

QID : 503 - Kinematic chain is known as mechanism when _____.

Options:

- 1) none of the link is fixed
- 2) one link is fixed
- 3) two links are fixed
- 4) all of the links are fixed

Correct Answer: one link is fixed

QID : 504 - Which of the following is TRUE for a flywheel which is retarding, if T is the torque on the crankshaft at any instant and T_{mean} is the mean resisting torque?

Options:

- 1) $T_{\text{mean}} - T > 0$
- 2) $T - T_{\text{mean}} > 0$
- 3) $T_{\text{mean}} - T < 0$
- 4) $T - T_{\text{mean}} < 0$

Correct Answer: $T - T_{\text{mean}} < 0$

QID : 505 - Which term defines the fluctuation of speed of a flywheel in terms of linear speeds?

Options:

1)

$$\frac{2(v_1 - v_2)}{v_1 + v_2}$$

2)

$$\frac{2(v_1 + v_2)}{v_1 - v_2}$$

3)

$$\frac{v_1 + v_2}{2(v_1 - v_2)}$$

4)

$$\frac{v_1 - v_2}{2(v_1 + v_2)}$$

Correct Answer:

QID : 506 -

What is the velocity ratio for creep in the belt drive system for σ_1 being the stress in tight side, σ_2 being the stress on slack side and E is the young's modulus of elasticity of the belt material?

बेल्ट ड्राइव प्रणाली में क्रिप के लिए वेग अनुपात क्या है, जिससे σ_1 टाइट फलक में तनाव हो रहा है, σ_2 ढीला फलक पर तनाव है और E बेल्ट सामग्री के लचीलेपन के यंग का मापांक है?

Options:

1)

$$\frac{N_1}{N_2} = \frac{d_1}{d_2} \times \frac{E - \sqrt{\sigma_2}}{E - \sqrt{\sigma_1}}$$

2)

$$\frac{N_1}{N_2} = \frac{d_1}{d_2} \times \frac{E + \sqrt{\sigma_2}}{E - \sqrt{\sigma_1}}$$

3)

$$\frac{N_1}{N_2} = \frac{d_1}{d_2} \times \frac{E + \sqrt{\sigma_2}}{E + \sqrt{\sigma_1}}$$

4)

$$\frac{N_1}{N_2} = \frac{d_1}{d_2} \times \frac{E - \sqrt{\sigma_2}}{E + \sqrt{\sigma_1}}$$

Correct Answer:

QID : 507 - Which kind of pair can attachment of a car mirror be classified into?

Options:

- 1) Rolling pair
- 2) Sliding pair
- 3) Spherical pair
- 4) Screw pair

Correct Answer: Sliding pair

QID : 508 - Which of the following can said to be equivalent with the frictional torque transmitted by a cone clutch?

Options:

- 1) Flat pivot bearing
- 2) Flat collar bearing
- 3) Conical pivot bearing
- 4) Trapezoidal pivot bearing

Correct Answer: Trapezoidal pivot bearing

QID : 509 -

Which following equation represents the frictional torque transmitted in a conical pivot bearing with radius R of shaft and α as the semi-angle of the cone?

कौन सा निम्नलिखित समीकरण एक शंकवाकार बियरिंग के घर्षण बलाघूर्ण संचरण का प्रतिनिधित्व करता है जिसमें शाफ्ट का त्रिज्या R और α शंकु का अर्ध कोण है

Options:

1)

$$\frac{1}{2} \times \mu \cdot W \cdot R \operatorname{cosec} \alpha$$

2)

$$\frac{2}{3} \times \mu \cdot W \cdot R \operatorname{cosec} \alpha$$

3)

$$\frac{3}{4} \times \mu \cdot W \cdot R \operatorname{cosec} \alpha$$

4)

$$\mu \cdot W \cdot R \operatorname{cosec} \alpha$$

Correct Answer:

QID : 510 -

How the normal pitch (P_N) and axial pitch (P_C) related to a helical gear with helix angle α ?

हेलिक्स कोण α के साथ पेचदार यंत्र से लंबवत पिच (P_N) और अक्षीय पिच (P_C) कैसे संबंधित है?

