

Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.

Subject : Assistant Engineer Trainee Mechanical
 Test Center Name : Lucknow Institute Of Technology
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Q.1

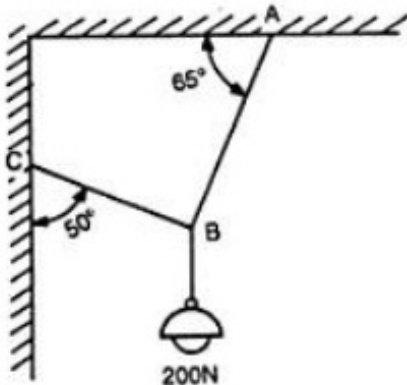
Which of the following is used in vapour compression refrigeration system?

- 1) Throttle valve
- 2) Both throttle valve and expansion cylinder
- 3) Expansion cylinder
- 4) Pump

Chosen Option: 3

Q.2

An electric light fixture weighing 200 N is supported (as shown in figure). Determine tensile force in wire BC.



- 1) 158.6 N
- 2) 120 N
- 3) 87.5 N
- 4) 20 N

Chosen Option: 3

Q.3

A steel bar is elongated by the application of axial compressive load of 200 kN. Determine the elongation if the cross section of bar (A) is 40 mm x 40 mm, length of bar (L) is 2m and modulus of elasticity $E = 200$ GPa.

- 1) 1.25mm
- 2) 4.05mm
- 3) 5.40mm
- 4) 2.70mm

Chosen Option: 1

Q.4

A closed thermodynamic system manifests when:

- 1) matter is not allowed to cross the boundary, but energy transfer does occur across the boundary
- 2) there is absolutely no interaction of the system with surroundings across its boundaries
- 3) there is only transfer of mass, but no heat and work energy are transferred
- 4) there is transfer of both mass and energy across the system boundaries

Chosen Option: 2

Q.5

The thickness of oil film at the surface of slip gauges is of the order of:

- 1) 10 micron
- 2) 0.005 micron
- 3) 0.1 micron
- 4) 1 micron

Chosen Option: 2

Q.6

A helical spring of wire diameter 6 mm and spring index 6 is acted by an initial load of 750 N. After compressing it further by 12 mm the stress in the wire is 500 MPa. Find the number of active coils. (given : $G = 84000 \text{ MPa}$).

- 1) 24
- 2) 10
- 3) 30
- 4) 18

Chosen Option: --

Q.7

Match the following and select the correct answer from the options given below the lists:

Column A	Column B
P: Compressible flow	U: Reynolds number
Q: Free surface flow	V: Nusselt number
R: Boundary layer flow	W: Weber number
S: Pipe flow	X: Froude number
T: Heat convection	Y: Mach number
	Z: Skin friction coefficient

- 1) P - Y; Q - W; R - Z; S - U; T - V
- 2) P - U; Q - X; R - V; S - Z; T - W
- 3) P - W; Q - X; R - Z; S - U; T - V
- 4) P - Y; Q - W; R - Z; S - U; T - X

Chosen Option: 2

Q.8

What type of materials are ceramics?

- 1) Conductors
- 2) Superconductors
- 3) Insulators
- 4) Semiconductors

Chosen Option: 4

Q.9

Among the following, identify the one which is not a component of a control system.

- 1) A comparison of actual results with the standard
- 2) A means of measuring accomplishment
- 3) A standard
- 4) A flow of authority to enforce the standards

Chosen Option: 3

Q.10

A dummy activity is:

- 1) Imaginary and alternative to existing pattern
- 2) Alternative to existing pattern
- 3) True
- 4) Imaginary

Chosen Option: 4

Q.11

Which one of the following statements is not related to the first law of thermodynamics?

- 1) Every process occurring in nature proceeds in the sense in which the sum of the entropies of all bodies taking part in the process is increased.
- 2) Energy can neither be created nor destroyed
- 3) The sum total of all energy remains constant
- 4) Whenever energy is transformed from one form to another, energy is always conserved

Chosen Option: 1

Q.12

For two points A and B located on a planar rigid body, the relative velocity between the two points:

- 1) should always be along AB
- 2) should always be perpendicular to AB when the body undergoes pure translation
- 3) should always be perpendicular to AB
- 4) can be oriented along any direction

Chosen Option: 4

Q.13

For which of the given conditions heat transfer from the insulated tip can be considered the case of fin of finite length?

(where m is slope of differential equation and L is length of fin).

- 1) $m = 0.75$, $L = 3$
- 2) $m = 3$, $L = 0.72$
- 3) $m = 1$, $L = 3$
- 4) $m = 2$, $L = 1.2$

Chosen Option: --

Q.14

Which of the following statements is correct for heat and work?

- 1) Both are point functions
- 2) Both are intensive properties
- 3) Both are path functions
- 4) Both are extensive properties

Chosen Option: 1

Q.15

A condenser of a refrigeration system rejects heat at rate of 150 kW, while its compressor consumes 60 kW power. What would be the coefficient of performance of the system?

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

Chosen Option: 2

Q.16

Which of the following is a single point cutting tool?

- 1) Hacksaw blade
- 2) Grinding wheel
- 3) Parting tool
- 4) Milling cutter

Chosen Option: 1

Q.17

Consider the information given below:

A smooth pipe of diameter 200 mm carries water. The pressure in the pipe at section S_1 (elevation: 10 m) is 50 kPa. At section S_2 (elevation: 12 m), the pressure is 20 kPa and the velocity is 2 m/s^2 . Density of water is 1000 kg/m^3 and acceleration due to gravity is 9.8 m/s^2 .

Which of the following is true?

- 1) Flow is from S_2 to S_1 and head loss is 1.06 m
- 2) Flow is from S_1 to S_2 and head loss is 0.53 m
- 3) Flow is from S_2 to S_1 and head loss is 0.53 m
- 4) Flow is from S_1 to S_2 and head loss is 1.06 m

Chosen Option: --

Q.18

Which of the following material has the lowest resistivity?

- 1) Manganin
- 2) Constantan
- 3) Nichrome
- 4) Silver

Chosen Option: 4

Q.19

Which of the following is true if environmentally sound products are made through efficient processes?

- 1) It is unprofitable, as long as recyclable materials prices are soft.
- 2) It is easier for repetitive processes than for product-focused processes.
- 3) It is known as lean manufacturing.
- 4) It can still be profitable.

Chosen Option: 3

Q.20

If the free-stream fluid velocity (V) is 20 m/s and the pipe diameter (D) is 1 m, calculate the Reynolds number (R), if the dynamic density (ρ) is given by 0.150 kg/m^3 and the fluid viscosity is 0.0000122.

- 1) 245902
- 2) 224201
- 3) 242602
- 4) 232502

Chosen Option: --

Q.21

A liquid compressed in a cylinder has initially a volume of 20 m^3 at a pressure of 100 Pa. If the new volume is 40 m^3 at a pressure of 50 Pa, the bulk modulus of elasticity would be:

- 1) -50 Pa
- 2) -20 Pa
- 3) 50 Pa
- 4) 20 Pa

Chosen Option: 3

Q.22

A Transportation firm has 4 exit (Supply) points and 5 entry (Demand) points. The total number of entries is greater than exits. So the number of iterations excluding degeneracy would be:

- 1) 3
- 2) 9
- 3) 0
- 4) 6

Chosen Option: --

Q.23

Customers arrive at a reception counter at an average interval rate of 10 minutes and receptionist takes an average of 6 minutes for one customer. Determine average queue length.

