



**(Papers) SSC Junior Engineer Exam Paper - 2016 "held on 02 March 2017 "Morning Shift( General Engineering)**

**QID : 801** - A football was inflated to a gauge pressure of 1 bar when the ambient temperature was 15°C. When the game started next day, the air temperature at the stadium was 5°C. Assume that the volume of the football remains constant at 2500 cm<sup>3</sup>. Gauge pressure of air to which the ball must have been originally inflated so that it would equal 1 bar gauge at the stadium is \_\_\_\_.

**Options:**

- 1) 2.23 bar
- 2) 1.94 bar
- 3) 1.07 bar
- 4) 1 bar

**Correct Answer:** 1.07 bar

**QID : 802** - The engine oil at 150 °C is cooled to 80 °C in a parallel flow heat exchanger by water entering at 25 °C and leaving at 60 °C. The exchanger effectiveness will be \_\_\_\_.

**Options:**

- 1) 0.36
- 2) 0.46
- 3) 0.56
- 4) 0.66

**Correct Answer:** 0.56

**QID : 803** - The atomic packing factor is the highest in which of the following cubic lattice system?

**Options:**

- 1) Simple Cubic
- 2) Body Centered Cubic (BCC)
- 3) Face Centered Cubic (FCC)
- 4) Diamond Cubic

**Correct Answer:** Face Centered Cubic (FCC)

**QID : 804** - The valves mounted on the boilers which change the direction of flow of steam by 90° and valves fitted in the pipelines which allow the steam in the same direction are respectively called as \_\_\_\_.

**Options:**

- 1) Stop valves and junction valves
- 2) Junction valves and stop valves
- 3) Junction valves and safety valves
- 4) Feed safety valves and stop valves

**Correct Answer:** Junction valves and stop valves

**QID : 805** - Which of the following are boiler mountings and not boiler accessories ?

- A] Pressure gauge
- B] Air preheater
- C] Superheater

**Options:**

- 1) B and C only
- 2) A only
- 3) A, B and C
- 4) A and C only

**Correct Answer:** A only

**QID : 806** - Entropy is a measure of \_\_\_\_\_.

**Options:**

- 1) Reversible heat transfer
- 2) System efficiency
- 3) Degree of randomness
- 4) System temperature

**Correct Answer:** Degree of randomness

**QID : 807** - Gibbs free energy is considered at which one of the following condition?

**Options:**

- 1) Isothermal, isochoric
- 2) Isobaric, isochoric
- 3) Isothermal, isobaric
- 4) None of these

**Correct Answer:** Isothermal, isobaric

**QID : 808** - In vapour absorption refrigeration systems, which of the following fluids are commonly used?

**Options:**

- 1) air and water
- 2) sulphur dioxide and water
- 3) ammonia and water
- 4) freon and water

**Correct Answer:** ammonia and water

**QID : 809** - In a cross compound steam engine \_\_\_\_\_.

**Options:**

- 1) one high and one low pressure cylinder are set side by side, driving the same shaft, cranks being set  $90^\circ$  apart
- 2) two cylinders are centred on the same piston rod, the 1.p. cylinder being placed nearest the crankshaft
- 3) two cylinders are set at  $90^\circ$ , usually to save floor space
- 4) None of these

**Correct Answer:** two cylinders are centred on the same piston rod, the 1.p. cylinder being placed nearest the crankshaft

**QID : 810** - Which of the following is expected to have highest thermal conductivity?

**Options:**

- 1) steam
- 2) solid ice
- 3) melting ice
- 4) water

**Correct Answer:** solid ice

**QID : 811** - A reversible thermodynamic cycle containing only three processes and producing work is to be constructed. The constraints are

- A. there must be one isothermal process
- B. there must be one isentropic process
- C. maximum and minimum cycle pressures and the clearance volume are fixed, and
- D. polytropic processes are not followed Then, the number of possible cycles is

**Options:**

- 1) 1
- 2) 2

3) 3

4) 4

**Correct Answer:** 1

**QID : 812** - Which combination of the following statements is correct?

The incorporation of re-heater in a steam power plant

- A. Always increases the thermal efficiency of the plant
- B. Always increases the dryness fraction of steam at condenser inlet
- C. Always increases the main temperature of heat addition
- D. Always increases the specific work output

**Options:**

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

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

**QID : 813** - The amount of heat required to raise the temperature of 1 kg of water from 0°C to the saturation temperature  $T_s$  °C at a given constant pressure is defined as \_\_\_\_\_.

**Options:**

- 1) Superheat
- 2) Entropy
- 3) Latent heat
- 4) Sensible heat

**Correct Answer:** Sensible heat

**QID : 814** - The enthalpy of steam is defined as \_\_\_\_\_.

**Options:**

- 1) Difference of internal energy and product of pressure and volume.
- 2) Product of internal energy and pressure.
- 3) Sum of internal energy and product of pressure and volume.
- 4) Amount of heat change divided by the absolute temperature.

**Correct Answer:** Sum of internal energy and product of pressure and volume.

**QID : 815** - What are the advantages of water tube boilers over fire tube boilers?

- A. Steam at higher pressures can be produced.
- B. More effective heat transfer.
- C. Sediment deposition is more.

**Options:**

- 1) A only
- 2) A and C only
- 3) A, B and C
- 4) A and B only

**Correct Answer:** A and B only

**QID : 816** - What is the state, in which none of the properties of the system change with time, known as?

**Options:**

- 1) Unsteady state
- 2) Steady state
- 3) Dynamic
- 4) Quasistatic

**Correct Answer:** Steady state

**QID : 817** - The rate of heat transfer across any plane normal to the x-direction is proportional to the wall area and the temperature gradient in the x-direction. This statement is also referred to as \_\_\_\_\_.

**Options:**

- 1) Second Law of Thermodynamics
- 2) Kelvin's Law
- 3) Third Law of Thermodynamics
- 4) Fourier's Law

**Correct Answer:** Fourier's Law

**QID : 818** - The critical temperature of a pure substance is defined as \_\_\_\_\_

**Options:**

- 1) The minimum temperature at which solid and liquid phases can coexist in equilibrium.

- 2) The maximum temperature at which solid and liquid phases can coexist in equilibrium.
- 3) The minimum temperature at which vapour and liquid phases can coexist in equilibrium.
- 4) The maximum temperature at which vapour and liquid phases can coexist in equilibrium.

**Correct Answer:** The maximum temperature at which vapour and liquid phases can coexist in equilibrium.

**QID : 819** - Which of the following is the correct expression for the maximum thermal efficiency ( $\eta$ ) of a system undergoing a reversible power cycle while operating between thermal reservoirs at temperatures  $T_c$  and  $T_h$

**Options:**

- 1)  $\eta = T_c/T_h$
- 2)  $\eta = T_h/T_c - 1$
- 3)  $\eta = 1 - T_c/T_h$
- 4)  $\eta = 1$

**Correct Answer:**  $\eta = 1 - T_c/T_h$

**QID : 820** - In actual refrigeration systems, the compressor handles vapour only. What is this process commonly referred to as \_\_\_\_\_.

**Options:**

- 1) Gas compression
- 2) Phase compression
- 3) Dry compression
- 4) Wet compression

**Correct Answer:** Dry compression

**QID : 821** - Property of a fluid at zero temperature is referred to as \_\_\_\_\_.

**Options:**

- 1) Stagnation property
- 2) Standard property
- 3) Simple property
- 4) None of these

**Correct Answer:** Stagnation property

**QID : 822** - The increase in pressure \_\_\_\_\_.

**Options:**

- 1) lowers the boiling point of a liquid
- 2) raises the boiling point of a liquid
- 3) does not affect the boiling point of a liquid
- 4) reduces its volume

**Correct Answer:** raises the boiling point of a liquid

**QID : 823** - The overall efficiency of thermal power plant is \_\_\_\_\_.

**Options:**

- 1) Boiler efficiency, turbine efficiency and generator efficiency
- 2) Boiler efficiency, turbine efficiency, generator efficiency and gas cycle efficiency
- 3) Carnot cycle efficiency
- 4) Regenerative cycle efficiency

**Correct Answer:** Boiler efficiency, turbine efficiency and generator efficiency

**QID : 824** - Heat transfer by radiation mainly depends upon \_\_\_\_\_.

**Options:**

- 1) its temperature
- 2) nature of the body
- 3) kind and extent of its surface
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 825** - Thermal diffusivity is \_\_\_\_\_.

