Lussac law

**Correct Answer:** Avagardo's law

**QID : 828** - Specific heat of a gas,  $C_p = C_v$ , at

**Options:**

- 1) Absolute zero
- 2) Critical temperature
- 3) Triple point
- 4) All temperatures

**Correct Answer:** Absolute zero

**QID : 829** - The specific heat at constant volume of solids obeys Debye's  $T^3$  law at \_\_\_\_\_.

**Options:**

- 1) High temperatures
- 2) Low temperatures
- 3) High pressures
- 4) All temperatures

**Correct Answer:** All temperatures

**QID : 830** - A reversible process \_\_\_\_\_.



**Options:**

- 1) Must pass through a continuous series of equilibrium states
- 2) Leaves no history of the events in surroundings
- 3) Must pass through the same states on the reversed path as on the forward path
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 831** - In Red Wood Viscometer \_\_\_\_\_.

**Options:**

- 1) Absolute value of viscosity is determined
- 2) Part of the head of fluid is utilised in overcoming friction
- 3) Fluid discharges through orifice with negligible velocity
- 4) Comparison of viscosity is done

**Correct Answer:** Absolute value of viscosity is determined

**QID : 832** - A rotameter is a device used to measure \_\_\_\_\_.

**Options:**

- 1) Velocity of fluid in pipes
- 2) Velocity of gauges
- 3) Vortex flow
- 4) Flow of fluids

**Correct Answer:** Flow of fluids

**QID : 833** - Steady flow occurs when \_\_\_\_\_.

**Options:**

- 1) Pressure does not change along the flow
- 2) Velocity does not change
- 3) Conditions change gradually with time
- 4) Conditions do not change with time at any point

**Correct Answer:** Conditions do not change with time at any point

**QID : 834** - If the particles of a fluid attain such velocities that vary from point to point in magnitude and direction as well as from instant, the flow is \_\_\_\_\_.

**Options:**

- 1) Uniform flow
- 2) Steady flow
- 3) Turbulent flow
- 4) Laminar flow

**Correct Answer:** Turbulent flow

**QID : 835** - Flow occurring in a pipeline when a valve is being opened is \_\_\_\_\_.

**Options:**

- 1) Steady
- 2) Unsteady
- 3) Laminar
- 4) Vortex

**Correct Answer:** Unsteady

**QID : 836** - For measuring flow by a Venturimeter, it should be installed in \_\_\_\_\_.

**Options:**

- 1) Vertical line
- 2) Horizontal line
- 3) Inclined line with upward flow
- 4) In any direction and in any location

**Correct Answer:** In any direction and in any location

**QID : 837** - A streamline is defined as the line \_\_\_\_\_.

**Options:**

- 1) Parallel to central axis flow
- 2) Parallel to outer surface to pipe
- 3) Of equal velocity in a flow
- 4) Along with the pressure drop is uniform

**Correct Answer:** Of equal velocity in a flow

**QID : 838** - The purpose of surge tank in a pipe line is to \_\_\_\_\_.

**Options:**

- 1) Smoothen the flow of water
- 2) Compensate friction losses in pipe
- 3) Prevent occurrence of hydraulic jump
- 4) Relieve pressure due to water hammer

**Correct Answer:** Compensate friction losses in pipe

**QID : 839** - The resultant upward pressure of a fluid on a floating body is equal to the weight of fluid displaced by the body. This definition is according to \_\_\_\_\_.

**Options:**

- 1) Buoyancy
- 2) Equilibrium of a floating body
- 3) Archimedes' principle
- 4) Bernoulli's theorem

**Correct Answer:** Buoyancy

**QID : 840** - A balloon lifting in air follows the \_\_\_\_\_.

**Options:**

- 1) Law of gravitation
- 2) Archimedes principle
- 3) Principle of buoyancy
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 841** - Hydraulic grade line as compared to the centre line of conduct \_\_\_\_\_.

**Options:**

- 1) Should be always above
- 2) Should be always below
- 3) Should always be parallel
- 4) May be above or below

**Correct Answer:** Should be always above

**QID : 842** - A Piezometer cannot be used for pressure measurement in pipes when \_\_\_\_\_.

**Options:**

- 1) Pressure difference is low
- 2) Velocity is high
- 3) Fluid in the pipe is a gas
- 4) Fluid is highly viscous

**Correct Answer:** Fluid in the pipe is a gas

**QID : 843** - A Hot Wire Anemometer is used for the measurement of \_\_\_\_\_.

**Options:**

- 1) Pressure of gases
- 2) Velocity of gases
- 3) Viscosity of gases
- 4) Viscosity of liquids

**Correct Answer:** Velocity of gases

**QID : 844** - Friction drag is generally larger than the pressure drag in \_\_\_\_\_.

**Options:**

- 1) Flow past a sphere
- 2) Flow past a cylinder
- 3) Flow past an airfoil
- 4) Flow past a thin sheet

**Correct Answer:** Flow past a cylinder

**QID : 845** - If one of the wall moves in the direction of flow with uniform velocity while the other wall is stationary, then the resulting flow between parallel walls is called \_\_\_\_\_.