- 1) 7/10
- 2) 3/10
- 3) 9/10
- 4) 11/10

Chosen Option: 1

Q.24

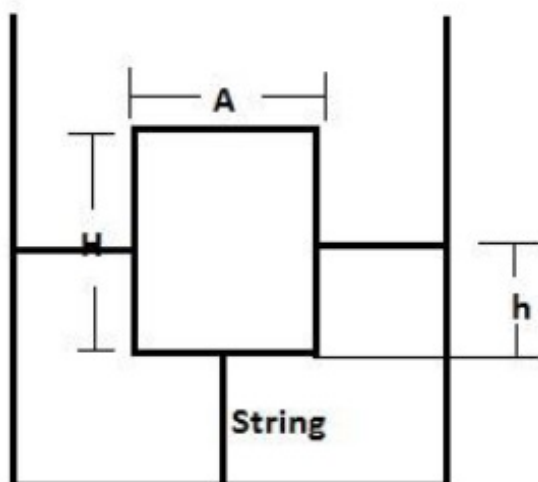
A square surface 3m x 3m lies in a vertical line in water with its upper edge at water surface. The hydrostatic force on square surface is:

- 1) 17,000 kg
- 2) 21,350 kg
- 3) 13,500 kg
- 4) 28,000 kg

Chosen Option: --

Q.25

A cylindrical body having cross-sectional area "A", height "H" and density " ρ_s " is immersed to a depth "h" in a liquid of density " ρ " and is tightened by a string to the bottom. Find the tension in the string. (where g is acceleration due to gravity)



- 1) ρghA
- 2) $(\rho - \rho_s) ghA$
- 3) $(\rho_s - \rho) ghA$
- 4) $(\rho h - \rho_s H)gA$

Chosen Option: 4

Q.26

A finned surface consists of root or base area of 2 W/m^2 and fin surface area of 2 m^2 . The average heat transfer coefficient for finned surface is $32 \text{ W/m}^2\text{K}$, effectiveness of fins provided is 0.65. If finned surface with root or base temperature of 55°C is transferring heat to a fluid at 35°C , then what is the rate of heat transfer?

- 1) 1050 W
- 2) 448 W
- 3) 1280 W
- 4) 825 W

Chosen Option: --

Q.27

Dielectrics are:

- 1) Magnetic materials
- 2) Ferroelectric materials
- 3) Insulating materials
- 4) Semiconducting materials

Chosen Option: 2

Q.28

A thin flat plate $3 \text{ m} \times 2 \text{ m}$ is hanging freely in air. The temperature of surrounding is 24°C . Solar radiation is falling on one side of the plate at the rate of 432 W/m^2 . What should be the convective heat transfer coefficient (in $\text{W/m}^2\text{-}^\circ\text{C}$), if the temperature of plate is to remain constant at 30°C ?

- 1) 200
- 2) 100
- 3) 36

4) 25

Chosen Option: --

Q.29

For characterizing flexibility and short cycle times the commonly used term is:

- 1) Agility
- 2) Proactiveness
- 3) Customer-readiness
- 4) Customer-driven

Chosen Option: 3

Q.30

Zeroth law of thermodynamics forms the basis of _____ measurement.

- 1) work
- 2) temperature
- 3) heat exchange
- 4) pressure

Chosen Option: 2

Q.31

Which of the following equation is used to determine the thickness of thick cylindrical shell with closed ends and made of brittle material?

- 1) Lamé's equation
- 2) Birnie's equation
- 3) Barlow's equation
- 4) Clavarino's equation

Chosen Option: 2

Q.32

Identify the effect on the entropy, when a closed system is undergoing an irreversible process.

- 1) Entropy remains constant
- 2) Entropy will rise
- 3) Value of entropy will fall
- 4) Can increase, decrease or remain constant

Chosen Option: 2

Q.33

What assumption regarding the lubricant film is made in Petroff's equation?

- 1) It is converging or diverging.
- 2) It is diverging.
- 3) It is uniform.

4) It is converging.

Chosen Option: 3

Q.34

How many valence electrons are possessed by Germanium?

- 1) 0
- 2) 4
- 3) 1
- 4) 8

Chosen Option: 2

Q.35

Among the following types of gears, which gears offer a refinement over spur gears?

- 1) External Gears
- 2) Skew Gear
- 3) Advanced spur gears
- 4) Helical Gears

Chosen Option: 2

Q.36

What is the unit of Kinematic viscosity?

- 1) N/m^2
- 2) $N.s/m^2$
- 3) m^2/s
- 4) $m^2/N.s$

Chosen Option: 2

Q.37

For thickness (t) of plates greater than 8 mm, the diameter (d) of the rivet is worked out by using the relation:

- 1) $d = 4 \sqrt{t}$
- 2) $d = 6 \sqrt{t}$
- 3) $d = 2 \sqrt{t}$
- 4) $d = 8 \sqrt{t}$

Chosen Option: 1

Q.38

Which among the following gives the correct relationship between Centigrade and Fahrenheit scales? (where C: degree Centigrade and F: degree Fahrenheit)

- 1) $C = (9/5) (F - 32)$
- 2) $C = 9/5 (F - 32)$

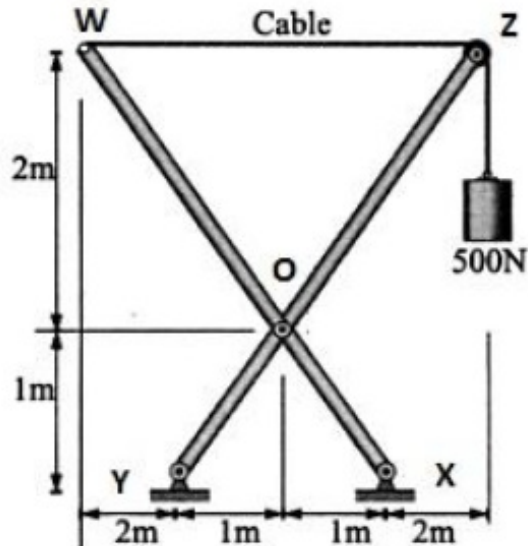
3) $C = 5/9 (F - 32)$

4) $F = (9/5)C - 32$

Chosen Option: 3

Q.39

A two member frame is pin connected at O, Y and X (as shown in figure). The cable is attached to W, passes over smooth peg at Z and is attached to load of 500 N. Determine vertical components of reactions at pin O, Y and X.



- 1) 2000 N, 1000 N, -500 N
- 2) 1000 N, 1500 N, 2000 N
- 3) 2000 N, -500 N, 2000 N
- 4) 1000 N, -500 N, 1000 N

Chosen Option: --

Q.40

Holes are the majority charge carriers in:

- 1) Insulators
- 2) P-type semiconductors
- 3) Superconductors
- 4) N-type semiconductors

Chosen Option: 2

Q.41

Which one of the following is the extensive property of a thermodynamic system?

- 1) Temperature
- 2) Density
- 3) Volume
- 4) Pressure

Chosen Option: 2

Q.42

A flat plate has thickness 6 cm, thermal conductivity 1 W/m-K, convective heat transfer coefficient on its two flat faces are of 50 W/m²-K and 20 W/m²-K, determine its overall heat transfer coefficient.

- 1) 6.33 W/m²-K
- 2) 7.69 W/m²-K
- 3) 20 W/m²-K
- 4) 30 W/m²-K

Chosen Option: --

Q.43

A system is taken from state "P" to state "Q" along two different paths "a" and "b". The heat absorbed and work done by the system along these paths are "Q_a", "Q_b" and "W_a", "W_b" respectively. Which among the following will be true?

- 1) $Q_a - W_a = Q_b - W_b$
- 2) $Q_a = Q_b$
- 3) $W_a = W_b$
- 4) $W_a + Q_a = W_b + Q_b$

Chosen Option: 1

Q.44

Which of the following can hold and position the work piece but does not guide the tool?

- 1) Piercing
- 2) Fixture
- 3) Clamp
- 4) Jigs

Chosen Option: 2

Q.45

Two long parallel plates of same emissivity 0.2 are maintained at different temperatures and have radiation heat exchange between them. To what amount will the radiation heat exchange get reduced by the radiation shield of emissivity 0.4 placed in the middle?