**Options:**

- 1) a dimensionless parameter
- 2) function of temperature
- 3) used as mathematical model
- 4) a physical property of the material

**Correct Answer:** a physical property of the material

**QID : 826** - Condensing temperature in a refrigerator is the temperature \_\_\_\_\_.

**Options:**

- 1) of cooling medium
- 2) of freezing zone
- 3) of evaporator
- 4) at which refrigerant gas becomes liquid

**Correct Answer:** at which refrigerant gas becomes liquid

**QID : 827** - With an increase in the thickness of insulation around a circular pipe, heat loss to surroundings due to \_\_\_\_\_.

**Options:**

- 1) convection increases, where as due to conduction decreases
- 2) convection decreases, where as due to conduction increases
- 3) both convection and conduction decreases
- 4) both convection and conduction increases

**Correct Answer:** convection increases, where as due to conduction decreases

**QID : 828** - For air with a relative humidity of 80% \_\_\_\_\_.

**Options:**

- 1) dry bulb temperature is less than the wet bulb temperature
- 2) dew point temperature is less than wet bulb temperature
- 3) dew point and wet bulb temperatures are equal
- 4) dry bulb and dew point temperatures are equal

**Correct Answer:** dew point temperature is less than wet bulb temperature

**QID : 829** - If a mass of moist air in an airtight vessel is heated to a higher temperature, then \_\_\_\_\_.

**Options:**

- 1) specific humidity of the air increases
- 2) specific humidity of the air decreases
- 3) relative humidity of the air increases
- 4) relative humidity of the air decreases

**Correct Answer:** relative humidity of the air decreases

**QID : 830** - In a vapour compression refrigeration system, liquid to suction heat exchanger is used to \_\_\_\_\_.

**Options:**

- 1) keep the COP constant
- 2) prevent the liquid refrigerant from entering the compressor
- 3) sub-cool the liquid refrigerant leaving the condenser
- 4) sub-cool the vapour refrigerant from the evaporator

**Correct Answer:** sub-cool the liquid refrigerant leaving the condenser

**QID : 831** - A right-circular cylinder open at top is filled with water and rotated about its vertical axis at such speed that half the water spills out. What is the value of pressure at centre of the bottom?

**Options:**

- 1) One half its value when cylinder was full
- 2) One fourth its value when cylinder was full
- 3) Zero
- 4) Insufficient data

**Correct Answer:** Zero

**QID : 832** - At a point on a streamline, the velocity is 3 m/sec and the radius of curvature is 9 m. If the rate of increase of velocity along the streamline at this point is 1/3 m/sec/m, then the total acceleration at this point would be \_\_\_\_\_.

**Options:**

- 1) 1 m/sec<sup>2</sup>
- 2) 3 m/sec<sup>2</sup>
- 3) 1/3 m/sec<sup>2</sup>
- 4)  $\sqrt{2}$  m/sec<sup>2</sup>

**Correct Answer:**  $\sqrt{2}$  m/sec<sup>2</sup>

**QID : 833** - Which of the following statements is correct regarding an impulse turbine?

**Options:**

- 1) The steam is initially compressed in a nozzle from low pressure to high pressure.
- 2) The steam is initially expanded in a nozzle from low pressure to high pressure.
- 3) The steam is initially compressed in a nozzle from high pressure to low pressure.
- 4) The steam is initially expanded in a nozzle from high pressure to low pressure.

**Correct Answer:** The steam is initially expanded in a nozzle from high pressure to low pressure.

**QID : 834** - A draft tube is used with \_\_\_\_\_.

**Options:**

- 1) impulse turbine
- 2) Pelton wheel turbine
- 3) reaction turbines
- 4) axial turbine pumps

**Correct Answer:** reaction turbines

**QID : 835** - For Newtonian fluid behaviour, the shear stress exerted by the fluid is equal to the \_\_\_\_\_.

**Options:**

- 1) Fluid viscosity divided by the velocity gradient parallel to the direction of shear.

- 2) Fluid viscosity divided by the velocity gradient perpendicular to the direction of shear.
- 3) Product of the fluid viscosity and the velocity gradient parallel to the direction of shear.
- 4) Product of the fluid viscosity and the velocity gradient perpendicular to the direction of shear.

**Correct Answer:** Product of the fluid viscosity and the velocity gradient perpendicular to the direction of shear.

**QID : 836** - Which of the following are the advantages of impulse turbine over reaction turbines ?

- A. Occupies less space per unit power.
- B. Compounding is not necessary for speed reduction as the rotor speeds are usually low.
- C. Suitable for high power generation.

**Options:**

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

**Correct Answer:** B and C only

**QID : 837** - The compressors used in a gas turbine are typically of which type?

**Options:**

- 1) Centrifugal
- 2) Centripetal
- 3) Reciprocating
- 4) Axial

**Correct Answer:** Reciprocating

**QID : 838** - Which turbine is also called as the propeller turbine?

**Options:**

- 1) Kaplan turbine
- 2) Francis turbine
- 3) Pelton wheel
- 4) Thompson turbine

**Correct Answer:** Kaplan turbine

**QID : 839** - According to Bernoulli's principle in fluid dynamics, for inviscid flow, increase in speed of fluid leads to which of the following?

**Options:**

- 1) Increase in pressure and/or increase in fluid's potential energy
- 2) Decrease in pressure and/or increase in fluid's potential energy
- 3) Increase in pressure and/or decrease in fluid's potential energy
- 4) Decrease in pressure and/or decrease in fluid's potential energy

**Correct Answer:** Decrease in pressure and/or decrease in fluid's potential energy

**QID : 840** - The material commonly used for air craft gas turbine is \_\_\_\_\_.

**Options:**

- 1) stainless steel
- 2) high alloy steel
- 3) duralumin
- 4) titanium

**Correct Answer:** duralumin

**QID : 841** - The difference of absolute pressure and local atmospheric pressure is known as \_\_\_\_\_.

**Options:**

- 1) Negative pressure
- 2) Positive pressure
- 3) Gauge pressure
- 4) Hydraulic pressure

**Correct Answer:** Gauge pressure

**QID : 842** - The sum of pressure head and elevation head is known as \_\_\_\_\_.

**Options:**

- 1) dynamic head
- 2) static head
- 3) direct head
- 4) potential head

**Correct Answer:** static head

**QID : 843** - Specific gravity is defined as the ratio of density of fluid and density of water at which temperature (in °C)?

**Options:**

- 1) 0
- 2) 100
- 3) 4
- 4) It is not dependent on temperature

**Correct Answer:** 4

**QID : 844** - Falling drops of water become spheres due to the property of \_\_\_\_\_.

**Options:**

- 1) adhesion
- 2) cohesion
- 3) surface tension
- 4) viscosity

**Correct Answer:** surface tension

**QID : 845** - Fluid flow in a straight circular pipe is typically laminar in nature when the Reynolds number is \_\_\_\_\_.

**Options:**

- 1) Less than 2300
- 2) Less than 4000
- 3) More than 2300
- 4) More than 4000

**Correct Answer:** Less than 2300

**QID : 846** - The reduction in fluid pressure that results when a fluid flows through a constricted section of a pipe is known as \_\_\_\_\_.

**Options:**

- 1) Orifice effect
- 2) Bernoulli's principle
- 3) Secondary flow
- 4) Venturi effect

**Correct Answer:** Venturi effect

**QID : 847** - For a compressible flow, Mach Number (M) is given by which of the following expression? where v = velocity of fluid in compressible flow c = speed of sound in air

**Options:**

- 1)  $M = v/\sqrt{c}$
- 2)  $M = c/v$
- 3)  $M = v/c$
- 4)  $M = v/c^2$

**Correct Answer:**  $M = v/c$

**QID : 848** - Which type of forces dominates a fluid flow with a very high Reynolds Number ( $Re \approx 10000$ )?

**Options:**

- 1) Inertial
- 2) Viscous
- 3) Reaction
- 4) Divergent

**Correct Answer:** Inertial

**QID : 849** - To avoid cavitation in centrifugal pumps \_\_\_\_\_.

**Options:**

- 1) suction pressure should be low
- 2) delivery pressure should be low
- 3) suction pressure should be high
- 4) delivery pressure should be high

**Correct Answer:** suction pressure should be high

QID : 850 -

For the continuity equation given by  $\vec{\nabla} \cdot \vec{V} = 0$  to be valid, where  $\vec{V}$  is the velocity vector, which one of the following is a necessary condition?