**Options:**

- 1) Plug flow
- 2) Stoke's flow
- 3) Couette flow
- 4) Euler's flow

**Correct Answer:** Plug flow

**QID : 846** - The ratio of the energy absorbed by the body to total energy falling on it is called \_\_\_\_\_.

**Options:**

- 1) absorptive power
- 2) emissive power
- 3) emissivity
- 4) None of these

**Correct Answer:** absorptive power

**QID : 847** - In a flow field, at the stagnation point \_\_\_\_\_.

**Options:**

- 1) Pressure is zero
- 2) velocity of fluid is zero
- 3) Pressure head is equal to velocity
- 4) All the velocity head is converted into pressure head

**Correct Answer:** velocity of fluid is zero

**QID : 848** - Viscosity is the most important property in the \_\_\_\_\_.

**Options:**

- 1) Travel of a bullet through air
- 2) Water jet issuing from a fire air
- 3) Formation of soap bubbles
- 4) Flow of castor oil through a tube

**Correct Answer:** Formation of soap bubbles

**QID : 849** - If pressure at any point in the liquid approaches the vapor pressure, liquid starts vaporising and creates pockets or bubbles of dissolved gases and vapours. This phenomenon



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is \_\_\_\_\_.

**Options:**

- 1) Surface tension
- 2) Adhesion
- 3) Vaporisation
- 4) Cavitation

**Correct Answer:** Surface tension

**QID : 850** - The fluid forces considered in the Navier-Stokes equation are \_\_\_\_\_.

**Options:**

- 1) Gravity, pressure and viscous
- 2) Gravity, pressure and turbulent
- 3) Pressure, viscous and turbulent
- 4) Gravity, viscous and turbulent

**Correct Answer:** Gravity, pressure and viscous

**QID : 851** - Hydraulic grade line for any flow system as compared to energy line is \_\_\_\_\_.

**Options:**

- 1) Above
- 2) Below
- 3) At same level
- 4) Uncertain

**Correct Answer:** Below

**QID : 852** - To avoid vaporisation in the pipe line, the pipe line over the ridge is laid such that it is not more than \_\_\_\_\_.

**Options:**

- 1) 2.4 m above the hydraulic gradient
- 2) 6.4m above the hydraulic gradient
- 3) 10.0 m above the hydraulic gradient
- 4) 5.0 m above the hydraulic gradient

**Correct Answer:** 2.4 m above the hydraulic gradient

**QID : 853** - The locus of elevations that water will rise in a series of pitot tube is called \_\_\_\_\_.

**Options:**

- 1) Hydraulic grade line
- 2) Pressure head

3) Energy grade line

4) Head loss

**Correct Answer:** Energy grade line

**QID : 854** - Pressure in Pascals at a depth of 1 m below the free surface of a body of water will be equal to \_\_\_\_\_.

**Options:**

1) 1 Pa

2) 98.1 Pa

3) 981 Pa

4) 9810 Pa

**Correct Answer:** 9810 Pa

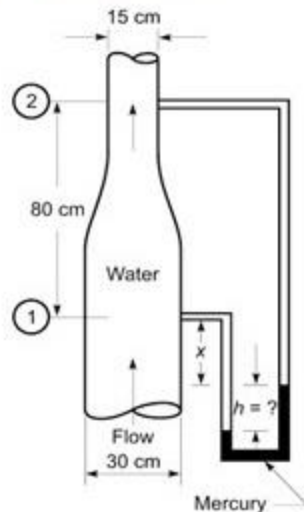
**QID : 855** -

Water flows up a tapered pipe as shown in the figure. What is the magnitude of the deflection  $h$  of the differential mercury manometer corresponding to a discharge of 126 L/s?

The friction in the pipe can be completely neglected.

दर्शाई गई आकृति के अनुसार जल शुंडित नली (टेपर्ड पाइप) से प्रवाहित हो रहा है। 126 L/s निर्वहन के संगत डिफ्रेंशियल मर्करी मनोमीटर के डिफ्लेक्सन  $h$  का परिमाण क्या होगा ?