Options:

1)

$$P_C = P_N \cdot \cos \alpha$$

2)

$$P_C = \frac{P_N}{\cos \alpha}$$

3)

$$P_N = P_C \cdot \cos \alpha$$

4)

$$P_N = \frac{P_C}{\cos \alpha}$$

Correct Answer:

QID : 511 - Which of the following is CORRECT for the train value of a gear train?

Options:

1) Speed of driver/speed of driven

2) Speed of driven/speed of driver

3) Number of teeth on driven/number of teeth on driver

4) None of these

Correct Answer: Speed of driven/speed of driver

QID : 512 - What will be the change in the vertical height (in m) of a watt governor, when the speed is decreased from 50 rpm to 25 rpm?

Options:

1) 0.358

2) 1.074

3) 1.432

4) 1.79

Correct Answer: 1.074

QID : 513 - How is sensitivity and stability related to governor?

Options:

- 1) Directly proportional
- 2) Inversely proportional
- 3) Not related
- 4) Cannot be determined

Correct Answer: Inversely proportional

QID : 514 - Which ratio defines the height of a watt governor to that of the porter governor for equal arm and link lengths, where m is the mass of the ball and M is the mass of the sleeve?

Options:

- 1) $\frac{m}{M+m}$
- 2) $\frac{M}{M+m}$
- 3) $\frac{M+m}{m}$
- 4) $\frac{M+m}{M}$

Correct Answer:

QID : 515 - Which of the following cam follower has the highest wear rate?

Options:

- 1) Knife edge follower
- 2) Roller follower
- 3) Flat face follower
- 4) Spherical faced follower

Correct Answer: Knife edge follower

QID : 516 - When the friction comes into action between the two running parts of a machine, it results in the production of _____.

Options:

- 1) light
- 2) oil
- 3) energy
- 4) heat

Correct Answer: heat

QID : 517 - When the position of the body is either in rest or in uniform velocity, then the body is said to be in the _____.

Options:

- 1) rest
- 2) uniform motion
- 3) rotational motion
- 4) equilibrium

Correct Answer: equilibrium

QID : 518 - The beam which has one _____ end and other _____ end is known as cantilever beam.

Options:

- 1) fixed, free
- 2) fixed, hinged
- 3) hinged, free
- 4) None of these

Correct Answer: fixed, free

QID : 519 - Calculate the value of modulus of rigidity (N/mm²) if the Poisson's ratio is 0.25 and modulus of elasticity for the material is 200 N/mm²?

Options:

- 1) 50
- 2) 80
- 3) 100
- 4) 150

Correct Answer: 80

QID : 520 - Choose the INCORRECT option for the Hooke's law.

Options:

1)

$$\sigma \propto \frac{1}{\varepsilon}$$

2)

$$\sigma \propto \varepsilon$$

3)

$$\sigma = \varepsilon$$

4)

$$\sigma = \varepsilon$$

Correct Answer:

QID : 521 -

A steel rod whose diameter is 2 cm and is 2 m long, experiences heating of temperature 30°C to 150°C. The coefficient of thermal expansion is $\alpha = 12 \times 10^{-6} / ^\circ\text{C}$ and Young's modulus is 200 GPa. If the rod has been restricted to its original position, then the thermal stress (MPa) developed will be _____.

एक स्टील रॉड जिसका व्यास 2 सेंटीमीटर और लम्बाई 2 मीटर है उसे तापमान 30°C से 150°C तक गर्म किया जाता है।

उष्मीय प्रसार गुणांक $\alpha = 12 \times 10^{-6} / ^\circ\text{C}$ है और यंग का मापांक 200 GPa है यदि छड़ को अपनी मूल स्थिति में प्रतिबंधित किया गया है, विकसित उष्मीय प्रतिबल (MPa) _____ है।

Options:

1) 234

2) 256

3) 288

4) 300

Correct Answer: 288

QID : 522 - The conditions for the thermal stress in a body are given below.

- (1) It is the function of coefficient of thermal expansion.
- (2) It is the function of temperature rise.
- (3) It is the function of modulus of elasticity.

Which of the following is the CORRECT answer?

Options:

- 1) 1 and 2 only
- 2) 1 and 3 only
- 3) 2 and 3 only
- 4) All option are correct

Correct Answer: All option are correct

QID : 523 - If the stress acting on a point is in the three dimensions, then what is the number of components in a stress tensor required for defining that stress?