- 1) 2/11
- 2) ¼
- 3) 3/5
- 4) 9/13

Chosen Option: --

Q.46

A hot fluid at 200°C enters a heat exchanger at a mass flow rate of 10⁴kg/h. Its specific heat is 2000 J/kg-K. It is to be cooled by another fluid entering at 25°C with a mass flow rate of 2500 kg/h and specific heat of 400 J/kg-K. The overall heat transfer coefficient based on outside area of 20 m² is 250 W/m²-K. The exit temperature of hot fluid when fluids are in parallel flow is:

- 1) 201°C
- 2) 167°C

- 3) 192°C
- 4) 309°C

Chosen Option: --

Q.47

Which of the following is not a typical example of interference fit?

- 1) Crank pins
- 2) Shrunk on couplings
- 3) Cross head slides
- 4) Iron tyres

Chosen Option: 3

Q.48

Profile of a gear tooth can be checked by:

- 1) Optical projector
- 2) Sine bar
- 3) Optical pyrometer
- 4) Bench micrometer

Chosen Option: 1

Q.49

The strategy that involves production of the amounts demanded at any given time is:

- 1) TQM strategy
- 2) Subcontracting strategy
- 3) Production level strategy
- 4) Chase strategy

Chosen Option: 3

Q.50

Which of the following threads is used for transmission of power?

- I. Square thread
- II. Buttress thread
- III. Acme thread

Choose the correct answer from the options given below.

- 1) I and III
- 2) I and II
- 3) II and III
- 4) I, II and III

Chosen Option: 3

Q.51

If the tearing efficiency of a riveted joint is 25%, then what is the ratio of diameter of rivet hole to the pitch of rivets?

- 1) 0.3
- 2) 0.5
- 3) 0.6
- 4) 0.75

Chosen Option: 2

Q.52

Which of the following usually specifies the size of gear?

- 1) Pitch circle diameter
- 2) Circular pitch
- 3) Diametral pitch
- 4) Pressure angle

Chosen Option: 1

Q.53

For the same lift of sleeve, range of speed of proell governor as compared to porter governor is:

- 1) Half
- 2) Less
- 3) Equal
- 4) More

Chosen Option: 4

Q.54

Largest forbidden energy gap is exhibited by:

- 1) Intrinsic Semiconductor
- 2) Insulator
- 3) Extrinsic semiconductor
- 4) Conductor

Chosen Option: 1

Q.55

If the value of rake angle is a large positive value, then:

- 1) material is forced back on itself
- 2) material is deformed less in the chip
- 3) material is not deformed

4) material is deformed more in the chip

Chosen Option: 4

Q.56

Which of the following gives the expression for the magnification factor at resonance in forced vibration system?
(where: s is stiffness of the spring, c is the damping coefficient or damping force unit velocity and ω_n is the natural circular frequency)

- 1) $\sqrt{(c\omega_n/s)}$
- 2) $(c\omega_n)/s$
- 3) $\sqrt{(s/(c\omega_n))}$
- 4) $s/(c\omega_n)$

Chosen Option: 4

Q.57

In designing a plate clutch, assumption of uniform wear conditions is made because:

- 1) It leads to cost effective design
- 2) No other assumption is possible
- 3) It leads to safer design
- 4) It is closer to real life situation

Chosen Option: 3

Q.58

The non-dimensional number that gives the relationship between the thermal boundary layer and hydrodynamic boundary layer is:

- 1) Grashof number
- 2) Peclet number
- 3) Prandtl number
- 4) Rayleigh number

Chosen Option: 4

Q.59

Deformation per unit length in the direction of force is known as:

- 1) Linear stress
- 2) Lateral strain
- 3) Unit strain
- 4) Linear strain

Chosen Option: 4

Q.60

The refrigerant used for absorption refrigerators working on heat from solar collectors is a mixture of water and which of the following substance?

- 1) Carbon dioxide
- 2) Freon 12
- 3) Lithium bromide
- 4) Sulphur dioxide

Chosen Option: 3

Q.61

A mass of 8 kg hanging from free end of spring. If stiffness of spring is 2 N/cm, then determine the angular frequency of the system.

- 1) 5 rad/s
- 2) 0.2 rad/s
- 3) 0.04 rad/s
- 4) 25 rad/s

Chosen Option: 1

Q.62

Sun's surface at 6400 K emits radiation at a wavelength of 0.75μ . A furnace at 327°C will emit through a small opening, radiation at a wavelength of nearly:

- 1) 8μ
- 2) 12μ
- 3) 0.25μ
- 4) 0.025μ

Chosen Option: --

Q.63

In a bolted joint, two members are connected with an axial tightening force of 2200 N. If the bolt used has metric thread of 4 mm pitch, then torque required for achieving the tightening force is:

- 1) 0.7 Nm
- 2) 1.4 Nm
- 3) 1.0 Nm
- 4) 2.8 Nm

Chosen Option: --

Q.64

What is the idea behind replacing an expander with a throttle valve in vapour compression refrigeration systems?

- 1) Because it considerably reduces the system weight
- 2) Because the positive work in isentropic expansion of liquid is very small
- 3) Because it improves the COP, as the condenser is small
- 4) Because it leads to significant cost reduction

Chosen Option: 3

Q.65

In a gib and cotter joint, the gib and cotter are subjected to:

- 1) Double Shear
- 2) Single shear and crushing
- 3) Single shear
- 4) Double shear and crushing

Chosen Option: 2

Q.66

Which one of the properties given below is an intensive property of the system?

- 1) Kinetic energy
- 2) Composition
- 3) Entropy
- 4) Volume

Chosen Option: 4

Q.67

The parts in contact with the job for doing different operations or generation of surfaces of products are known as:

- 1) Cutter
- 2) Chips
- 3) Products
- 4) Tools

Chosen Option: 1

Q.68

Which of the following is true regarding T joint weld?

- 1) It is used to join two pieces of metal in the manner as rivet joint meals
- 2) It is used where longitudinal shear is present
- 3) It is used where severe loading is encountered and the upper surface of both pieces must be in the same plane
- 4) It is used to join two pieces perpendicularly

Chosen Option: 2

Q.69

Which of the following are the strongest materials available and are used for applications where high strength is required at relatively low cost and where weight is not of primary importance?

- 1) Carbon
- 2) Non-ferrous metals
- 3) Ferrous metals

4) Diamonds

Chosen Option: 3

Q.70

A centrifugal pump draws in too much power compared to design value. It could be due to:

- 1) Heavy liquid
- 2) Hot liquid
- 3) Presence of air in water
- 4) Air leakage

Chosen Option: 4

Q.71

Which of the following parameters has the unit of Pascal-second?

- 1) Kinematic viscosity
- 2) Dynamic viscosity
- 3) Surface tension
- 4) Pressure

Chosen Option: 2

Q.72

Rolling, Forging etc. are examples of metal _____ operations.

- 1) Grinding
- 2) Cutting
- 3) Drilling
- 4) Forming

Chosen Option: 4

Q.73

The relation between the tool life (T) and cutting speed (V) according to the Taylor's tool life equation is: (where: n and C are constants found by experimentation or published data; they are properties of tool material, work piece and feed rate)

- 1) $T_L V^n = C$
- 2) $V^n / T_L = C$
- 3) $T_L / V^n = C$
- 4) $V T_L^n = C$

Chosen Option: 2

Q.74

An assembly line is an example of which one of the following processes?

- 1) Customized process

- 2) Product focused process
- 3) Repetitive process
- 4) Specialized process

Chosen Option: 4

Q.75

Automobile steering gear is an example of:

- 1) Sliding Pair
- 2) Higher Pair
- 3) Turning Pair
- 4) Lower Pair

Chosen Option: 3

Q.76

Which of the following phenomena is responsible for the heat transfer through the walls of steel radiator?