पाइप में होने वाले घर्षण को पूर्णतः नगण्य माना जा सकता है।



**Options:**

1) 16.28 cm

2) 17.28 cm

3) 19.28 cm

4) 25.28 cm

**Correct Answer:** 19.28 cm

**QID : 856** - If a pump is handling water and is discharging a certain flow  $Q$  at a constant total dynamic head requiring a definite B.H.P., the same pump when handling a liquid of specific gravity 0.75 and viscosity nearly same as of water would discharge

**Options:**

- 1) same quantity of liquid
- 2)  $0.75Q$
- 3)  $Q/0.75$
- 4)  $1.5Q$

**Correct Answer:** same quantity of liquid

**QID : 857** - A 20 cm diameter pipe 5000 metres long conveys 0.05 cumec of water which is to be pumped through a height of 6 metres. What is the horse power required by the pump, if its efficiency is 75 % ?(take  $4f = 0.006$ )

**Options:**

- 1) 74.2 HP
- 2) 74 HP
- 3) 75 HP
- 4) 50 HP

**Correct Answer:** 74.2 HP

**QID : 858** - For laminar flow in a pipe,  $V$  is equal to

**Options:**

- 1)  $U_{max}$
- 2)  $0.5 U_{max}$
- 3)  $0.25 U_{max}$
- 4)  $2 U_{max}$

**Correct Answer:**  $0.5 U_{max}$

**QID : 859** - Water at  $20^\circ\text{C}$  flowing through a 20 cm diameter pipe. Take kinematic viscosity of water at  $20^\circ\text{C}$  is equal to 0.0101 stoke. Assume that the changes from laminar to turbulent at  $Re = 2320$ . The critical velocity will be \_\_\_\_\_.

**Options:**

- 1) 1.117 cm/sec
- 2) 11.17 cm/sec
- 3) 111.7 cm/sec
- 4) 1.117 m/sec

**Correct Answer:** 1.117 cm/sec



**QID : 860** - Surge wave is an example of \_\_\_\_\_.

**Options:**

- 1) Steady uniform flow
- 2) Steady non-uniform flow
- 3) Unsteady uniform flow
- 4) Unsteady non-uniform flow

**Correct Answer:** Unsteady non-uniform flow

**QID : 861** - Quick return mechanism is an inversion of \_\_\_\_\_.

**Options:**

- 1) Four bar chain
- 2) Single slider crank chain
- 3) Double slider crank chain
- 4) Crossed slider crank chain

**Correct Answer:** Single slider crank chain

**QID : 862** - In gears, interference takes place when \_\_\_\_\_.

**Options:**

- 1) Tip of a tooth of a mating gear digs into the portion between base and root circles
- 2) Gears do not move smoothly in the absence of lubrication
- 3) Pitch of the gear is not same
- 4) Gear teeth are undercut

**Correct Answer:** Tip of a tooth of a mating gear digs into the portion between base and root circles

**QID : 863** - In a multiple V belt drive, when a single belt is damaged, it is preferable to change the complete set to \_\_\_\_\_.

**Options:**

- 1) Reduce vibration
- 2) Reduce slip
- 3) Ensure uniform loading
- 4) Ensure proper alignment

**Correct Answer:** Ensure proper alignment

**QID : 864** - The centre of gravity of the coupler link in a 4-bar mechanism would experience \_\_\_\_\_.

**Options:**

- 1) No acceleration
- 2) Only linear acceleration

- 3) Only angular acceleration
- 4) Both linear and angular accelerations

**Correct Answer:** Both linear and angular accelerations

**QID : 865** - The amplitude of underdamping a small damping varies with time as \_\_\_\_\_.

**Options:**

- 1) Linearly
- 2) Arithmetically
- 3) Geometrically
- 4) Exponentially

**Correct Answer:** Exponentially

**QID : 866** - Whirling speed of a shaft coincide with the natural frequency of the \_\_\_\_\_.

**Options:**

- 1) Longitudinal vibration
- 2) Transverse vibration
- 3) Torsional vibration
- 4) Coupled between torsional vibration

**Correct Answer:** Transverse vibration

**QID : 867** - A mass of 1 kg is attached to the end of a spring with stiffness 0.7 N/mm. The critical damping coefficient of this system is \_\_\_\_\_.