दी गई,  $\vec{\nabla} \cdot \vec{V} = 0$  कंटिन्यूटी समीकरण की वैधता के लिए, जहां  $\vec{V}$  वेग सदिश है, निम्नलिखित में से कौन सी आवश्यक शर्त है?

Options:

- 1) Steady flow
- 2) Irrotational flow
- 3) Inviscid flow
- 4) Incompressible flow

**Correct Answer:** Incompressible flow

QID : 851 -

Match the items in List 1 and 2.

सूची-1 और सूची-2 का मिलान करें।

| List-1 सूची-1 |                                             | List-2 सूची-2 |                                                            |
|---------------|---------------------------------------------|---------------|------------------------------------------------------------|
| A             | Compressible flow<br>संपीड्य प्रवाह         | 1             | Reynolds number<br>रेनॉल्ड्स संख्या                        |
| B             | Free surface flow<br>मुक्त पृष्ठ प्रवाह     | 2             | Nusselt number<br>नुसेल्ट संख्या                           |
| C             | Boundary layer flow<br>परिसीमा पृष्ठ प्रवाह | 3             | Weber number<br>वेबर संख्या                                |
| D             | Pipe flow<br>नलिका प्रवाह                   | 4             | Froude number<br>फ्रोड संख्या                              |
| E             | Heat convection<br>उष्मा संवहन              | 5             | Match number<br>मैच संख्या                                 |
|               |                                             | 6             | Skin friction coefficient<br>उपरिस्तर (स्किन) घर्षण गुणांक |

Options:

- 1) A-1, B-4, C-2, D-6; E-3
- 2) A-3, B-4, C-6, D-1; E-2
- 3) A-5, B-3, C-6, D-1; E-4
- 4) A-5, B-3, C-6, D-1; E-2

**Correct Answer:** A-5, B-3, C-6, D-1; E-2

QID : 852 -

Match the items in List 1 and 2.

सूची-1 और सूची-2 का मिलान करें।

| List-1 सूची-1 |                                            | List-2 सूची-2 |                             |
|---------------|--------------------------------------------|---------------|-----------------------------|
| A             | Centrifugal compressor<br>अपकेंद्री संपीडक | 1             | Axial flow<br>अक्षीय प्रवाह |
| B             | Centrifugal pump<br>अपकेंद्री पंप          | 2             | Surging<br>आरोही (सर्जिंग)  |
| C             | Pelton wheel<br>पेल्टन चक्र                | 3             | Priming<br>प्राथमिक         |
| D             | Kaplan turbine<br>काप्लान टरबाइन           | 4             | Pure impulse<br>शुद्ध आवेग  |

Options:

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



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

**Correct Answer:** A-2, B-3, C-4, D-1

**QID : 853** - A fluid whose shear stress is linearly proportional to the velocity gradient in the direction perpendicular to the plane of shear is called as \_\_\_\_\_.

**Options:**

- 1) Friction fluid
- 2) Stress fluid
- 3) Newtonian fluid
- 4) Cartesian fluid

**Correct Answer:** Newtonian fluid

**QID : 854** - Euler's equation for the motion of liquid assumes that \_\_\_\_\_.

**Options:**

- 1) Fluid is viscous
- 2) Fluid is homogeneous and incompressible
- 3) Velocity of flow is non-uniform over the section
- 4) Flow is unsteady along with stream line

**Correct Answer:** Fluid is homogeneous and incompressible

**QID : 855** - A flow whose stream line is represented by a curve, is called \_\_\_\_\_.

**Options:**

- 1) One-dimensional flow
- 2) Three dimensional flow
- 3) Two-dimensional flow
- 4) Four-dimensional flow

**Correct Answer:** Two-dimensional flow

**QID : 856** - The frictional resistance of a pipe varies approximately with \_\_\_\_\_ of the liquid.

**Options:**

- 1) pressure
- 2) square of velocity
- 3) velocity
- 4) cube of the velocity

**Correct Answer:** square of velocity

**QID : 857** - The cavitation in a hydraulic machine is mainly due to \_\_\_\_\_.

**Options:**

- 1) Low velocity
- 2) Low pressure
- 3) High velocity
- 4) High pressure

**Correct Answer:** Low pressure

**QID : 858** - The stress, which is responsible for retaining water in a capillary tube above the free water surface of the water body in which the capillary tube is inserted, is called the \_\_\_\_\_.

**Options:**

- 1) Capillary compression
- 2) Capillary tension
- 3) Capillary pore pressure
- 4) None of these

**Correct Answer:** Capillary tension

**QID : 859** - A flow whose stream line is represented by a curve, is called \_\_\_\_\_.

**Options:**

- 1) One-dimensional flow
- 2) Three dimensional flow
- 3) Two-dimensional flow
- 4) Four-dimensional flow

**Correct Answer:** Two-dimensional flow

**QID : 860** - A single speed centrifugal pump, feeding a small water supply distribution system of a block of houses, works at \_\_\_\_\_.

**Options:**

- 1) Maximum efficiency
- 2) Minimum efficiency
- 3) Reduced efficiency
- 4) None of these

**Correct Answer:** Reduced efficiency

**QID : 861** - In under-damped vibrating system, the amplitude of vibration with reference to time \_\_\_\_\_.

**Options:**

- 1) increases linearly
- 2) increases exponentially
- 3) decreases linearly
- 4) decreases exponentially

**Correct Answer:** decreases exponentially

**QID : 862** - A three rotor system has following number of natural frequencies \_\_\_\_\_.

**Options:**

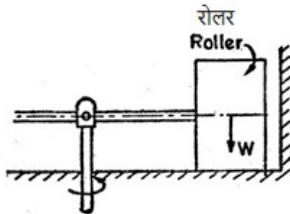
- 1) 1
- 2) 2
- 3) 3
- 4) 4

**Correct Answer:** 2

**QID : 863** -

The figure given below shows a crusher having several cylindrical rollers of weight  $W$ . The crushing force due to each roller will be:

नीचे दर्शाई गई आकृति में, संदलित्र में भार  $W$  के कुछ बेलनाकार भार लगे हैं। प्रत्येक रोलर का संदलन बल कितना होगा?



**Options:**

- 1)  $W$
- 2) less than  $W$
- 3) more than  $W$
- 4) unpredictable

**Correct Answer:** more than  $W$

**QID : 864** - The principle of direct and reverse cranks is readily applicable to \_\_\_\_\_.

**Options:**

- 1) primary balance
- 2) secondary balance
- 3) balancing of in-line engines
- 4) partial primary balance

**Correct Answer:** partial primary balance

**QID : 865** - In order to facilitate the starting of locomotive in any position, the cranks of a locomotive with two cylinders are placed at following angle to each other \_\_\_\_\_.

**Options:**

- 1)  $45^\circ$
- 2)  $90^\circ$
- 3)  $135^\circ$
- 4)  $180^\circ$

**Correct Answer:**  $90^\circ$

**QID : 866** - The critical speed depends on \_\_\_\_\_.

**Options:**

- 1) mass
- 2) stiffness
- 3) mass and stiffness
- 4) mass, stiffness and eccentricity

**Correct Answer:** mass and stiffness

**QID : 867** - If a more stiff spring is used in Hartnell governor, then the governor will be \_\_\_\_\_.

**Options:**

- 1) more sensitive
- 2) less sensitive
- 3) sensitively remains unaffected
- 4) isochronous

**Correct Answer:** less sensitive

**QID : 868** - A gear having 100 teeth is fixed and another gear having 25 teeth revolves around it, the centre lines of both gears being joined by an arm. How many revolutions will be made by gear of 25 teeth for one revolution of arm?

**Options:**

- 1) 4
- 2) 3
- 3) 5
- 4) 6

**Correct Answer:** 5

**QID : 869** - The power transmitted by a belt is maximum when the maximum tension in the belt compared to centrifugal tension is \_\_\_\_\_.