- 1) Conduction only
- 2) Conduction and convection
- 3) Convection only
- 4) Radiation only

Chosen Option: 2

Q.77

What is the value of dielectric constant of vacuum?

- 1) Less than unity
- 2) Unity
- 3) Infinity
- 4) Zero

Chosen Option: 2

Q.78

Which of the following is the most commonly used method for the design of duct size?

- 1) Dual or double duct method
- 2) Static region method
- 3) Velocity reduction method
- 4) Equal friction method

Chosen Option: 2

Q.79

What is torsional rigidity?

- 1) The torque required to produce a twist of one degree per unit length of the shaft.

- 2) The torque required to produce a twist of one radian per unit length of the shaft.
- 3) The torque required to produce a twist of one radian per unit area of the shaft.
- 4) The torque required to produce a twist of one degree per unit area of the shaft.

Chosen Option: 4

Q.80

Allen bolts are:

- 1) Provided with hexagonal depression in head
- 2) Counter shank
- 3) Self locking bolts
- 4) Self screwing bolts

Chosen Option: 2

Q.81

Auto frottage is the method of:

- 1) Relieving thick cylinders
- 2) Prestressing thick cylinders
- 3) Calculating stresses in thick cylinders
- 4) Increasing life of thick cylinders

Chosen Option: 2

Q.82

A 1:20 model of a naval ship has a submerged area of 1.5 m^3 and length 8 m with a total drag of 2 kgf when towed through water at a velocity of 1.4 m/s. Calculate the Reynold's number.

- 1) 1.2×10^7
- 2) 1.0×10^5
- 3) 1.5×10^7
- 4) 1.1×10^7

Chosen Option: --

Q.83

During metal cutting process, temperature at job-tool contact point is measured by:

- 1) Hydrometer
- 2) Dynamometer
- 3) Wattmeter
- 4) Pyrometer

Chosen Option: 4

Q.84

Consider a vehicle suspension system that consists of a spring and a damper. The stiffness of the spring is 3.6 kN/m and the damping constant of damper is 400 N-s/m. If the mass is 50 kg, then determine the damping factor (d) and damped natural frequency (f_n) respectively.

- 1) 0.471 and 1.19 Hz
- 2) 0.471 and 7.48 Hz
- 3) 0.666 and 8.50 Hz
- 4) 0.666 and 1.35 Hz

Chosen Option: --

Q.85

_____ threads are used when the force acts entirely in one direction.

- 1) Acme
- 2) B.S.W.
- 3) Square
- 4) Buttress

Chosen Option: 4

Q.86

When ordering cost is increased to 64 times, EOQ will be increased to:

- 1) 4 times
- 2) 8 times
- 3) Remains same
- 4) 2 times

Chosen Option: 1

Q.87

What type of stress is induced in a body when it is subjected to transverse vibration?

- 1) Compressive stress
- 2) Shear stress
- 3) Both shear and tensile stress
- 4) Tensile stress

Chosen Option: 3

Q.88

Consider the following given situation:

A water container is kept on a weighing balance and water from a tap is falling vertically into the container with a volume flow rate of " Q "; the velocity of the water when it hits the water surface is " U ". What would be the force registered by the weighing balance at a particular instant of time when the total mass of the container and water is " m ".

(where: ρ is the density of water)

- 1) $mg + \rho QU$
- 2) $mg + 2\rho QU$
- 3) $\rho QU^2/2$

4) $mg + \frac{PQU^2}{2}$

Chosen Option: 1

Q.89

What would be the value of Young's modulus (Modulus of rigidity), for Poisson's ratio to be 0.4?

- 1) 1/12
- 2) 14/5
- 3) 11/5
- 4) 5/12

Chosen Option: 2

Q.90

How many electrons are there in valence shell of all semiconductor elements?

- 1) 2
- 2) 8
- 3) 0
- 4) 4

Chosen Option: 4

Q.91

What is the product of polymerization of phenol and formaldehyde?

- 1) Teflon
- 2) Bakelite
- 3) PVC
- 4) Polyester

Chosen Option: 2

Q.92

_____ is the dimensional and positional relationship between the work-piece and the cutting tool.

- 1) Jigs
- 2) Locating
- 3) Clamping
- 4) Fixing

Chosen Option: 1

Q.93

Match the different non-traditional machining processes given in **Group-A** with their respective basic mechanism of metal removal given in **Group-B** and select the correct answer from the options given below the lists:

Group-A	Group-B
A. USM	(i) Vaporization by thermo -electric method
B. ECM	(ii) Ion-displacement by electrochemical method
C. EDM	(iii) Erosion by mechanical abrasion
D. LBM	(iv) When heated, melts and vaporizes instantly by thermoelectric method

- 1) A-iii, B-ii, C-i, D-iv
- 2) A-ii, B-iii, C-i, D-iv
- 3) A-iv, B-iii, C-ii, D-i
- 4) A-i, B-iii, C-ii, D-iv

Chosen Option: 1

Q.94

Throttling is a _____ enthalpy process.

- 1) constant
- 2) random
- 3) decreasing
- 4) increasing

Chosen Option: 4

Q.95

The process is deemed to be out of control, when _____ causes are present.

- 1) common
- 2) special
- 3) root
- 4) random

Chosen Option: 2

Q.96

Automated Manufacturing device is a component of :

- 1) ASRS
- 2) CAPP
- 3) FMS
- 4) CAD/CAM

Chosen Option: 4

Q.97

A small sphere of outer area 0.36 m^2 is totally enclosed by a large cubical hail. Shape factor of hail with respect to sphere is 0.008. The measure of internal side of cubical hail is:

- 1) 5.2 m

- 2) 10 m
- 3) 2.74 m
- 4) 4 m

Chosen Option: --

Q.98

Which of the following gives the value of face angle of a bevel gear?

- 1) pitch angle + addendum angle
- 2) pitch angle - addendum angle
- 3) diametral pitch
- 4) axial pitch

Chosen Option: 4

Q.99

The element which has ferrite stabilizing effect is:

- 1) Chromium
- 2) Manganese
- 3) Nickel
- 4) Copper

Chosen Option: 2

Q.100

A copper wire of radius 0.65 mm is insulated with a sheathing of thickness 1.25 mm having a thermal conductivity of 0.7 W/mK. The outside surface convective heat transfer coefficient is 10 W/m²K. If the thickness of insulation sheathing is raised by 15 mm, then what will be the result on electrical current-carrying capacity of the wire?

- 1) It will increase
- 2) It will remain same
- 3) It will vary depending upon the electrical conductivity of the wire
- 4) It will decrease

Chosen Option: 1

Q.101

Consider the following statements regarding Jigs and Fixtures and identify the one which is not true.

- 1) Fixtures are usually massive and heavier in construction and bolted rigidly on machine table.
- 2) Elements of jigs are body, clamping and locating devices and also tool guide.
- 3) Elements of fixture are body, clamping and locating devices.
- 4) Jig is a device which can hold and locate the medium and heavier sized work pieces.

Chosen Option: 4

Q.102

Which of the following is performed with a cutting tool moving at a cutting speed "V" in the direction of primary motion?

- 1) Cutting
- 2) Casting
- 3) Non-traditional machining process , utilizing electrical , chemical and optimal sources of energy
- 4) Grinding

Chosen Option: 3

Q.103

The full form of ERP is:

- 1) Enterprise Resource Planning
- 2) Enterprise Revenue Planning
- 3) Enterprise Report Planning
- 4) Enterprise Recovery Planning

Chosen Option: 1

Q.104

When we view processes as interconnected components of a system, we tend to avoid:

- 1) sub optimization
- 2) capacity utilization
- 3) root causes
- 4) process variance

Chosen Option: 1

Q.105

A uniform rod of cross sectional area 2 mm^2 is heated from 0°C to 40°C . What would be the value of energy stored per unit volume if Young's modulus is 10^{11} N/m^2 and linear expansion coefficient is 12×10^{-6} per $^\circ\text{C}$?