Options:

- 1) 3
- 2) 4
- 3) 6
- 4) 9

Correct Answer: 9

QID : 524 - If the equivalent torque in a shaft is 500 Nm and the bending moment is 300 Nm. Calculate the magnitude of the required torque and the equivalent bending moment.

Options:

- 1) 500 Nm and 400 Nm
- 2) 400 Nm and 400 Nm
- 3) 400 Nm and 500 Nm
- 4) 300 Nm and 400 Nm

Correct Answer: 400 Nm and 400 Nm

QID : 525 - What will be the change in length (mm) of a steel bar having a square cross section of dimension 40 mm x 40 mm, which is subjected to an axial compressive load of 250 kN. If the length of the bar is 4 m and modulus of elasticity is $E = 250 \text{ GPa}$?

Options:

- 1) 2.5
- 2) 1.25
- 3) 2
- 4) 1.5

Correct Answer: 2.5

QID : 526 - Choose the INCORRECT option for the equation of elongation of a uniform rod having length L due to the self weight W.

Options:

1)

$$\delta = \frac{WL}{2AE}$$

2)

$$\delta = \frac{2WL}{AE}$$

3)

$$\delta = \frac{WL}{AE}$$

4)

$$\delta = \frac{2WL}{AE} \text{ and } \delta = \frac{WL}{AE} \text{ both}$$

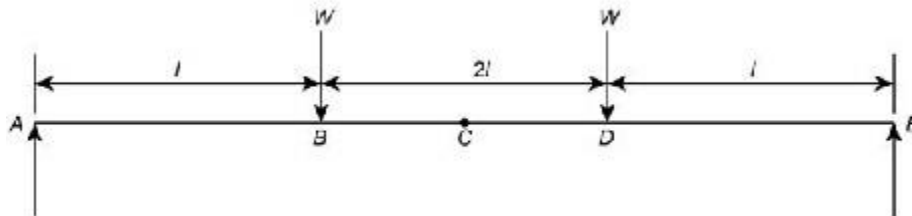
$$\delta = \frac{2WL}{AE} \text{ और } \delta = \frac{WL}{AE} \text{ दोनों}$$

Correct Answer:

QID : 527 -

Consider the loaded beam as shown in the figure below. Determine the portion of the beam which is subjected to pure bending.

नीचे दिए गए चित्र में भारित धरन पर विचार करें। धरन के हिस्से को निर्धारित करें जो शुद्ध झुकाव के अधीन है।



Options:

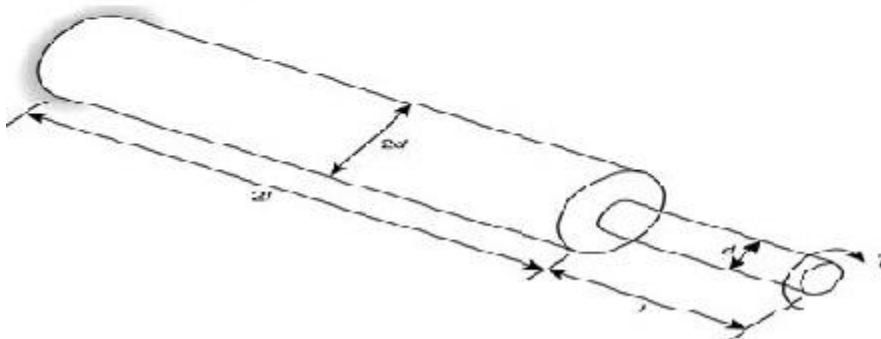
- 1) DE
- 2) CD
- 3) BD
- 4) AE

Correct Answer: BD

QID : 528 -

Calculate the total angle of twist for a stepped shaft which is subjected to the torque (T) as shown in the figure below.

एक स्टेप्ड शाफ्ट के लिए मोड़ के कुल कोण की गणना करें जो अर्घूर्ण (T) के अधीन है जैसा कि नीचे दी गई छवि में दिखाया गया है।



Options:

- 1)

$$\frac{TI}{\pi Gd^4}$$

2)

$$\frac{66TI}{\pi Gd^4}$$

3)

$$\frac{TI}{66Gd^4}$$

4)

$$\frac{36TI}{\pi Gd^4}$$

Correct Answer:**QID : 529 -**

A cross sectional bar of area 700 mm^2 is subjected to an axial load as shown in the figure below. What is the value of stress (MPa) in the section RS?