**Options:**

- 1) 2 times
- 2) 3 times
- 3) 4 times
- 4) 2.5 times

**Correct Answer:** 3 times

**QID : 870** - A rotating mass having moment of inertia of 30 kgm<sup>2</sup> rotates at 800 rpm and is travelling in a curve of 170 metre radius at a speed of 240 km/hr. It will experience a gyroscopic reaction of \_\_\_\_\_.

**Options:**

- 1) 10 m kgf
- 2) 100 m kgf
- 3) 1000 m kgf
- 4) 10000 m kgf

**Correct Answer:** 100 m kgf

**QID : 871** - Throw of a cam is the maximum distance of the follower from:

**Options:**

- 1) Base circle
- 2) Pitch circle
- 3) Root circle
- 4) Prime circle

**Correct Answer:** Base circle

**QID : 872** - The following is the inversion of slider crank mechanism

- A. Whitworth quick return mechanism
- B. Hand pump
- C. Oscillating cylinder engine

**Options:**

- 1) only A
- 2) only B
- 3) only C
- 4) A, B and C

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

**QID : 873** - The horse power transmitted by a belt is dependent upon

- A. tension on tight side of belt
- B. tension on slack side of belt
- C. radius of pulley
- D. speed of pulley

**Options:**

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

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

**QID : 874** - Which of the following is a lower pair?

- A. Ball and socket
- B. Piston and cylinder
- C. Cam and follower

**Options:**

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

**Correct Answer:** A and B

**QID : 875** - The distance between the centres of the rivets in adjacent rows of zigzag riveted joint is known as \_\_\_\_\_.

**Options:**

- 1) pitch
- 2) back pitch
- 3) diagonal pitch
- 4) diametric pitch

**Correct Answer:** diagonal pitch

**QID : 876** - A body is resting on a plane inclined at angle  $30^\circ$  to horizontal. What force would be required to slide it down, if the coefficient of friction between body and plane is 0.3?

**Options:**

- 1) Zero
- 2) 1 kg
- 3) 5 kg
- 4) None of these

**Correct Answer:** Zero

**QID : 877** - A satellite is kept on moving in its orbit around the earth due to \_\_\_\_\_.

**Options:**

- 1) centrifugal force
- 2) centripetal force
- 3) gravitational force
- 4) resultant forces acting on satellite

**Correct Answer:** centripetal force

**QID : 878** - The tension in the cable supporting a lift is more when the lift is \_\_\_\_\_.

**Options:**

- 1) moving downwards with uniform velocity
- 2) moving upwards with uniform velocity
- 3) stationary
- 4) moving upwards with acceleration

**Correct Answer:** moving upwards with acceleration

**QID : 879** - For steel, the ultimate strength in shear as compared to ultimate strength in tension is \_\_\_\_\_.

**Options:**

- 1) same
- 2)  $1/2$
- 3)  $1/3$
- 4)  $2/3$

**Correct Answer:**  $2/3$

**QID : 880** - In a simply supported beam, where the shear force is zero, the bending moment will be \_\_\_\_.

**Options:**

- 1) zero
- 2) maximum
- 3) minimum
- 4) zero or minimum

**Correct Answer:** maximum

**QID : 881** - The stress in a body due to suddenly applied load compared to when it is applied gradually is \_\_\_\_.

**Options:**

- 1) same
- 2) half
- 3) two times
- 4) four times

**Correct Answer:** two times

**QID : 882** - Modulus of rigidity is defined as the ratio of \_\_\_\_.

**Options:**

- 1) longitudinal stress and longitudinal strain
- 2) volumetric stress and volumetric strain
- 3) lateral stress and lateral strain
- 4) shear stress and shear strain

**Correct Answer:** shear stress and shear strain

**QID : 883** - The intensity of stress which causes unit strain is called \_\_\_\_.

**Options:**

- 1) unit stress
- 2) bulk modulus
- 3) modulus of rigidity
- 4) modulus of elasticity

**Correct Answer:** modulus of elasticity

**QID : 884** - The property of a material by virtue of which a body returns to its original shape after removal of the load is called \_\_\_\_.

**Options:**

- 1) Plasticity
- 2) Elasticity
- 3) Ductility
- 4) Malleability

**Correct Answer:** Elasticity

**QID : 885** - For which material the Poisson's ratio is more than unity?

- A. steel
- B. copper
- C. aluminium
- D. cast iron

**Options:**

- 1) only A
- 2) only B
- 3) only C
- 4) None of these

**Correct Answer:** None of these

**QID : 886** - A beam is loaded as cantilever. If the load at the end is increased, the failure will occur \_\_\_\_.

**Options:**

- 1) in the middle
- 2) at the tip below the load
- 3) at the support
- 4) anywhere

**Correct Answer:** at the support

**QID : 887** - At the principal planes \_\_\_\_.

**Options:**

- 1) the normal stress is maximum or minimum and the shear stress is zero
- 2) the tensile and compressive stresses are zero

3) the tensile stress is zero and the shear stress is maximum

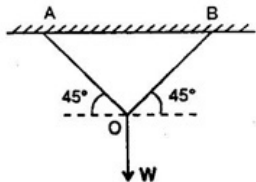
4) no stress acts

**Correct Answer:** the normal stress is maximum or minimum and the shear stress is zero

**QID : 888 -**

Two wires AO and BO support a vertical load W at O as shown in the figure below. The wires are of equal length and equal cross sectional area. The tension in each wire is equal to:

नीचे दी गई आकृति के अनुसार AO और BO दो तार एक लम्बवत भार W को O पर समर्थित करते हैं। तार समान लंबाई और समान अनुप्रस्थ काट (क्रॉस सेक्शन) क्षेत्रफल के हैं। प्रत्येक तार में तनाव किसके बराबर होगा?



**Options:**

1)  $W/2$

2)  $W$

3)  $\sqrt{2}W$

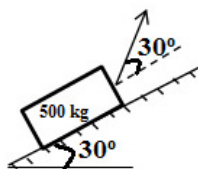
4)  $W/\sqrt{2}$

**Correct Answer:**  $W/\sqrt{2}$

**QID : 889 -**

A weight of 500 kg is held on a smooth plane, inclined at  $30^\circ$  to the horizontal by a force P acting  $30^\circ$  above the plane as shown in the figure below. The reaction of plane on the weight will be:

नीचे दी गई आकृति के अनुसार एक 500 कि.ग्रा. का भार एक चिकनी सतह पर, जो क्षैतिज से  $30^\circ$  पर झुके हुए तल में बल P द्वारा रखी हुई है। तल की भार पर क्या प्रतिक्रिया होगी?



**Options:**

1) 500 N

2) 250 N

3) 476 N

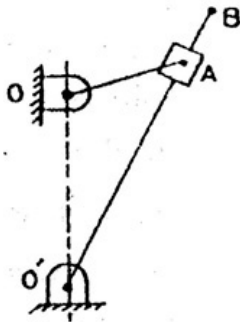
4) 288 N

**Correct Answer:** 288 N

**QID : 890 -**

Given figure shows a quick return mechanism. The crank OA rotates clockwise uniformly.  $OA = 2 \text{ cm}$ .  $OO' = 4 \text{ cm}$ . The ratio of time for forward motion to that for return motion is:

दी गई आकृति में शीघ्र प्रतिवर्ती तंत्र दर्शाया गया है। क्रैंक OA एकसमान गति से घड़ी की सुई की दिशा में घूम रहा है।  $OA = 2 \text{ से.मी.}$ ,  $OO' = 4 \text{ से.मी.}$  आगे की ओर गति व पीछे की ओर गति के समय में क्या अनुपात होगा?