**Options:**

- 1) 1.40 Ns/m
- 2) 18.522 Ns/m
- 3) 52.92 Ns/m
- 4) 529.20 Ns/m

**Correct Answer:** 52.92 Ns/m

**QID : 868** - Rankine's theory of failure is applicable for which of the following type of materials?

**Options:**

- 1) Brittle
- 2) Ductile
- 3) Elastic
- 4) Plastic

**Correct Answer:** Brittle

**QID : 869** - The shock absorbing capacity of a bolt can be increased by \_\_\_\_\_.

**Options:**

- 1) Tightening it properly

2) Increasing shank diameter

3) Grinding the shank

4) Using washer

**Correct Answer:** Grinding the shank

**QID : 870** - Which if the following key is under compression rather than in being shear when under load?

**Options:**

1) Saddle

2) Barth

3) Feather

4) Kennedy

**Correct Answer:** Barth

**QID : 871** - Shaft is subjected to which of the following stresses?

**Options:**

1) Bending

2) Torsional

3) Both bending and torsional

4) None of these

**Correct Answer:** Both bending and torsional

**QID : 872** - Which of the following is self-aligning bearing?

**Options:**

1) Conical

2) Spherical

3) Rectangular

4) None of these

**Correct Answer:** Spherical

**QID : 873** - Which of the following is Trapezoidal thread?

**Options:**

1) Acme

2) Square

3) Buttress

4) All options are correct

**Correct Answer:** Acme

**QID : 874** - The efficiency of self-locking screw is \_\_\_\_\_.

**Options:**

1) More than 50%

- 2) Less than 50%
- 3) Equal to 50%
- 4) None of these

**Correct Answer:** Less than 50%

**QID : 875** - The most suitable bearing for carrying very heavy loads with slow speed is \_\_\_\_\_.

**Options:**

- 1) Hydrodynamic bearing
- 2) Ball bearing
- 3) Roller bearing
- 4) Hydrostatic bearing

**Correct Answer:** Hydrostatic bearing

**QID : 876** - The outside diameter of a hollow shaft is twice it's inside diameter. The ratio of its torque carrying capacity to that of a solid shaft of the same material and the same outside diameter is \_\_\_\_\_

**Options:**

- 1) 15/16
- 2) 3/4
- 3) 1/2
- 4) 1/16

**Correct Answer:** 15/16

**QID : 877** - A solid shaft can resist a bending moment of 3 kNm and a twisting moment of 4 kNm together, then the maximum torque that can be applied is \_\_\_\_\_.

**Options:**

- 1) 7.0 kNm
- 2) 3.5 kNm
- 3) 4.5 kNm
- 4) 5.0 kNm

**Correct Answer:** 5.0 kNm

**QID : 878** - Under torsion, brittle materials generally fail \_\_\_\_\_.

**Options:**

- 1) Along a plane perpendicular to its longitudinal axis
- 2) In the direction of minimum tension
- 3) Along surfaces forming a 45° angle with the longitudinal axis
- 4) Not in any specific manner

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**Correct Answer:** Along surfaces forming a  $45^\circ$  angle with the longitudinal axis

**QID : 879** - The shear stress distribution over a rectangular cross-section of a beam follows \_\_\_\_\_.

**Options:**

- 1) A straight line path
- 2) A circular path
- 3) A parabolic path
- 4) An elliptical path

**Correct Answer:** A parabolic path

**QID : 880** - When two mutually perpendicular principal stresses are unequal but alike, the maximum shear stress is represented by \_\_\_\_\_.

**Options:**

- 1) The diameter of the Mohr's circle
- 2) Half the diameter of the Mohr's circle
- 3) One-third the diameter of the Mohr's circle
- 4) One-fourth the diameter of the Mohr's circle

**Correct Answer:** Half the diameter of the Mohr's circle

**QID : 881** - The plane of maximum shear stress has normal stress that is \_\_\_\_\_.

**Options:**

- 1) Maximum
- 2) Minimum
- 3) Zero
- 4) None of these

**Correct Answer:** Zero

**QID : 882** - Consider the following theories of failure:

- A. Maximum stress theory
- B. Maximum strain theory
- C. Maximum shear stress theory
- D. Maximum energy or distortion theory

The most suitable for ductile material is

**Options:**

- 1) A and B
- 2) A and C
- 3) A and D
- 4) C and D

**Correct Answer:** C and D

**QID : 883** - For ductile materials, the most appropriate failure theory is \_\_\_\_\_.

**Options:**

- 1) Maximum shear stress theory
- 2) Maximum principal stress theory
- 3) Maximum principal strain theory
- 4) Shear strain energy theory