700 mm^2 क्षेत्र के एक क्रॉस अनुभागीय पट्टी नीचे एक आंकड़ा के रूप में दिखाए गए अक्षीय भार के अधीन है। अनुभाग RS में प्रतिबल (एमपीए) का मान क्या है?



Options:

1) 30

2) 40

3) 50

4) 60

Correct Answer: 30

QID : 530 - If the diameter of the column is reduced by 30%, then what will be the change in the Euler's buckling load (in %)?

Options:

- 1) 25
- 2) 50
- 3) 75
- 4) 100

Correct Answer: 75

QID : 531 - What is the value of latent heat of vapourization at critical point?

Options:

- 1) Zero
- 2) Greater than zero
- 3) Less than zero
- 4) Insufficient data

Correct Answer: Zero

QID : 532 - What happens to the specific volume of water when it is heated at 0°C?

Options:

- 1) Decreases steadily
- 2) Increases steadily
- 3) First increases then decreases
- 4) First decreases then increases

Correct Answer: First decreases then increases

QID : 533 - Which of the following is the other name of isentropic process?

Options:

- 1) a reversible isothermal process
- 2) a reversible adiabatic process
- 3) a reversible isobaric process
- 4) a reversible isochoric process

Correct Answer: a reversible adiabatic process

QID : 534 - Which of the following represents an impossible cycle?

Options:

- 1)

$$\oint \frac{dQ}{T} = 0$$

2)

$$\oint \frac{dQ}{T} > 0$$

3)

$$\oint \frac{dQ}{T} < 0$$

4) None of these

Correct Answer:

QID : 535 - Which of the following is INCORRECT for reversible adiabatic process?

Options:

1) $dS=0$

2) S is constant.

3) $dQ=0$

4) Q is not constant.

Correct Answer: Q is not constant.

QID : 536 - Which of the following method of fuel ignition is used in diesel engine?

Options:

1) Spark plug

2) Fuel injector

3) Combustion chamber

4) Heat from compressed air

Correct Answer: Heat from compressed air

QID : 537 - How self ignition temperature of petrol be compared to that of diesel?

Options:

1) Higher

2) Lower

3) Same

4) Insufficient data

Correct Answer: Higher

QID : 538 - Which of the following is TRUE for supercharging?

Options:

- 1) Supplying higher density of air at intake than the surrounding.
- 2) Providing forced cool air at intake.
- 3) Raising exhaust pressure
- 4) Supplying excess fuel for raising load

Correct Answer: Supplying higher density of air at intake than the surrounding.

QID : 539 - Which term best represents the calorific value of gaseous fuel?

Options:

- 1) kcal
- 2) kcal/kg
- 3) kcal/m²
- 4) kcal/n

Correct Answer: kcal/kg

QID : 540 - Which of the substance can be classified as pure substance?

Options:

- 1) Humid air
- 2) Soil
- 3) Sand in water
- 4) Baking soda

Correct Answer: Baking soda

QID : 541 - Which of the following statement is INCORRECT for work output of an ideal Otto cycle?

Options:

- 1) Decreases with an increase in adiabatic index.
- 2) Decreases with an increase in compression ratio.
- 3) Increases with an increase in pressure ratio.
- 4) Both Decreases with an increase in adiabatic index and Decreases with an increase in compression ratio.

Correct Answer: Both Decreases with an increase in adiabatic index and Decreases with an increase in compression ratio.

QID : 542 - A reversible engine, which operates between temperature range of 1200 K and 600 K, rejects 30% of heat to the sink comes under the classification of?

Options:

- 1) Carnot Engine
- 2) Petrol engine
- 3) Diesel engine
- 4) None of these

Correct Answer: None of these

QID : 543 - Which relation clearly depicts the absolute thermodynamic temperature scale?

Options:

1)

$$\frac{Q_1}{Q_2} = \frac{T_1}{T_2}$$

2)

$$\frac{Q_2}{Q_1} = \frac{T_1}{T_2}$$

3)

$$\frac{Q_1}{Q_2} = \frac{T_1}{T_2} \text{ and } \frac{Q_2}{Q_1} = \frac{T_1}{T_2} \text{ both}$$

$$\frac{Q_1}{Q_2} = \frac{T_1}{T_2} \text{ और } \frac{Q_2}{Q_1} = \frac{T_1}{T_2} \text{ दोनों}$$

4) None of these

Correct Answer:

QID : 544 - At triple point for water, which of the following term is not equal to zero?