**Options:**

- 1) 0.5
- 2) 2
- 3)  $\sqrt{2}$
- 4) 1

**Correct Answer: 2**

**QID : 891 -** Binding wire used to support the joints for soldering is made of \_\_\_\_\_.

**Options:**

- 1) aluminium
- 2) copper
- 3) soft iron
- 4) mild steel

**Correct Answer: soft iron**

**QID : 892 -** Which of the following is not a casting process?

**Options:**

- 1) Chills process
- 2) extrusion
- 3) semi-centrifuge method
- 4) slush process

**Correct Answer: extrusion**

**QID : 893 -** Carburising flame is used to weld metals like \_\_\_\_\_.

**Options:**

- 1) steel
- 2) copper and brass
- 3) aluminium, nickel, monel etc.,
- 4) carburised steel

**Correct Answer: aluminium, nickel, monel etc.,**

**QID : 894 -** The most commonly used flame in gas welding is

- A. Neutral
- B. Oxidising
- C. Carburising

**Options:**

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

**Correct Answer: only A**

**QID : 895 -** In braze welding, the filler metal is

- A. Distributed by capillary attraction
- B. Melted and deposited at the point where the weld is to be made

C. Not required

**Options:**

- 1) only A
- 2) only B
- 3) Both A and B
- 4) only C

**Correct Answer:** Both A and B

**QID : 896** - Magnetic arc blow is \_\_\_\_\_.

**Options:**

- 1) a recent welding technique
- 2) used to weld materials
- 3) occurs when welding near equator
- 4) phenomenon of occurrence of splatter because of magnetic fields created in d.c. arc welding

**Correct Answer:** phenomenon of occurrence of splatter because of magnetic fields created in d.c. arc welding

**QID : 897** - Preheating is essential in welding \_\_\_\_\_.

**Options:**

- 1) high speed steel
- 2) stainless steel
- 3) cast iron
- 4) german silver

**Correct Answer:** cast iron

**QID : 898** - Tool in the case of ultrasonic machining is made of \_\_\_\_\_.

**Options:**

- 1) HSS
- 2) diamond
- 3) brass or copper
- 4) stainless steel

**Correct Answer:** brass or copper

**QID : 899** - Thread rolling is somewhat like \_\_\_\_\_.

**Options:**

- 1) cold extrusion
- 2) cold machining
- 3) cold rolling
- 4) cold forging

**Correct Answer:** cold rolling

**QID : 900** - The fatigue strength of metal is improved by setting up compressive stresses in the surface by a process known as \_\_\_\_\_.

**Options:**

- 1) lancing
- 2) shot-peening
- 3) hemming
- 4) slugging

**Correct Answer:** shot-peening





**(Papers) SSC Junior Engineer Exam Paper - 2016 "held on 03 March 2017 "Afternoon Shift( General Engineering)**

**QID : 1001** - Provision of fins on a given heat transfer surface will be more if there are \_\_\_\_.

**Options:**

- 1) Fewer number of thin fins
- 2) Fewer number of thick fins
- 3) Large number of thick fins
- 4) Large number of thin fins

**Correct Answer:** Large number of thick fins

**QID : 1002** - Which of the following would lead to a reduction in thermal resistance?

**Options:**

- 1) In conduction, reduction in the thickness of the material and an increase in the thermal conductivity.
- 2) In convection, stirring of the fluid and cleaning the heating surface
- 3) In radiation, increasing the temperature and reducing the emissivity
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 1003** - Inspite of large heat transfer coefficients in boiling liquids, fins are used advantageously when the entire surface is exposed to \_\_\_\_.

**Options:**

- 1) Nucleate boiling
- 2) Film boiling
- 3) Transition boiling
- 4) All modes of boiling

**Correct Answer:** Film boiling

**QID : 1004** - The parameter(s) responsible for loss of heat from a hot pipe surface in a room without fans would include \_\_\_\_.

**Options:**

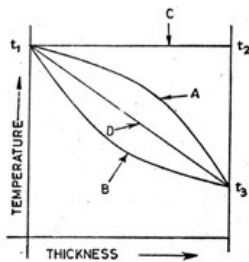
- 1) Temperature of the surface and air in the room
- 2) Emissivity of the surface
- 3) Length and diameter of the pipe
- 4) All options are correct

**Correct Answer:** All options are correct

**QID : 1005 -**

The figure given below shows the variation of temperature across the thickness of materials with different thermal conductivities under steady states. Curve C will be applicable when thermal conductivity of the material \_\_\_\_\_

नीचे दी गई आकृति में, स्थिर अवस्था में विभिन्न ऊष्मीय चालकताओं के साथ धातु की मोटाई में तापमान में भिन्नता को दर्शाता है। आरेख C लागू होगा जब धातु की ऊष्मीय चालकता \_\_\_\_\_



**Options:**

- 1) increases with increase in temperature
- 2) decreases with increase in temperature
- 3) is very large
- 4) is constant at all temperatures

**Correct Answer:** is very large

**QID : 1006 -** On a summer day, a scooter rider feels more comfortable while on the move than while at a stop light because \_\_\_\_\_.

**Options:**

- 1) An object in motion captures less solar radiation
- 2) Air is transparent to radiation and hence it is cooler than the body
- 3) More heat is lost by convection and radiation while in motion
- 4) Air has a low specific heat and hence it is cooler

**Correct Answer:** More heat is lost by convection and radiation while in motion

**QID : 1007 -** In radiative heat transfer, a gray surface is one \_\_\_\_\_.

**Options:**

- 1) Which appears gray to the eye
- 2) Whose emissivity is independent of wavelength
- 3) Which has reflectivity equal to zero
- 4) Which appears equally bright from all directions

**Correct Answer:** Whose emissivity is independent of wavelength

**QID : 1008 -** The property of a working substance, which increases or decreases according to the heat supplied or removed in a reversible manner, is called \_\_\_\_\_.

**Options:**

- 1) Enthalpy
- 2) Entropy
- 3) Reversibility
- 4) None of these

**Correct Answer:** Entropy

**QID : 1009 -** Triple point \_\_\_\_\_.

**Options:**

- 1) Occurs in a mixture of two or more gases
- 2) Is the point, where three phases exists together
- 3) Occurs in sublimation
- 4) None of these

**Correct Answer:** Is the point, where three phases exists together

**QID : 1010 -** Non quasistatic process is \_\_\_\_\_.

**Options:**

- 1) Free expansion of gas
- 2) Expansion of a gas in a cylinder under constant pressure
- 3) Rapid compression of a gas in a cylinder
- 4) Gradual compression of a gas in a cylinder

**Correct Answer:** Free expansion of gas

**QID : 1011** - Isentropic flow is \_\_\_\_\_.

**Options:**

- 1) Reversible adiabatic flow
- 2) Irreversible adiabatic flow
- 3) Frictionless fluid flow
- 4) None of these

**Correct Answer:** Reversible adiabatic flow

**QID : 1012** - In all reversible process, entropy of the system \_\_\_\_\_.

**Options:**

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

**Correct Answer:** Increases

**QID : 1013** - In isothermal expansion, work done by gas depends upon \_\_\_\_\_.

**Options:**

- 1) Atomicity of gas only
- 2) Expansion ratio only
- 3) Adiabatic index
- 4) Both Atomicity of gas and expansion ratio

**Correct Answer:** Both Atomicity of gas and expansion ratio

**QID : 1014** - The difference between two specific heats,  $C_p$  and  $C_v$  for a gas represents \_\_\_\_\_.

**Options:**

- 1) Increase in kinetic energy of gas molecules
- 2) Increase in potential energy of gas molecules
- 3) External work done
- 4) Increase in volume

**Correct Answer:** External work done

**QID : 1015** - The universal gas constant of a gas is the product of molecular weight of the gas and \_\_\_\_\_.

**Options:**

- 1) Gas constant
- 2) Specific heat at constant pressure
- 3) Specific heat at constant volume
- 4) None of these

**Correct Answer:** Gas constant

**QID : 1016** - The temperature of a gas is a measure of \_\_\_\_\_.

**Options:**

- 1) Average distance between gas molecules
- 2) Average kinetic energy of gas molecules
- 3) Average potential energy of gas molecules
- 4) None of these

**Correct Answer:** Average kinetic energy of gas molecules

**QID : 1017** - A perpetual motion machine of the first kind i.e. a machine which produces power without consuming any energy is \_\_\_\_\_.

**Options:**

- 1) Possible according to first law of thermodynamics
- 2) Impossible according to first law of thermodynamics
- 3) Impossible according to second law of thermodynamics
- 4) Possible according to second law of thermodynamics

**Correct Answer:** Impossible according to first law of thermodynamics

**QID : 1018** - A system consisting of more than one phase is called \_\_\_\_\_.

**Options:**

- 1) Isolated system
- 2) Open system

- 3) Non-uniform system
- 4) Heterogeneous system

**Correct Answer:** Heterogeneous system

**QID : 1019** - Thermal equilibrium between two or more bodies exists, when they are brought together, there is no change in \_\_\_\_\_.