- 1) 10250 J/m^3
- 2) 11520 J/m^3
- 3) 12500 J/m^3
- 4) 55120 J/m^3

Chosen Option: --

Q.106

A centrifugal pump has the following specifications

Speed - 1000 rpm

Flow - 1200 cubic meters/second

Head - 20 m

Power - 5 H.P.

If speed is increased to 1500 rpm, new flow will be

- 1) 1800 Cubic meter/second
- 2) 4500 Cubic meter/second
- 3) 1200 Cubic meter/second
- 4) 2700 Cubic meter/second

Chosen Option: 1

Q.107

A quantity of $90 \text{ m}^3/\text{sec}$ of water is smoothly flowing in a rectangular 16 m broad channel. If the depth of flow is 2 m and a jump is established, then what would be the depth downstream of the jump?

- 1) 3.89 m
- 2) 3.50 m
- 3) 3.59 m
- 4) 3.98 m

Chosen Option: --

Q.108

Hooke's law holds good up to:

- 1) Limit of proportionality
- 2) Plastic limit
- 3) Yield point
- 4) Breaking point

Chosen Option: 2

Q.109

What is the name given to a system using an automated work cell controlled by electronic signals from a common centralized computer facility?

- 1) Automatic guided vehicle (AGV) system
- 2) Robotics
- 3) Flexible manufacturing system (FMS)
- 4) Adaptive control system

Chosen Option: 4

Q.110

Bulk modulus "K" is:

- 1) Ratio of change in volume to normal stress
- 2) Ratio of shear to stress
- 3) Ratio of stress to shear
- 4) Ratio of normal stress to Volumetric strain

Chosen Option: 4

Q.111

Force acting on a rope in a tug of war, is an example of:

- 1) Coplanar concurrent force
- 2) coplanar force
- 3) Collinear force
- 4) Coplanar non-concurrent force

Chosen Option: 3

Q.112

Which of the following statements are correct?

- I. Practically all common refrigerants have approximately the same COP and power requirement.
- II. Ammonia mixes freely with lubricating oil and this helps lubrication of compressors.
- III. Dielectric strength of refrigerants is an important property in hermetically sealed compressor units.
- IV. Leakage of ammonia can be detected by halide torch method.

Choose the correct answer from the options given below.

- 1) III and IV
- 2) I and III
- 3) I, II, III and IV
- 4) I and II

Chosen Option: 1

Q.113

A centrifugal hydraulic pump is used to force water to an open tank through a pipe having a diameter of 2 decimeters. Given that the pump is 4 km away from the tank, the average speed of the water in the pipe is 2 m/s. After neglecting the other minor losses, evaluate the absolute discharge pressure at the pump exit if it is to maintain a constant head of 5 m in the tank.

(Assume Darcy's friction factor of 0.01 for the pump).

- 1) 0.449 bar
- 2) 5.503 bar
- 3) 55.203 bar
- 4) 44.911 bar

Chosen Option: --

Q.114

Which of the following statements are correct?

1. As per Indian Boiler Regulations the thickness of the boiler shell should not be more than 7 mm.
2. Minimum distance between the rows of the rivets in chain riveting joints should be equal to the diameter of rivet hole.
3. For longitudinal joint in boilers a butt joint with two cover plates should be used.
4. A butt joint with double strap is in double shear.

Choose the correct answer from the options given below.

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

Chosen Option: 2

Q.115

For an opaque plane surface the radiosity, irradiation and emissive power are respectively 16, 24 and 12 W/m^2 . Determine the emissivity of surface.

- 1) 0.2
- 2) 0.67
- 3) 0.45
- 4) 0.87

Chosen Option: 3

- Q.116** Consider the following statements regarding cutting tools and identify the one which is not true.
- 1) Shank is that portion of the tool which does not ground to form cutting edges.
 - 2) Nose radius in cutting tool reduces tool life and surface finish.
 - 3) Higher depth of cut increases rate of metal removal.
 - 4) Positive back rake angle of a single point tool is the slope downward towards the shank.

Chosen Option: 3

- Q.117** A thermodynamic system refers to:
- 1) Any defined region in space
 - 2) A specified mass in fluid flow
 - 3) A prescribed and identifiable quantity of matter
 - 4) A specified region of constant volume

Chosen Option: 3

- Q.118** During the adiabatic cooling of moist air which of the following remains constant?
- 1) WBT
 - 2) DBT
 - 3) Specific humidity
 - 4) Relative humidity

Chosen Option: 3

- Q.119** If the Number of components in a system are known to be 3, then according to Gibb's phase rule, the number of phases will be:
- 1) ≤ 4
 - 2) ≤ 2
 - 3) ≤ 5
 - 4) ≤ 3

Chosen Option: 1

- Q.120** When the discharge pressure is too high in refrigeration system, why is high pressure control installed?
- 1) To stop the compressor
 - 2) To stop the water circulating pump
 - 3) To stop the cooling fan

4) To regulate the flow of cooling water

Chosen Option: 2

Q.121

If $\sqrt{(hA/kP)}$ is _____, then addition of fin to the surface increases the heat transfer. (Where: h: Convective heat transfer co-efficient, A: Area, P: Perimeter and k: Thermal conductivity of material)

- 1) greater than one but less than two
- 2) equal to one
- 3) less than one
- 4) greater than one

Chosen Option: 4

Q.122

Determine the shape factor of a hemispherical body placed on a flat surface with respect to itself.

- 1) 1
- 2) 0.25
- 3) 0.5
- 4) 0

Chosen Option: 2

Q.123

A cylinder of mass "M" and radius "R" rolls down an inclined plane of inclination " θ ". What is the linear acceleration of axis of cylinder? (where: g acceleration due to gravity)

- 1) $\frac{2}{3} g \sin \theta$
- 2) $3 g \sin \theta$
- 3) $\frac{1}{3} g \sin \theta$
- 4) $g \sin \theta$

Chosen Option: 4

Q.124

_____ is the property of a measuring instrument, whereby its metrological properties remain constant over time.

- 1) Precision
- 2) Stability
- 3) Resolution
- 4) Discrimination

Chosen Option: 2

Q.125

A particle is moving under the influence of a force $F(x) = -k/(2x^2)$ along the positive x-axis. At time $t = 0$, it is at $x = 1$ m and its velocity is $v = 0$. What would be its velocity, when it reaches $x = 0.5$ m? (Where $k = 10^{-2}$ N-m² and mass of particle is 10^{-2} kg)

- 1) 0
- 2) 2 m/s
- 3) 0.5 m/s
- 4) 1 m/s

Chosen Option: 2

Q.126

Stress concentration factor for a machine component is dependent

- 1) On factors other than geometry and material of the component
- 2) Only on the geometry of the component
- 3) Only on the material of the component
- 4) On geometry as well as material of the component

Chosen Option: 4

Q.127

Normal stresses of equal magnitude " p ", but of opposite signs, act at a point of strained material in perpendicular direction. What is the magnitude of the resultant normal stress on plane inclined at 45° to the applied stresses?

- 1) 0
- 2) $p/2$
- 3) $p/4$
- 4) $2p$

Chosen Option: 4

Q.128

A shaft is observed with maximum bending stress is of 80 N/mm² and maximum shearing stress is of 30 N/mm². The yield point under tension is 280 N/mm². What will be the Factor of Safety (F.O.S) based on maximum shear stress theory of failure?

- 1) 2.5
- 2) 3
- 3) 3.5
- 4) 2.8

Chosen Option: 3

Q.129

Waste heat can be effectively used in _____ refrigeration system.