Options:

- 1) Enthalpy
- 2) Entropy
- 3) Internal energy
- 4) None of these

Correct Answer: Enthalpy

QID : 545 - What does the term 'quality' indicate?

Options:

- 1) Mass fraction of liquid in a liquid vapour mixture
- 2) Mass fraction of vapour in a liquid vapour mixture
- 3) Both Mass fraction of liquid in a liquid vapour mixture and Mass fraction of vapour in a liquid vapour mixture
- 4) None of these

Correct Answer: Mass fraction of vapour in a liquid vapour mixture

QID : 546 - A gas is compressed frictionless from an initial state of $y \text{ m}^3$ and 1 MPa to a final state of 0.2 m^3 and 1 MPa. There is a transfer of 40 kJ of heat from the gas and a drop of 20kJ in internal energy. What is the initial state volume of the gas?

Options:

- 1) 0.2
- 2) 0.22
- 3) 19.8
- 4) 20.2

Correct Answer: 0.22

QID : 547 - What is the drop in enthalpy (in kJ/kg) for a steam whistle which is perfectly insulated and does not work has an exit velocity of steam at 40 m/sec?

Options:

- 1) 0.8
- 2) 8
- 3) 80
- 4) 800

Correct Answer: 0.8

QID : 548 - Two Carnot engines are connected in a series with working extreme temperatures as 2000 K and 200 K respectively. What is the efficiency of the first Carnot engine (in %)?

Options:

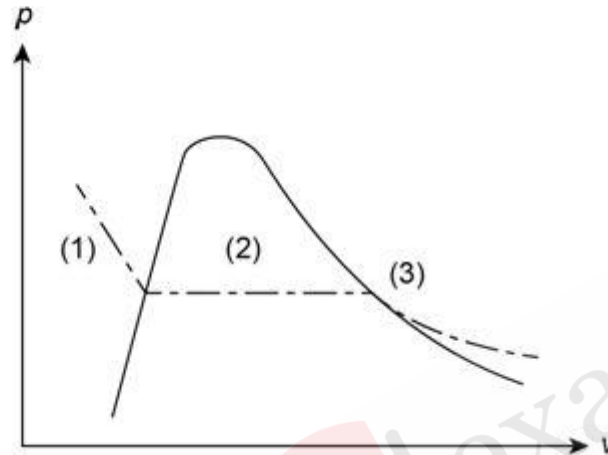
- 1) 0
- 2) 50
- 3) 68

4) 90

Correct Answer: 0**QID :** 549 -

What the region (3) in the p-V diagram given below is called?

नीचे दी गई पी-वी आरेख में क्षेत्र (3) क्या कहा जाता है?



Options:

- 1) Compressed liquid region
- 2) Saturated liquid vapour region
- 3) Solid-liquid region
- 4) Superheated region

Correct Answer: Saturated liquid vapour region**QID :** 550 - Which formula is the CORRECT depiction of slope of adiabatic curve?**Options:**

1)

$$\frac{dP}{dV} = -\gamma \frac{P}{V}$$

2)

$$\frac{dP}{dV} = \frac{P}{V}$$

3)

$$\frac{dP}{dV} = -\frac{P}{V}$$

4)

$$\frac{dP}{dV} = \gamma \frac{P}{V}$$

Correct Answer:

QID : 551 - _____ surface hardening process gives maximum hardness to the surface.

Options:

- 1) Pack hardening
- 2) Nitriding
- 3) Cyaniding
- 4) Induction hardening

Correct Answer: Nitriding

QID : 552 - _____ is not a ceramic material

Options:

- 1) Glass
- 2) Bakelite
- 3) Clay
- 4) Aluminium oxide

Correct Answer: Bakelite

QID : 553 - To which of the following is the proof stress related?