**Options:**

- 1) Density
- 2) Pressure
- 3) Temperature
- 4) All options are correct

**Correct Answer:** Temperature

**QID : 1020** - Control volume refers to a \_\_\_\_\_.

**Options:**

- 1) Specified mass
- 2) Fixed region in the space
- 3) Closed system
- 4) None of these

**Correct Answer:** Fixed region in the space

**QID : 1021** - In regenerator type heat exchanger, heat transfer takes place by

**Options:**

- 1) direct mixing of hot and cold fluids
- 2) a complete separation between hot and cold fluids
- 3) flow of hot and cold fluids alternately over a surface
- 4) generation of heat again and again

**Correct Answer:** flow of hot and cold fluids alternately over a surface

**QID : 1022** - Film coefficient is the ratio of \_\_\_\_\_.

**Options:**

- 1) Thickness of film of fluid to thermal conductivity
- 2) Thickness of film of fluid to temperature drop through film of fluid
- 3) Thermal conductivity to temperature drop through film of fluid
- 4) Thermal conductivity to equivalent thickness of film of fluid

**Correct Answer:** Thermal conductivity to equivalent thickness of film of fluid

**QID : 1023** - Highest thermal diffusivity is of \_\_\_\_\_.

**Options:**

- 1) Iron
- 2) Lead
- 3) Concrete
- 4) Wood

**Correct Answer:** Lead

**QID : 1024** - Highest thermal conductivity is of \_\_\_\_\_.

**Options:**

- 1) Solid ice
- 2) Melting ice
- 3) Water
- 4) Steam

**Correct Answer:** Solid ice

**QID : 1025** - The ratio of work done per cycle to the swept volume in case of compressor is called

**Options:**

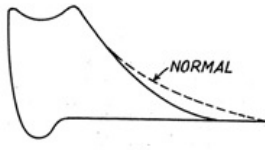
- 1) compression index
- 2) compression ratio
- 3) compressor efficiency
- 4) mean effective pressure

**Correct Answer:** mean effective pressure

QID : 1026 -

The indicator diagram shown in the figure below obtained on a compressor shows that \_\_\_\_\_.

संपीडक पर प्राप्त नीचे दिए गए सूचक आरेख में, क्या प्रदर्शित होता है?



Options:

- 1) suction valve or piston rings, or both are leaking
- 2) discharge valve is leaking into cylinder during compression stroke
- 3) slow opening suction valve
- 4) suction valve sticking open at beginning of compression stroke

**Correct Answer:** discharge valve is leaking into cylinder during compression stroke

QID : 1027 - Metals are good heat conductors because \_\_\_\_\_.

Options:

- 1) of free electrons present
- 2) their atoms are relatively far apart
- 3) their atoms collide frequently
- 4) All options are correct

**Correct Answer:** their atoms collide frequently

QID : 1028 - Heat is transferred from an insulated pipe to the surrounding still air by \_\_\_\_\_.

Options:

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

**Correct Answer:** Radiation

QID : 1029 - Heat is transferred by conduction, convection and radiation in \_\_\_\_\_.

Options:

- 1) Boiler furnaces
- 2) Melting of ice
- 3) Condensation of steam in condenser
- 4) None of these

**Correct Answer:** Boiler furnaces

QID : 1030 - In optical pyrometers absorption filter is used \_\_\_\_\_.

Options:

- 1) To get monochromatic light
- 2) To eliminate stray rays of light
- 3) To minimise reflection of rays from the lens surface
- 4) To enable filament operation at reduced intensity for longer life

**Correct Answer:** To enable filament operation at reduced intensity for longer life

QID : 1031 - The flow of water in a pipe of diameter 3000 mm can be measured by \_\_\_\_\_.

Options:

- 1) Venturimeter
- 2) Rotameter
- 3) Pilot tube
- 4) Orifice plate

**Correct Answer:** Pilot tube

QID : 1032 - Buoyant force is \_\_\_\_\_.

Options:

- 1) Resultant of up-thrust and gravity forces acting on the body
- 2) Resultant force on the body due to the fluid surrounding it
- 3) Resultant of static weight of body and dynamic thrust of fluid
- 4) Equal to the volume of liquid displaced by the body

**Correct Answer:** Equal to the volume of liquid displaced by the body

**QID : 1033** - In equilibrium condition, fluids are not able to sustain \_\_\_\_\_.

**Options:**

- 1) Shear force
- 2) Resistance to viscosity
- 3) Surface tension
- 4) Geometric similitude

**Correct Answer:** Surface tension

**QID : 1034** - A large Reynold number is indication of \_\_\_\_\_.

**Options:**

- 1) Smooth and streamline flow
- 2) Laminar flow
- 3) Steady flow
- 4) Highly turbulent flow

**Correct Answer:** Highly turbulent flow

**QID : 1035** - 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 : 1036** - Tranquil flow must always occur \_\_\_\_\_.

**Options:**

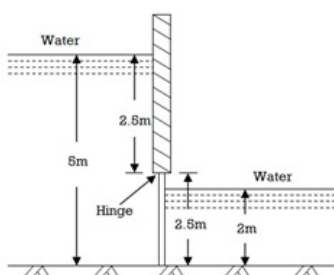
- 1) at normal depth
- 2) above normal depth
- 3) below normal depth
- 4) above critical depth

**Correct Answer:** above critical depth

**QID : 1037** -

A vertical sluice gate 3m wide and 2.5m deep contains water on both of its sides. On the upstream side, the water is 5m deep and on the downstream side it is 2m deep from the bottom of the sluice. What is the resultant pressure on the gate?

एक ऊर्ध्वार्ध जलमार्ग 3 मीटर चौड़ा और 2.5 मीटर गहरा है जिसके दोनों ओर पानी भरा है। धारा के प्रतिकूल, जलमार्ग के तल से पानी 5 मीटर गहरा है और अनुप्रवाह में यह 2 मीटर गहरा है। द्वार पर परिणामी दाब क्या है?



**Options:**

- 1) 275.9 KN
- 2) 58.9 KN
- 3) 217 KN
- 4) None of these

**Correct Answer:** 217 KN

**QID : 1038** - The coefficient of discharge ( $C_d$ ) of an orifice varies with \_\_\_\_\_.

**Options:**

- 1) Reynold number
- 2) Weber number
- 3) Froude number
- 4) Mach number

**Correct Answer:** Reynold number

**QID : 1039** - Head loss in turbulent flow in a pipe \_\_\_\_\_.

**Options:**

- 1) Varies directly as velocity
- 2) Varies inversely as square of velocity
- 3) Varies approximately as square of velocity
- 4) Varies inversely as velocity

**Correct Answer:** Varies approximately as square of velocity

**QID : 1040** - A type of flow in which the fluid particles while moving in the direction of flow rotate about their mass centre, is called \_\_\_\_\_.

**Options:**

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

**Correct Answer:** Rotational flow

**QID : 1041** - For a flow to be rotational, velocity normal to the plane of area should be equal to the \_\_\_\_\_.

**Options:**

- 1) Angular velocity vector
- 2) Half the angular velocity vector
- 3) Twice the angular velocity vector
- 4) Zero

**Correct Answer:** Twice the angular velocity vector

**QID : 1042** - A fluid in which resistance to deformation is independent of the shear stress, is called \_\_\_\_\_.

**Options:**

- 1) Bingham plastic fluid
- 2) Pseudo plastic fluid
- 3) Dilatant fluid
- 4) Newtonian fluid

**Correct Answer:** Newtonian fluid

**QID : 1043** - The rate of change of linear momentum is equals to \_\_\_\_\_.

**Options:**

- 1) Active force
- 2) Reactive force
- 3) Torque
- 4) Work done

**Correct Answer:** Active force

**QID : 1044** - The force buoyancy is dependent on \_\_\_\_\_.

**Options:**

- 1) Mass of liquid displaced
- 2) Viscosity of fluid
- 3) Surface tension of fluid
- 4) Depth of immersion

**Correct Answer:** Mass of liquid displaced

**QID : 1045** - The vapour pressure over the concave surface is \_\_\_\_\_.

**Options:**

- 1) Less than the vapour pressure over the plane surface
- 2) Equal to vapour pressure over the plane surface
- 3) Greater than the vapour pressure over the plane
- 4) Zero