**Correct Answer:** Maximum shear stress theory

**QID : 884** - All the failure theories give nearly the same result \_\_\_\_\_.

**Options:**

- 1) When one of the principal stresses at a point is larger in comparison to the other
- 2) When shear stresses act
- 3) When both the principal stresses are numerically equal
- 4) For all situations of stress

**Correct Answer:** When one of the principal stresses at a point is larger in comparison to the other

**QID : 885** - From the hypothesis given by Rankine, the criteria for failure of brittle material is \_\_\_\_\_.

**Options:**

- 1) Maximum principal stress
- 2) Maximum strain energy
- 3) Maximum shear stress
- 4) Maximum shear strain energy

**Correct Answer:** Maximum principal stress

**QID : 886** - In a closed helical spring subjected to an axial load, other quantities remaining the same, if the wire diameter is doubled and mean radius of the coil is also doubled, then stiffness of spring when compared to original one will become \_\_\_\_\_.

**Options:**

- 1) Twice
- 2) Four times
- 3) Eight times
- 4) Sixteen times

**Correct Answer:** Twice

**QID : 887** - The Poisson's ratio for most of the materials is close to \_\_\_\_\_.

**Options:**

- 1) 1 : 2
- 2) 1 : 3
- 3) 1 : 4
- 4) 1 : 5

**Correct Answer:** 1 : 3

**QID : 888** - True stress represents the ratio of \_\_\_\_\_.

**Options:**

- 1) Average load and average area
- 2) Average load and maximum area
- 3) Maximum load and maximum area
- 4) Instantaneous load and instantaneous area

**Correct Answer:** Instantaneous load and instantaneous area

**QID : 889** - For an element under the effect of biaxial state of normal stress, the normal stresses are on a  $45^\circ$  plane is equal to \_\_\_\_\_.

**Options:**

- 1) Difference of normal stresses
- 2) Sum of normal stresses
- 3) Half of the sum of normal stresses
- 4) Half of the difference of normal stresses

**Correct Answer:** Half of the sum of normal stresses

**QID : 890** - For a thin spherical shell subjected to internal pressure, the ratio of volumetric strain to diametrical strain is \_\_\_\_\_.

**Options:**

- 1) 5 : 4
- 2) 3 : 2
- 3) 2 : 1
- 4) 3 : 1

**Correct Answer:** 3 : 1

**QID : 891** - Stud and projection welding belong to the following category of welding \_\_\_\_\_.

**Options:**

- 1) gas welding
- 2) arc welding



3) resistance welding

4) pressure welding

**Correct Answer:** resistance welding

**QID : 892** - Electrode gets consumed in the following welding process \_\_\_\_\_.

**Options:**

1) gas

2) resistance

3) thermit

4) arc

**Correct Answer:** arc

**QID : 893** - The strength of a properly welded joint as compared to base metal would be \_\_\_\_\_.

**Options:**

1) same

2) more

3) less

4) unpredictable

**Correct Answer:** more

**QID : 894** - Oxygen to acetylene ratio in case of carburising flame is \_\_\_\_\_.

**Options:**

1) 0.5 : 1

2) 0.9 : 1

3) 1 : 1

4) 1 : 1.2

**Correct Answer:** 0.9 : 1

**QID : 895** - For steel castings, the following type of sand is better \_\_\_\_\_.

**Options:**

1) fine-grain

2) coarser-grain

3) medium grain

4) fine-grain, coarser-grain and medium grain all are equally good

**Correct Answer:** coarser-grain

**QID : 896** - Hot tear refers to \_\_\_\_\_.

**Options:**

- 1) casting defect
- 2) process of fabrication
- 3) process of heat treatment
- 4) weathering of non-ferrous materials

**Correct Answer:** casting defect

**QID : 897** - Slick in a foundry shop is used to \_\_\_\_\_.

**Options:**

- 1) make and repair corners in a mould
- 2) thoroughly mix up moulding sand
- 3) make venting holes in the mould
- 4) prepare gates

**Correct Answer:** make and repair corners in a mould

**QID : 898** - Which of the following processes would produce best components?

**Options:**

- 1) die casting
- 2) hot rolling
- 3) extrusion
- 4) forging

**Correct Answer:** die casting

**QID : 899** - A sprue hole is \_\_\_\_\_.

**Options:**

- 1) a casting defect
- 2) a hold made for riveting
- 3) a blind hole in jigs
- 4) an opening in mould for pouring molten metal

**Correct Answer:** an opening in mould for pouring molten metal

**QID : 900** - Coining is the operation of \_\_\_\_\_.

**Options:**

- 1) cold forging
- 2) hot forging
- 3) cold extrusion
- 4) piercing

**Correct Answer:** cold forging



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