Options:

- 1) Elongation
- 2) Necking
- 3) Yielding
- 4) Fracture

Correct Answer: Elongation

QID : 554 - Mechanical seals are used

Options:

- 1) to prevent vibrations
- 2) to prevent leakage
- 3) to reduce friction
- 4) to balance the equipment

Correct Answer: to prevent leakage

QID : 555 - Noise level in case of an aircraft is

Options:

- 1) generally less than 100 db
- 2) generally more than 100 db
- 3) always more than 100 db
- 4) in the range of 60-80 db

Correct Answer: always more than 100 db

QID : 556 - The tool life of a tool is said to be over if

Options:

- 1) the tool has failed and a poor surface finish is obtained
- 2) sudden increase in power and cutting forces takes place and chatter appears in machining
- 3) overheating and fuming due to friction occurs in addition to dimensional instability
- 4) All option are correct

Correct Answer: All option are correct

QID : 557 - Graphite moulds are generally used for continuous casting method because

Options:

- 1) the metals wet the mould slightly
- 2) only a small film of lubricating oil is required
- 3) they are self-lubricating
- 4) they are comparatively cheaper

Correct Answer: they are self-lubricating

QID : 558 - Ceramic tools are fixed to tool by the following process

Options:

- 1) soldering
- 2) brazing
- 3) welding
- 4) clamping

Correct Answer: brazing

QID : 559 - Gear tooth Vernier is used

Options:

- 1) to measure the addendum
- 2) to measure the addendum and dedendum

- 3) to measure the circular pitch
- 4) to measure the pitch line thickness of both

Correct Answer: to measure the pitch line thickness of both

QID : 560 -

Which one of the following is the steady flow energy equation for a boiler?

निम्नलिखित में से कौन सा बॉयलर के लिए स्थिर प्रवाह ऊर्जा समीकरण है?

(a) $h_1 + \frac{v_1^2}{2gJ} = h_2 + \frac{v_2^2}{2gJ}$

(b) $Q = (h_2 - h_1)$

(c) $h_1 + \frac{v_1^2}{2gJ} + Q = h_2 + \frac{v_2^2}{2gJ}$

(d) $W_s = (h_2 - h_1) + Q$

Options:

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

Correct Answer: D only

QID : 561 - The major constituents of a fuel are

Options:

- 1) carbon, hydrogen and oxygen
- 2) carbon, hydrogen, oxygen and nitrogen
- 3) carbon, oxygen, hydrogen, nitrogen, phosphorus and sulphur
- 4) Carbon and hydrogen

Correct Answer: Carbon and hydrogen

QID : 562 - The general gas equation is given as

Options:

- 1) $pv = mT$

2) $p/V = mT$

3) $pT = mRT$

4) $p/V = mRT$

Correct Answer: $pT = mRT$

QID : 563 - Molar volume is equal to

Options:

1) 22.41 m³ at NTP

2) 2.241 m³ at NTP

3) 29.27 m³ at NTP

4) 1.03 m³ at NTP

Correct Answer: 22.41 m³ at NTP

QID : 564 - Internal combustion engine works on

Options:

1) first law of thermodynamics

2) second law of thermodynamics

3) zeroth law of thermodynamics

4) None of these

Correct Answer: first law of thermodynamics

QID : 565 - The first and second laws of thermodynamics help to derive the following properties, respectively.

Options:

1) pressure and temperature

2) temperature and entropy

3) pressure and entropy

4) temperature and enthalpy

Correct Answer: temperature and entropy

QID : 566 - Constant volume process is

Options:

1) isopiestic process

2) hyperbolic process

3) isometric process

4) polytropic process

Correct Answer: isometric process

QID : 567 -

Stream and velocity potential functions for a two-dimensional flow field given by $u = 2x$ and $v = -2y$ are

$u = 2x$ और $v = -2y$ के द्वारा दिया गया दो-आयामी प्रवाह क्षेत्र के लिए स्ट्रीम और वेग संभावित कार्य है

- (a) $\psi = 2xy, \phi = x^2 - y^2$
- (b) $\psi = x^2 - y^2, \phi = 2xy$
- (c) $\psi = x^2 - y^2, \phi = x^2 + y^2$
- (d) $\psi = x^2 + y^2, \phi = x^2 - y^2$

Options:

- 1) (a) Only
- 2) (b) Only
- 3) (c) Only
- 4) (d) Only

Correct Answer: (b) Only

QID : 568 - The internal energy of a gas obeying van der Waals, equation $(p + a/V^2)(V - b) = RT$ depends on its

Options:

- 1) temperature
- 2) temperature and pressure
- 3) temperature and specific volume
- 4) pressure and specific volume

Correct Answer: temperature and specific volume

QID : 569 - Consider the following properties:

- (1) Entropy
- (2) Viscosity
- (3) Temperature
- (4) Specific heat at constant volume

Which of the above properties of a system is/are extensive?