**Correct Answer:** Less than the vapour pressure over the plane surface

**QID : 1046** - Bernoulli's equation cannot be applied when the flow is \_\_\_\_\_.

**Options:**

- 1) Rotational
- 2) Turbulent
- 3) Unsteady
- 4) All options are correct

**Correct Answer:** Turbulent

**QID : 1047** - When a body floating in a liquid is displaced slightly, it oscillates about \_\_\_\_\_.

**Options:**

- 1) Centre of gravity of body
- 2) Centre of pressure

- 3) Centre of buoyancy
- 4) Metacentre

**Correct Answer:** Metacentre

**QID : 1048** - Heaviest fluid is \_\_\_\_\_.

**Options:**

- 1) Air
- 2) Castor oil
- 3) Glycerin
- 4) Carbon tetrachloride

**Correct Answer:** Carbon tetrachloride

**QID : 1049** - A hydrometer is used to determine \_\_\_\_\_.

**Options:**

- 1) Relative humidity
- 2) Buoyant force
- 3) Specific gravity of liquids
- 4) Viscosity of liquids

**Correct Answer:** Specific gravity of liquids

**QID : 1050** - A model of torpedo is tested in a towing tank at a velocity of 25 m/sec. The prototype is expected to attain a velocity of 5 m/sec. What model scale has been used?

**Options:**

- 1) 1 : 5
- 2) 1: 2.5
- 3) 1: 25
- 4) None of these

**Correct Answer:** 1 : 5

**QID : 1051** - For the water is flowing through a 20 cm diameter pipe with friction factor,  $f = 0.04$ . The flow will be \_\_\_\_\_.

**Options:**

- 1) Viscous
- 2) Non viscous
- 3) Both viscous and non-viscous
- 4) None of these

**Correct Answer:** Viscous

**QID : 1052** - Crude oil of kinematic viscosity 2.25 stokes flows through a 20 cm diameter pipe, The rate of flow being 1.5 litres/sec. The flow will be \_\_\_\_\_.

**Options:**

- 1) Laminar
- 2) Turbulent
- 3) Uncertain
- 4) None of these

**Correct Answer:** Laminar

**QID : 1053** - The maximum continuous power available from a hydroelectric plant under the most adverse hydraulic conditions is known as \_\_\_\_\_.

**Options:**

- 1) base power
- 2) firm power
- 3) primary power
- 4) secondary power

**Correct Answer:** firm power

**QID : 1054** - A plot between power generated in MW and time is known as \_\_\_\_\_.

**Options:**

- 1) Load curve
- 2) Load duration curve
- 3) Load factor
- 4) Demand curve

**Correct Answer:** Load curve

**QID : 1055** - The ratio of 'Average generation in KWH per year' to 'the product of Installed capacity in KW and hrs per year' is known as \_\_\_\_\_.

- A. Plant factor
- B. Capacity factor
- C. Use factor

**Options:**



- 1) only A
- 2) A or B
- 3) A or B or C
- 4) only C

**Correct Answer:** A or B or C

**QID : 1056** - Portion of the installed reserve kept in operable condition but not placed in service to supply the peak load is known as \_\_\_\_.

**Options:**

- 1) Operating reserve
- 2) Spinning reserve
- 3) Cold reserve
- 4) Hot reserve

**Correct Answer:** Cold reserve

**QID : 1057** - Capacity of hydroelectric plant in service in excess of the peak load is known as \_\_\_\_.

**Options:**

- 1) Operating reserve
- 2) Spinning reserve
- 3) Cold reserve
- 4) Hot reserve

**Correct Answer:** Operating reserve

**QID : 1058** - An impulse turbine is used for \_\_\_\_.

**Options:**

- 1) Low head of water
- 2) High head of water
- 3) Medium head of water
- 4) High discharge

**Correct Answer:** High head of water

**QID : 1059** - In a reaction turbine, the draft tube is used \_\_\_\_.

**Options:**

- 1) To run the turbine full
- 2) To prevent air to enter the turbine
- 3) To increase the effective head of water
- 4) To transport water to downstream

**Correct Answer:** To increase the effective head of water

**QID : 1060** - In an inward flow reaction of turbine \_\_\_\_.

**Options:**

- 1) The water flows parallel to the axis of the wheel
- 2) The water enters the centre of wheel and there flows towards the outer periphery of the wheel
- 3) The water enters the wheel at the outer periphery, and then flows towards the centre of the wheel
- 4) The flow of water is partly radial and partly axial

**Correct Answer:** The water enters the wheel at the outer periphery, and then flows towards the centre of the wheel

**QID : 1061** - Castor and camber are terms associated with which of the following parts of an automobile?

**Options:**

- 1) Gears
- 2) Engine
- 3) Suspensions
- 4) Wheels

**Correct Answer:** Wheels

**QID : 1062** - In reciprocating engines primary forces \_\_\_\_.

**Options:**

- 1) Are completely balanced
- 2) Are partially balanced
- 3) Are balanced by secondary forces
- 4) Cannot be balanced

**Correct Answer:** Are partially balanced

**QID : 1063** - A friction circle is a circle drawn when the journal rotates in a bearing. Its radius depends on the coefficient of friction and \_\_\_\_.

**Options:**

- 1) Magnitude of the forces on the journal
- 2) Angular velocity of the journal

- 3) Clearance between the journal and the bearing
- 4) Radius of the journal

**Correct Answer:** Radius of the journal

**QID : 1064** - The gear train usually employed in clocks is a \_\_\_\_\_.

**Options:**

- 1) Reverted gear train
- 2) Simple gear train
- 3) Sun and planet gear
- 4) Differential gear

**Correct Answer:** Reverted gear train

**QID : 1065** - Critical damping is a function of \_\_\_\_\_.

**Options:**

- 1) Mass and stiffness
- 2) Mass and damping co-efficient
- 3) Stiffness and natural frequency
- 4) Natural frequency and damping co-efficient

**Correct Answer:** Mass and stiffness

**QID : 1066** - Rotating shafts tend to vibrate violently at whirling speeds because \_\_\_\_\_.

**Options:**

- 1) The shafts are rotating at vary speeds
- 2) Bearing centre line coincide with the shaft axis
- 3) The system is unbalanced
- 4) Resonance is caused due to the heavy weight of the rotor

**Correct Answer:** Resonance is caused due to the heavy weight of the rotor

**QID : 1067** - Critical or whirling speed is the speed at which the shaft tends to vibrate violently in \_\_\_\_\_.

**Options:**

- 1) Transverse direction
- 2) Longitudinal direction
- 3) Linear direction
- 4) None of these

**Correct Answer:** Transverse direction

**QID : 1068** - When a shaking force is transmitted through the springs, damping becomes detrimental when the ratio of its frequency to the natural frequency is greater than \_\_\_\_\_.

**Options:**

- 1) 0.25
- 2) 0.5
- 3) 1
- 4)  $\sqrt{2}$

**Correct Answer:**  $\sqrt{2}$

**QID : 1069** - Stress concentration in static loading is more serious in \_\_\_\_\_.

**Options:**

- 1) Ductile materials
- 2) Brittle materials
- 3) Equally serious in both cases
- 4) Depends on other factors

**Correct Answer:** Brittle materials

**QID : 1070** - Which of the following key transmits power through frictional resistance only?

**Options:**

- 1) Saddle key
- 2) Barth key
- 3) Kennedy key
- 4) Tangent key

**Correct Answer:** Saddle key

**QID : 1071** - The key will fail in which of the following manner?

**Options:**

- 1) Shearing
- 2) Crushing
- 3) Both crushing and shearing
- 4) None of these

**Correct Answer:** Both crushing and shearing

**QID : 1072** - In hydrostatic bearing the starting friction is \_\_\_\_\_.

**Options:**

- 1) Very low
- 2) More
- 3) Either more or less
- 4) Uncertain

**Correct Answer:** Very low

**QID : 1073** - Feather keys are generally \_\_\_\_\_.

**Options:**

- 1) Tight in shaft and loose in hub
- 2) Loose in shaft and tight in hub
- 3) Tight in both shaft and hub
- 4) Loose in both shaft and hub

**Correct Answer:** Tight in shaft and loose in hub

**QID : 1074** - The uniform pressure theory as compared to the uniform wear theory gives \_\_\_\_\_.

**Options:**

- 1) Higher frictional torque
- 2) Lower frictional torque
- 3) Either lower or higher frictional torque
- 4) None of these

**Correct Answer:** Higher frictional torque

**QID : 1075** - Tapered roller bearings can take \_\_\_\_\_.

**Options:**

- 1) Radial load only
- 2) Axial load only
- 3) Both radial and axial loads and the ratio of these being less than unity
- 4) Both radial and axial loads and the ratio of these being greater than unity

**Correct Answer:** Both radial and axial loads and the ratio of these being less than unity

**QID : 1076** - Two shafts A and B are made of the same material. The diameter of shaft B is twice that of shaft A. The ratio of power which can be transmitted by shaft A to that of shaft B is \_\_\_\_\_.