- 1) vapour compression cycle
- 2) vortex refrigeration system
- 3) vapour absorption cycle

4) air refrigeration cycle

Chosen Option: 2

Q.130

If the principal stresses in a plane stress problem are $\sigma_1 = 100$ MPa, $\sigma_2 = 40$ MPa, the magnitude of the maximum shear stress (in MPa) will be:

- 1) 30
- 2) 10
- 3) 40
- 4) 20

Chosen Option: 1

Q.131

A 100 W electric bulb was switched in a 2.5 m x 3 m x 3 m size thermally insulated room having a temperature of 20°C. The room temperature at the end of 24 hours will be:

- 1) 321°C
- 2) 470°C
- 3) 450°C
- 4) 341°C

Chosen Option: 3

Q.132

Which of the following stresses acts on the spokes of the flywheel?

- 1) Tensile stress
- 2) Direct shear stress
- 3) Torsional shear stress
- 4) Compressive stress

Chosen Option: 3

Q.133

Thermocouples are used for measuring which of the following parameter?

- 1) Pressure
- 2) Humidity
- 3) Density
- 4) Temperature

Chosen Option: 4

Q.134

Mean square molecular speed is:

- 1) directly proportional to the square root of density
- 2) directly proportional to density
- 3) inversely proportional to density

4) inversely proportional to the square root of density

Chosen Option: 4

Q.135

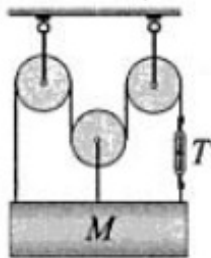
Which of the following causes the variation in chain speed?

- 1) Slip
- 2) Backlash
- 3) Chordal action
- 4) Creep

Chosen Option: 1

Q.136

Consider the given figure depicting a spring scale that indicates a tension "T" in the right hand cable of a pulley system. Calculate the mass "M" :
(Neglect mass of pulley and ignore friction between cable and pulley however g depicts gravitational acceleration)



- 1) $T(1+e^{4\pi})g$
- 2) $4T/g$
- 3) $2T/g$
- 4) T/g

Chosen Option: 2

Q.137

A flat road has a curve segment with a radius of 105 m. While negotiating this curve, a vehicle slipped on its tyres as well as tried to roll over at a particular speed. This speed, assuming a friction coefficient of 0.4, is:

- 1) 32 m/s
- 2) 25 m/s
- 3) 18 m/s
- 4) 20 m/s

Chosen Option: --

Q.138

A reciprocating engine running at 90 rad/s, is supported on springs and static deflection of spring is 4 mm. When engine runs, the frequency of vibration of system will be:
(Take $g = 10 \text{ m/s}^2$)

- 1) 160 rad/s
- 2) 100 rad/s

- 3) 75 rad/s
- 4) 50 rad/s

Chosen Option: --

Q.139

If material expands freely due to heating, the type of stress developed will be:

- 1) Thermal Stress
- 2) Compressive Stress
- 3) Tensile Stress
- 4) No stress will be developed

Chosen Option: 3

Q.140

Which of the following is true regarding a Newtonian fluid?

- 1) Rate of shear stress is proportional to shear strain
- 2) Shear stress is proportional to rate of shear strain
- 3) Shear stress is proportional to shear strain
- 4) Rate of shear stress is proportional to rate of shear strain

Chosen Option: 4

Q.141

Generally, the three components of control systems are checked to determine the responsibility for control. If any of these criteria is not met, then the process is the responsibility of:

- 1) Management
- 2) The supervisor
- 3) The process owner
- 4) Quality control team

Chosen Option: 2

Q.142

For what type of strength are transverse fillet welded joints designed?

- 1) Bending strength
- 2) Tensile strength
- 3) Compressive strength
- 4) Shear strength

Chosen Option: 4

Q.143

Any network must have flow between Source and Sink equal to capacity of:

- 1) Cut
- 2) Either cut or minimal cut

- 3) Minimal cut
- 4) Both cut and minimal cut

Chosen Option: 2

Q.144

_____ of an instrument is the ability of an instrument to respond to small changes of the stimulus.

- 1) Resolution
- 2) Precision
- 3) Discrimination
- 4) Sensitivity

Chosen Option: 4

Q.145

The coefficient of rolling resistance, for a steel wheel of 200 mm diameter which rolls on a horizontal steel rail, is 0.3 mm. The steel wheel carries a load of 600 N. The force necessary to roll the wheel along the rail is:

- 1) 90 kN
- 2) 180 N
- 3) 90 N
- 4) 270 N

Chosen Option: --

Q.146

Which of the following gives the value of root angle of a bevel gear?

- 1) pitch angle - addendum angle
- 2) pitch angle + addendum angle
- 3) pitch angle - dedendum angle
- 4) pitch angle + dedendum angle

Chosen Option: 2

Q.147

Which of the following strength forms the basis in the designing of a push rod?

- 1) Buckling strength
- 2) Bending strength
- 3) Tensile strength
- 4) Compression strength

Chosen Option: 1

Q.148

Two equal forces are acting at a point with an angle of 60° between them. The magnitude of each force, if the resultant force is 36 N, is:

- 1) 17.89 N
- 2) 20.78 N
- 3) 15.63 N
- 4) 25.12 N

Chosen Option: 2

Q.149

For a material Young's Modulus is 100 GN/m^2 and Shear Modulus is 42 GN/m^2 when it endures a strain of 0.01. A round bar of 37.5 mm diameter and 2.4 m long of same material was stretched to 2.5 mm. What will be the Bulk Modulus when the Shear Modulus remains unchanged?

- 1) 3.00 GN/m^2
- 2) 3.46 GN/m^2
- 3) 2.83 GN/m^2
- 4) 4.67 GN/m^2

Chosen Option: --

Q.150

For a specific cutting energy, if "F" is power required for cutting, "Z" is the metal removal rate, then which of the following expressions can be used to calculate the energy per unit volume "U"?

- 1) $U=FZ$
- 2) Cannot be determined, more data required
- 3) $U=F/Z$
- 4) $U=Z/F$

Chosen Option: 3

Q.1

हाल ही में, ब्रिटिश वैज्ञानिकों ने निम्नलिखित महासागरों के नीचे भव्य घाटी (ग्रैंड कैन्याँन) से अधिक गहरी घाटी की खोज की है?

- 1) अटलांटिक महासागर
- 2) अंटार्कटिक महासागर
- 3) प्रशांत महासागर
- 4) हिंद महासागर

Chosen Option: 3

Q.2

Recently, which telecom company became the first in the country to cross 200 million subscribers?

- 1) Airtel
- 2) TATA
- 3) Vodafone
- 4) Idea

Chosen Option: 1

Q.3

हाल ही में खोला गया ताइशान अंटार्कटिक अनुसंधान केन्द्र निम्नलिखित में से किस देश से संबंधित है?

- 1) चीन
- 2) दक्षिण कोरिया
- 3) जापान
- 4) सिंगापुर

Chosen Option: 2

Q.4 How many communities have been granted the status of 'Minority' by the Government of India under National Commission of Minorities Act 1992?

- 1) Eight
- 2) Five
- 3) Six
- 4) Ten

Chosen Option: 1

Q.5 Who among the following has been elected as president of Indian Olympic Association (IOA)?

- 1) Anil Khanna
- 2) N Srinivasan
- 3) Rajeev Mehta
- 4) N. Ramachandran

Chosen Option: 4

Q.6 According to the latest report on digital governance, India was ranked 8th in the list of ten countries. The country which topped the list is

- 1) UAE
- 2) Singapore
- 3) Australia
- 4) Brazil

Chosen Option: 2

Q.7 भारत के राष्ट्रपति ने हाल ही में 1 जनवरी, 2014 को लोकपाल अधिनियम पर हस्ताक्षर किया है। लोकपाल अधिनियम का अधिकारिक नाम है _____ }

- 1) भ्रष्टाचार निरोधक अधिनियम
- 2) कदाचार निवारण अधिनियम, 2013
- 3) भ्रष्ट अधिकारियों की सज़ा अधिनियम
- 4) लोकपाल और लोकायुक्त अधिनियम, 2013

Chosen Option: 1

Q.8 The Lokpal Act provides for investigation of corruption charges against Public functionaries. However it cannot investigate or initiate proceedings against _____.