Options:

- 1) Only 1
- 2) Only 1 and 2
- 3) Only 2, 3 and 4
- 4) Only 1, 2 and 4

Correct Answer: Only 1

QID : 570 - In cooling tower, water is cooled by the process of:

Options:

- 1) condensation
- 2) fusion
- 3) evaporation
- 4) sublimation

Correct Answer: evaporation

QID : 571 - While starting the centrifugal pump

Options:

- 1) delivery valve is kept wide open
- 2) delivery valve is kept closed
- 3) inlet valve is kept closed
- 4) delivery valve is opened slightly

Correct Answer: delivery valve is kept closed

QID : 572 - In the centrifugal pump, maximum efficiency is obtained when the blades are

Options:

- 1) bent backward
- 2) bent forward
- 3) straight
- 4) bent to have aerofoil section

Correct Answer: straight

QID : 573 - One dimension flow is one

Options:

- 1) involving zero transverse components of flow
- 2) in uniform flow

3) in steady uniform flow

4) None of these

Correct Answer: involving zero transverse components of flow

QID : 574 - The hydraulic mean depth for a rectangular section is: Where, b = Width of rectangular section d = Depth of water

Options:

1) $bd / (2d+b)$

2) $bd / (d+b)$

3) $2bd / (d+b)$

4) $bd / 2(d+b)$

Correct Answer: $bd / (2d+b)$

QID : 575 - The branch of Engineering Science, which deals with water at rest or in motion is called

Options:

1) hydraulics

2) fluid mechanics

3) applied mechanics

4) kinematics

Correct Answer: hydraulics

QID : 576 - Pressure inside a water droplet is given by the relation

Options:

1) $\rho=4\sigma/d$

2) $\rho=3\sigma/d$

3) $\rho=8\sigma/d$

4) $\rho=16\sigma/d$

Correct Answer: $\rho=4\sigma/d$

QID : 577 - Vertical distribution of velocity in an open channel for laminar flow can be assumed as

Options:

1) offer no resistance to change of shape

- 2) offer resistance to change of shape
- 3) offer least resistance to compression
- 4) None of these

Correct Answer: offer least resistance to compression

QID : 578 - A manometer is used to measure

Options:

- 1) velocity of flow in channel
- 2) atmospheric pressure
- 3) pressure in pipes
- 4) None of these

Correct Answer: pressure in pipes

QID : 579 - The length of mouthpiece as-compared to diameter is

Options:

- 1) 5 to 6 times
- 2) 6 to 8 times
- 3) 2 to 3 times
- 4) 1 to 1.5 times

Correct Answer: 2 to 3 times

QID : 580 - The lower critical Reynolds number is approximately equal to

Options:

- 1) 100
- 2) 200
- 3) 1000
- 4) 2000

Correct Answer: 2000

QID : 581 - If a thin plate is held normal to the flow, the viscous drag on it is

Options:

- 1) maximum
- 2) minimum
- 3) zero
- 4) None of these

Correct Answer: zero

QID : 582 - The cross section of cippoletti weir is

Options:

- 1) rectangular
- 2) triangular
- 3) trapezoidal
- 4) None of these

Correct Answer: trapezoidal

QID : 583 - When there is no air left blow the nappe, it is known as

Options:

- 1) free nappe
- 2) depressed nappe
- 3) adhering nappe
- 4) All option are correct

Correct Answer: adhering nappe

QID : 584 - In case of reaction turbine

Options:

- 1) $P_1 = P_2$
- 2) $P_1 > P_2$
- 3) $P_1 < P_2$
- 4) None of these

Correct Answer: $P_1 > P_2$

QID : 585 - The overall efficiency of Pelton wheel is about

Options:

- 1) 0.55
- 2) 0.65
- 3) 0.85
- 4) 0.99

Correct Answer: 0.85

QID : 586 -

If α is the rake angle of the cutting tool, ϕ is the shear angle and v is the cutting velocity, then the velocity of chip sliding along the shear plane is given by