**Options:**

- 1)  $\frac{1}{2}$
- 2)  $\frac{1}{4}$
- 3)  $\frac{1}{8}$
- 4)  $\frac{1}{16}$

**Correct Answer:**  $\frac{1}{8}$

**QID : 1077** - For the two shafts connected in parallel, find which statement is true?

**Options:**

- 1) Torque in each shaft is the same
- 2) Shear stress in each shaft is the same
- 3) Angle of twist of each shaft is the same
- 4) Torsional stiffness of each shaft is the same

**Correct Answer:** Angle of twist of each shaft is the same

**QID : 1078** - The buckling load will be maximum for a column if \_\_\_\_\_.

**Options:**

- 1) One end of the column is clamped and the other end is free
- 2) Both ends of the column are clamped
- 3) Both ends of the column are hinged
- 4) One end of the column is hinged and the other end is free

**Correct Answer:** Both ends of the column are clamped

**QID : 1079** - The number of strain readings (using strain gauges) needed on a plane surface to determine the principal strains and their directions are \_\_\_\_\_.

**Options:**

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

**Correct Answer:** 3

**QID : 1080** - If the value of Poisson's ratio is zero, then it means that \_\_\_\_\_.

**Options:**

- 1) The material is rigid
- 2) The material is perfectly plastic
- 3) There is no longitudinal strain in the material
- 4) None of these

**Correct Answer:** None of these

**QID : 1081** - Which of the following is applied to brittle materials?

**Options:**

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

**Correct Answer:** Maximum principal stress theory

**QID : 1082** - Design of shafts made of brittle materials is based on \_\_\_\_\_.

**Options:**

- 1) Guest's theory
- 2) Rankine's theory
- 3) St.Venant's theory
- 4) Von Mises theory

**Correct Answer:** Rankine's theory

**QID : 1083** - The moment of inertia of a hollow circular section whose external diameter is 8 cm and internal diameter is 6 cm about centroidal axis is \_\_\_\_\_ cm<sup>4</sup>.

**Options:**

- 1) 437.5
- 2) 337.5
- 3) 237.5
- 4) 137.5

**Correct Answer:** 437.5

**QID : 1084** - The maximum frictional force which comes into play when a body just begins to slide over the surface of another body is known as \_\_\_\_\_.

**Options:**

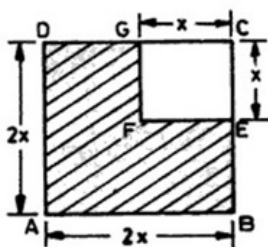
- 1) sliding friction
- 2) rolling friction
- 3) limiting friction
- 4) None of these

**Correct Answer:** limiting friction

**QID : 1085** -

A square sheet of metal has a square of one quarter of the original area cut from one corner as shown in the figure. Which of the following statements is true about the position of the centre of gravity of the remaining portion of the sheet?

धातु की एक वर्गाकार शीट के एक कोने से वास्तविक क्षेत्र के एक चौथाई भाग का एक वर्ग काटा गया है। शीट के बचे हुए भाग के गुरुत्व केन्द्र की स्थिति के बारे में निम्नलिखित में से कौन सा कथन सत्य है?



**Options:**

- 1) Centre of gravity lies at a distance of 5/12 of the side of the original square from each uncut side
- 2) Centre of gravity lies at a distance of 7/12 of the side of the original square from each uncut side
- 3) Centre of gravity lies at a distance of 3/4 of the side of the original square from each uncut side
- 4) None of these

**Correct Answer:** Centre of gravity lies at a distance of 5/12 of the side of the original square from each uncut side

**QID : 1086** - A steel bar 20 mm in diameter simply supported at its ends over a total span of 40 cm, carries a load at its center. If the maximum stress included in the bar is limited to  $480/\pi$  N/mm<sup>2</sup> then the bending strain energy stored in the bar is \_\_\_\_\_.

**Options:**

- 1) 411 N mm
- 2) 511 N mm
- 3) 611 N mm
- 4) 711 N mm

**Correct Answer:** 611 N mm

**QID : 1087** - The Charpy test is conducted to measure \_\_\_\_\_.

**Options:**

- 1) Toughness
- 2) Creep strength
- 3) Fatigue strength
- 4) Elastic strength of a material

**Correct Answer:** Toughness

**QID : 1088** - The stress produced by a suddenly applied load as compared to that produced by the same load when applied gradually is \_\_\_\_\_ times.

**Options:**

- 1) 1.5
- 2) 2
- 3) 3
- 4) 4

**Correct Answer:** 2

**QID : 1089** - The bending moment for a certain portion of the beam is constant. For that section, shear force would be \_\_\_\_\_.

**Options:**

- 1) Zero
- 2) Increasing
- 3) Decreasing
- 4) Constant

**Correct Answer:** Zero

**QID : 1090** - An increase in load at the free end of a cantilever is likely to cause failure \_\_\_\_\_.

**Options:**

- 1) At the free end
- 2) At the mid of its length
- 3) At the fixed support end
- 4) Anywhere on the beam

**Correct Answer:** At the fixed support end

**QID : 1091** - In the electro-discharge machining process, the work-piece and the electrode are submerged in \_\_\_\_\_.

**Options:**

- 1) a dielectric fluid
- 2) an abrasive slurry
- 3) an electrolytic solution
- 4) vacuum

**Correct Answer:** a dielectric fluid

**QID : 1092** - Swaging is an operation of \_\_\_\_\_.

**Options:**

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

**Correct Answer:** forging

**QID : 1093** - In arc welding operations the current value is decided by \_\_\_\_\_.

**Options:**

- 1) thickness of plate
- 2) length of welded portion
- 3) voltage across the arc
- 4) size of the electrode

**Correct Answer:** size of the electrode

**QID : 1094** - Two sheets of same material but different thickness can be butt welded by \_\_\_\_\_.

**Options:**

- 1) adjustment of the current
- 2) time duration of current
- 3) pressure applied
- 4) changing the size of one electrode

**Correct Answer:** changing the size of one electrode

**QID : 1095** - Pick up the incorrect statement about MIG welding.

**Options:**

- 1) no flux required
- 2) high welding speed
- 3) increased corrosion resistance
- 4) even unclean surface can be welded to obtain sound welds

**Correct Answer:** no flux required

**QID : 1096** - First product of the blast furnace in the process of converting iron ore into useful metal by reduction is called \_\_\_\_\_.

**Options:**

- 1) Cast iron
- 2) Wrought iron
- 3) Pig iron
- 4) Steel

**Correct Answer:** Pig iron

**QID : 1097** - Raw material for all iron and steel product is \_\_\_\_\_.

**Options:**

- 1) Cast iron
- 2) Wrought iron
- 3) Pig iron
- 4) Steel

**Correct Answer:** Pig iron

**QID : 1098** - Grey cast iron has \_\_\_\_\_.

**Options:**

- 1) brittleness
- 2) low electrical conductivity
- 3) low compressive strength
- 4) All options are correct

**Correct Answer:** low electrical conductivity

**QID : 1099** - Chilled cast iron is \_\_\_\_\_.

**Options:**

- 1) Soft on surface
- 2) Machined freely
- 3) High resistance to wear
- 4) All options are correct

**Correct Answer:** High resistance to wear

**QID : 1100** - If carbon present in cast iron is partly free and partly in combined state, it is called \_\_\_\_\_.

**Options:**

- 1) White cast iron
- 2) Grey cast iron
- 3) Molten cast iron
- 4) None of these

**Correct Answer:** White cast iron