- 1) Prime Minister of India
- 2) Members of Parliament
- 3) Ministers

4) President of India

Chosen Option: 1

Q.9

The Kuril Islands dispute or Northern Territories dispute, is a dispute between Japan and ____.

- 1) Philippines
- 2) South Korea
- 3) China
- 4) Russia

Chosen Option: 2

Q.10

"Watson" is an artificially intelligent computer system capable of answering questions posed in natural language, developed by

- 1) Microsoft
- 2) IBM
- 3) Google
- 4) Dell

Chosen Option: 2

Q.11

Which of the following countries will host 2018 Winter Olympics?

- 1) Singapore
- 2) Netherlands
- 3) Japan
- 4) South Korea

Chosen Option: 3

Q.12

The 'Last Supper', a famous renaissance painting was a master piece of

- 1) Raphael
- 2) Leonardo da Vinci
- 3) Titian
- 4) Michael Angelo

Chosen Option: 3

Q.13

What is the full form of IGNOU?

- 1) Indian Governmental National Overseas University
- 2) Indira Gandhi National Overseas University
- 3) Indian Government's National Open University
- 4) Indira Gandhi National Open University

Chosen Option: 4

Q.14

Which is the largest Gulf in the World?

- 1) The Persian Gulf
- 2) The Strait of Hormuz
- 3) The Gulf of Mexico
- 4) The Gulf of Cambay

Chosen Option: 1

Q.15 Who has been elected as the New President of Maldives?

- 1) Asaf Ali Zardari
- 2) Abdulla Yameen Abdul Gayoom
- 3) Abu Nasheed
- 4) Abdul Razak

Chosen Option: 3

Q.16 निम्नलिखित में से किस समुदाय को हाल ही में केंद्र सरकार द्वारा अल्पसंख्यक का दर्जा प्रदान किया गया है?

- 1) जैन
- 2) ईसाई
- 3) पारसी
- 4) सिख

Chosen Option: 3

Q.17 Niagara Falls is located between which of the following pairs of lakes?

- 1) Lake Superior and Lake Huron
- 2) Lake Ontario and Lake Huron
- 3) Lake Huron and lake Erie
- 4) Lake Erie and lake Ontario

Chosen Option: 4

Q.18 Renaissance started first in

- 1) France
- 2) England
- 3) Russia
- 4) Italy

Chosen Option: 1

Q.19 President Pranab Mukherjee has recently approved the creation of the State of Telangana, which will be India's

- 1) 29th state
- 2) 28th state
- 3) 30th state
- 4) 27th state

Chosen Option: 1

Q.20 What is the full form of AICTE?

- 1) All India Council for Temporary Employment
- 2) All India Centre for Temporary Employment
- 3) All India Council for Technical Education
- 4) All India Committee for Telecommunications Exercise

Chosen Option: 3

Q.1 Find the next term in the series:
ADVENTURE, DVENTURE, DVENTUR, ?, VENTU

- 1) VENTURE
- 2) DVENT
- 3) DVENTU
- 4) VENTUR

Chosen Option: 4

Comprehension:

Passage: you are given a set of two related words, followed by a third word and four answer choices. Of the four choices, you must identify the one that would best complete the second set so that it expresses the same relationship as the first set.

Q.2 SubQuestion No. :1

Judge : Bench :: King : ?

- 1) Bench
- 2) Court
- 3) Throne
- 4) Trial

Chosen Option: 3

Q.3 SubQuestion No. :2

Circle : Sphere :: Square : ?

- 1) Floor
- 2) Cuboid
- 3) Cube
- 4) Rectangle

Chosen Option: 3

Q.4 Pointing a woman, Mahendra says, "The only son of her mother is my father". How is Mahendra related to the woman?

- 1) Brother
- 2) Grandson
- 3) Son
- 4) Nephew

Chosen Option: 4

Q.5 Below is given a question followed by two statements numbered I and II. The question may or may not be answered with the help of these statements. You have to decide if these statements are sufficient to answer the question.

If * is one of the operations: addition or multiplication, which is it?

Statements:

I. $0 * 0 = 0$

II. $0 * 1 = 1$

- 1) Only one of the statements, alone, is sufficient to answer the question but other statement is not.

2) Each statement alone is sufficient to answer the question

3) Both statements I and II together are sufficient to answer the question asked but neither statement alone is sufficient.

4) Statements I and II together are not sufficient to answer the question asked and additional data to the problem are needed.

Chosen Option: 1

Q.6

If in a certain code language BASKET is written as 5%3#42 and ARM is written as %@9, TERM then in that code language is written as:

1) 24@9

2) 42@9

3) 249@

4) 23@9

Chosen Option: 1

Q.7

If in a certain code language MERCURY is written as FGIECAB, CURE then in that code language is written as:

1) EAGC

2) ECAB

3) ECAG

4) GCFI

Chosen Option: 3

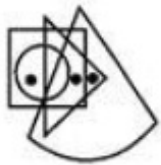
Comprehension:

अनुच्छेद: निम्नलिखित प्रश्न में, समस्या वाले चित्र में बिन्दु अंकित किया गया है। उत्तर वाले चार चित्रों (1), (2), (3), (4), में से केवल एक का चुनाव करना है जिससे कि बिन्दु का निर्धारण वही शर्त पूरी करे जो कि समस्या वाले चित्र में है। उत्तर को तदनुसार अंकित करें।

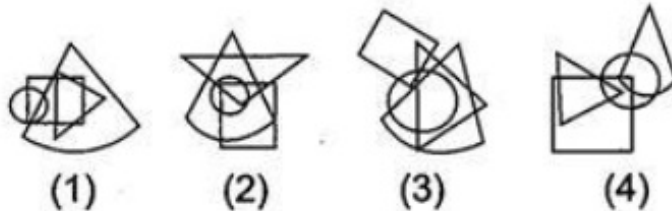
Q.8

SubQuestion No. :1

समस्या वाले चित्र:



उत्तर वाले चित्र:



समस्या वाले चित्र:

1) 2

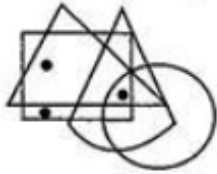
2) 4

3) 3

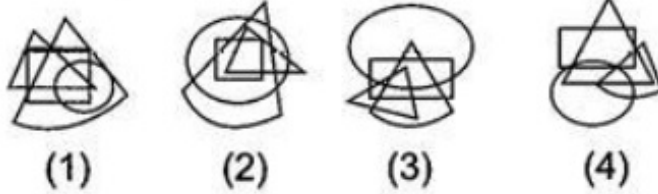
4) 1

Chosen Option: 4

Problem Figures: _



Answer Figures:



Problem Figures:

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

Chosen Option: --

Comprehension:

Passage: Symbols @, \$, #, * and % are used with different meanings as follows:

'A @ B' means 'A is smaller than B'.

'A \$ B' means 'A is greater than B'.

'A # B' means 'A is either smaller than or equal to B'.

'A * B' means 'A is either greater than or equal to B'.

'A % B' means 'A is neither smaller than nor greater than B'.

Now assuming in each of the following questions the given statements to be true, find which of the given conclusions given below them is/are definitely true and give your answer accordingly.

Q.10 SubQuestion No. :1

Statements:

- I. T # J
- II. J * Y
- III. Y @ W

Conclusions:

- I. J @ W
- II. T % Y

- 1) Only conclusion I follows.
- 2) Either conclusion I or conclusion II follow.
- 3) Neither conclusion I nor conclusion II follows.
- 4) Only conclusion II follows.