यदि α काटने के उपकरण का रैक कोण है, ϕ कतरनी कोण है और v काटने की वेलोसिटी है, फिर कतरनी विमान के साथ स्लाइडिंग चिप की गति को इसके द्वारा दिया जाता है

$$1] \frac{v \cos \alpha}{\sin(\phi - \alpha)}$$

$$2] \frac{v \sin \alpha}{\sin(\phi - \alpha)}$$

$$3] \frac{v \sin \alpha}{\cos(\phi - \alpha)}$$

$$4] \frac{v \cos \alpha}{\cos(\phi - \alpha)}$$

Options:

1) (a)

2) (b)

3) (c)

4) (d)

Correct Answer: (a)

QID : 587 - Which one of the statements is correct for a forced vortex?

Options:

1) Turns in an opposite direction to a free vortex

2) Always occurs in conjunction with a free vortex

3) Has the linear velocity directly proportional to the radius

4) Has the linear velocity inversely proportional to the radius

Correct Answer: Has the linear velocity directly proportional to the radius

QID : 588 - Why is multi-staging in centrifugal pumps used?

Options:

1) For high flow rate

2) For high head

3) For high speed

4) For high efficiency

Correct Answer: For high head

QID : 589 - The overall efficiency of a Pelton turbine is 70%. If the mechanical efficiency is 85%, what is its hydraulic efficiency?

Options:

- 1) 0.824
- 2) 0.595
- 3) 0.723
- 4) 0.815

Correct Answer: 0.824

QID : 590 - Which of the following water turbines does not require a draft tube?

Options:

- 1) Propeller turbine
- 2) Pelton Turbine
- 3) Kaplan turbine
- 4) Francis turbine

Correct Answer: Pelton Turbine

QID : 591 - Which phenomenon will occur when the valve at the discharge end of a pipe connected to a reservoir is suddenly closed?

Options:

- 1) Cavitation
- 2) Erosion
- 3) Hammering
- 4) Surging

Correct Answer: Hammering

QID : 592 - The pressure drop for a relatively low Reynolds number flow in a 600 mm, 30 m long pipeline is 70 kPa. What is the wall shear stress?

Options:

- 1) 0
- 2) 350 Pa
- 3) 700 Pa
- 4) 1400 Pa

Correct Answer: 350 Pa

QID : 593 - Uniform flow occurs when

Options:

- 1) the flow is steady
- 2) the flow is streamline
- 3) size and shape of the cross section in a particular length remain constant
- 4) size and cross section change uniformly along length

Correct Answer: size and shape of the cross section in a particular length remain constant

QID : 594 - General energy equation holds for

Options:

- 1) steady flow
- 2) turbulent flow
- 3) laminar flow
- 4) non-uniform flow

Correct Answer: non-uniform flow

QID : 595 - Two pipe systems can be said to be equivalent, when the following quantities are same

Options:

- 1) friction loss and flow
- 2) length and diameter
- 3) flow and length
- 4) friction factor and diameter

Correct Answer: friction loss and flow

QID : 596 - Water, by evaporative cooling, can theoretically be cooled down to:-

Options:

- 1) atmospheric temperature
- 2) air's dry bulb temperature
- 3) air's wet bulb temperature
- 4) air's dew point temperature

Correct Answer: air's dew point temperature

QID : 597 - Any change in load is adjusted by adjusting following parameter on turbine

Options:

- 1) net head

- 2) absolute velocity
- 3) blade velocity
- 4) flow

Correct Answer: flow

QID : 598 - A turbine pump is basically a centrifugal pump equipped additionally with

Options:

- 1) adjustable blades
- 2) backward curved blades
- 3) vaned diffusion casing
- 4) inlet guide blades

Correct Answer: vaned diffusion casing

QID : 599 - A Pelton wheel is

Options:

- 1) impulse turbine
- 2) radial flow impulse turbine
- 3) inward flow impulse turbine
- 4) outward flow impulse turbine

Correct Answer: impulse turbine

QID : 600 - Guide angle as per the aerofoil theory of Kaplan turbine blade design is defined as the angle between

Options:

- 1) lift and resultant force
- 2) drag and resultant force
- 3) lift and tangential force
- 4) lift and drag

Correct Answer: lift and resultant force