Chosen Option: 3

Q.11 SubQuestion No. :2

Statements:

- I. K * D
- II. D \$ L
- III. L @ J

Conclusions:

- I. K \$ L
- II. K # J

- 1) Only conclusion I follows.
- 2) Only conclusion II follows.
- 3) Neither conclusion I nor conclusion II follows.
- 4) Either conclusion I or conclusion II follow.

Chosen Option: 1

Q.12 If in a certain code language A is written as 26 and SUN is written as 27, CAT then in that code language is written as:

- 1) 57
- 2) 24
- 3) 58
- 4) 27

Chosen Option: 1

Q.13 Pointing to Kalpna, Arjun says, "She is the only daughter of my father-in-law". How is Kalpna related to Arjun?

- 1) Niece
- 2) Daughter
- 3) Wife
- 4) Daughter-in-law

Chosen Option: 3

Comprehension:

Passage: Read the following information carefully and answer the questions that are given below it:

Five boys Asif, Dinesh, Ekaansh, Chander and Bhavesh and five girls Parul, Kajal, Rashmi, Sanjana and Vinny are sitting in two rows facing each other. All the boys are in one row and all the girls in the other.

Ekaansh who is to the immediate right of Bhavesh and opposite to Parul is not at any end. Rashmi, who is immediate right of Kajal and opposite to Chander, is at one of the ends.

Asif is opposite to Kajal who is to the third to the right of Sanjana. Dinesh and Vinny are not opposite to each other.

Q.14 SubQuestion No. :1

In the boys' row who is in the middle?

- 1) Bhavesh
- 2) Cannot be determined
- 3) Asif
- 4) Dinesh

Chosen Option: 1

Q.15 SubQuestion No. :2

Who is to immediate right of Parul?

- 1) Sanjana
- 2) Cannot be determined
- 3) Vinny
- 4) Kajal

Chosen Option: 3

Q.16 Find the next term in the series:

49, 1625, 3649, 6481, ?

- 1) 100144
- 2) 121169
- 3) 100121
- 4) 81100

Chosen Option: 3

Q.17 If in a certain code language DEAN is written as NDAE and ROAD is written as DRAO, SOME then in that code language is written as:

- 1) EMOS
- 2) MSEO
- 3) ESMO
- 4) EOMS

Chosen Option: 3

Q.18 Introducing a man, a woman says, "He is the only son of my mother's mother". How is the man related to the woman?

- 1) Maternal Uncle
- 2) Father
- 3) Aunt
- 4) Uncle

Chosen Option: 1

Comprehension:

Paassage: Given question is followed by two statements numbered I and II. The question may or may not be answered with the help of these statements. You have to decide if these statements are sufficient to answer the question.

Q.19 SubQuestion No. :1

How far is Patna from Shimla?

Statements:

I. Patna is 200 km from Delhi.

II. Delhi is 500 km from Shimla.

- 1) Only one of the statements, alone, is sufficient to answer the question but other statement is not.
- 2) Statements I and II together are not sufficient to answer the question asked and additional data to the problem are needed.
- 3) Each statement alone is sufficient to answer the question.
- 4) Both statements I and II together are sufficient to answer the question asked but neither statement alone is sufficient.

Chosen Option: 4

Q.20 SubQuestion No. :2

Is Minu the mother of Shanu?

Statements:

I. Shanu is the mother of Sonu.

II. Sonu is the grandson of Minu.

- 1) Only one of the statements, alone, is sufficient to answer the question but other statement is not
- 2) Statements I and II together are not sufficient to answer the question asked and additional data to the problem are needed.
- 3) Each statement alone is sufficient to answer the question.
- 4) Both statements I and II together are sufficient to answer the question asked but neither statement alone is sufficient.

Chosen Option: 2

Comprehension:

आगे आने वाले प्रश्नों का उत्तर देने के लिए नीचे दिए गए अनुच्छेद को ध्यानपूर्वक पढ़ें।

हमारा देश विभिन्न संस्कृतियों का देश है जो समूचे विश्व में अपनी एक अलग पहचान रखता है। अलग-अलग संस्कृति और भाषाएं होते हुए भी हम सभी एक सूत्र में बंधे हुए हैं तथा राष्ट्र की एकता व अखंडता को अक्षुण्ण रखने के लिए सदैव तत्पर रहते हैं।

संगठन ही सभी शक्तियों की जड़ है, एकता के बल पर ही अनेक राष्ट्रों का निर्माण हुआ है, प्रत्येक वर्ग में एकता के बिना देश कदापि उन्नति नहीं कर सकता। एकता में महान शक्ति है। एकता के बल पर बलवान शत्रु को भी पराजित किया जा सकता है।

राष्ट्रीय एकता का मतलब ही होता है, राष्ट्र के सब घटकों में भिन्न-भिन्न विचारों और विभिन्न आस्थाओं के होते हुए भी आपसी प्रेम, एकता और भाईचारे का बना रहना। राष्ट्रीय एकता में केवल शारीरिक समीपता ही महत्वपूर्ण नहीं होती बल्कि उसमें मानसिक, बौद्धिक, वैचारिक और भावात्मक निकटता की समानता आवश्यक है।

Q.1 SubQuestion No. :1

अक्षुण्ण का विलोम क्या होगा?

- 1) शक्तिहीन
- 2) नष्ट
- 3) भयहीन
- 4) लघु

Chosen Option: 2

Q.2 SubQuestion No. :2

तत्पर शब्द से क्या आशय है?

- 1) एकजुट

- 2) शक्ति
- 3) तैयार
- 4) भयहीन

Chosen Option: 3

Q.3 SubQuestion No. :3

. निम्न में से कौन सा वाक्यांश "समूचे विश्व में अपनी एक अलग पहचान रखता है"
को सही तरीके से प्रस्तुत करता है?

- 1) अजर
- 2) अक्षम्य
- 3) अकथनीय
- 4) अद्वितीय

Chosen Option: 4

Q.4 SubQuestion No. :4

उपरोक्त अवतरण में किस पर सबसे ज्यादा जोर दिया गया है?

- 1) संस्कृति
- 2) भावात्मक निकटता
- 3) राष्ट्रीय शक्ति
- 4) राष्ट्रीय एकता

Chosen Option: 4

Q.5

निम्नलिखित में से शब्द का शुद्ध रूप कौन सा है?

- 1) पराकर्म
- 2) पराक्रम
- 3) प्राकर्म
- 4) पारकर्म

Chosen Option: 2

Q.6

"आदेश जो निश्चित अवधि तक लागू हो"- वाक्यांश का उपयुक्त शब्द कौन सा है?

- 1) अष्टाध्यायी
- 2) अधिसूचना
- 3) अधिनियम
- 4) अध्यादेश

Chosen Option: 4

Q.7

नीचे लिखे वाक्यों में से सबसे शुद्ध वाक्य कौन सा है?

- 1) वह ने वह को देखा
- 2) वह ने उसे देखा
- 3) मैंने उसे देखा
- 4) मैंने वह को देखा

Chosen Option: 4

Q.8

निम्नलिखित में से शब्द का शुद्ध रूप कौन सा है?

- 1) विनासकारी
- 2) विनस्कारी
- 3) विनष्कारी
- 4) विनाशकारी

Chosen Option: 4

Q.9

अभ्यागत का पर्यायवाची शब्द क्या होगा?

- 1) अतिथि
- 2) अनुपम
- 3) अंहकार
- 4) अंधकार

Chosen Option: 1

Q.10

शब्द 'अवनी' का विलोम क्या होगा?

- 1) अनर्थ
- 2) अग्रज
- 3) शान्त
- 4) अम्बर

Chosen Option: 2

