Questions	Choices
1. Hammer blow	**1.is the maximum vertical unbalanced force caused by the mass added to balance the reciprocating masses** 2.varies inversely with the square of the speed 3.is the maximum horizontal unbalanced force caused by the mass provided to balance the reciprocating masses. 4.varies as the square root of the speed
2. In under damped vibrating system, the amplitude of vibration	1. increases exponentially with time **2. decreases exponentially with time** 3. increases linearly with time 4. decreases linearly with time
3. Mobility of a statically indeterminate structure is	**1. Less than equal to -1** 2. 0 3. 1 4. Greater than or equal to 2
4. Two non-collinear parallel equal forces acting in opposite direction	1.balance each other **2.constitute a couple** 3.constitute a moment 4.constitute a moment of couple
5. This is the term for the range of tightness or looseness resulting from the allowances and tolerances in mating parts	1.Limits **2.Fits** 3.Specifications 4.Allowances
The single most valuable, flexible, and versatile geometric control is	1. concentricity 2. position 3. perpendicularity 4. Straightness

Questions	Choices
What is the name of a system which brings together several technologies into a coherent system?	1. Focused integration systems 2. Portable manufacturing systems 3. Flexible manufacturing systems 4. Automated integration systems
What do Flexible Manufacturing systems (FMS) do?	1. Moves and manipulates products, parts or tolls 2. Co-ordinates the whole process of manufacturing and manufactures a part, component or product 3. Moves materials between operations 4. Completely manufactures a range of components without significant human intervention during the processing
The cone clutches have become obsolete because of	1. small cone angles 2. exposure to dirt and dust 3. difficulty in disengaging 4. all of these

Questions	Choices
In a gib and cotter joint, the gib and cotter are subjected to	1. Single s hear only 2. an axial tensile as well as compressive load 3. The bending moment only 4. only compressive axial load Double shear and crushing
	1. 0.048 mm • • • • 2. 0.015 mm 3.0.005 mm 4.0.008 mm

Questions	Choices
	1. 2. 3. 4.
In sand molding, a slick refers to	1. a round sieve 2. a long, flat metal plate fitted with an offset handle 3. used to make or repair corners in the mould 4. used to scoop sand deep in the mould
Metals are good conductors of heat because	1. Their atoms collide frequently 2. They have high density 3. They contain free electrons 4. Their atoms are relatively far apart
The value of Prandtle number for air is approximately	1. 0.287 2. 0.7 3. 1.0 4. 4.2

Questions	Choices
The main aim of compounding of steam turbine is to	1. avoid steam condensation 2. reduce rotor speed 3. improve efficiency 4. reduce steam consumption
Productivity can be rational defined by	1. Outputs/Inputs 2. Input + Output)/ Output 3. Output/(Input + Output) 4. Inputs/Outputs
In metrology, calibration is performed to _____	1. manufacture the equipment's 2. measure the repeatability of the instrument 3. measure the surface roughness 4. to fix the errors
The principle of transmissibility of forces states that, when a force acts upon a body, its effect is	1. same at every point on its line of action 2. different at different points on its line of action 3. minimum, if it acts at the centre of gravity of the body 4. maximum, if it acts at the centre of gravity of the body
The angular velocity (in rad / s) of a body rotating at N revolutions per minute is	1. 2πN/60 2. 2πN/180 3. πN/60 4. πN/180
A body of weight W is required to move up on rough inclined plane whose angle of inclination with the horizontal is a. The effort applied parallel to the plane is given by(where μ = tanf = Coefficient of friction between the plane and the body.)	1.P = W tana 2.P = W (cosa + μsina) 3.P = W tan(a + f) 4.P = W (sina + μcosa)

Questions	Choices
The point, through which the whole weight of the body acts, irrespective of its position, is known as	1. moment of inertia 2. centre of percussion 3. centre of gravity 4. centre of mass
The angle of inclination of the plane at which the body begins to move down the plane, is called	1. angle of friction 2. none of these 3. angle of repose 4. angle of projection
Secondary forces in reciprocating mass on engine frame are	1.of same frequency as of primary forces 2.four times the frequency as of primary forces 3.twice the frequency as of primary forces 4.none of the options
Varingon's theorem of moments states that if a number of coplaner forces acting on a particle, then	1.their lines of action are at equal distances 2.the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point. 3.their algebraic sum is zero 4.the algebraic sum of their moments about any point in their plane is zero
Onejoule is equal to	1.1 N-m 2.100 N-m 3.0.1 N-m 4.10 N-m
According to lami's theorem	1.the three forces must be in equilibrium 2.the three forces must be equal 3.the three forces must be at 120° to each other 4.if the three forces acting at a point are in equilibrium, then each force is proportional to the sine of the angle between the other two
The coefficient of restitution for inelastic bodies is	1.one 2.zero 3.more than one 4.between zero and one

Questions	Choices
A lead ball with a certain velocity is made to strike a wall, it falls down, but rubber ball of same mass and with same velocity strikes the same wall, it rebounds. Select the correct reason from the following:	1.both the balls undergo an equal change in momentum 2.the change in momentum suffered by rubber ball is less than the lead ball 3.the change in momentum suffered by rubber ball is more than the lead ball 4.none of the options
Which formula is used to calculate diametral pitch?	1. (number of teeth) x (pitch circle diameter) 2. (pitch circle diameter) / (number of teeth) 3. (number of teeth) / (pitch circle diameter) 4. None of the options are correct
Which of the following statements is true?	1. Photocell is used to measure light intensity 2. Planimeter is used to measure surface roughness 3. According to Indian Standard 696 roughness valve is to be measured in millimeter 4. None of the options are correct
Two forces are acting at an angle of 120°. The bigger force is 40N and the resultant is perpendicular to the smaller one. The smaller force is	1.40 N 2.30 N 3.20 N 4.none of these options
The centroid a T-section 100 mm x 150 mm x 50 mm from its bottom is	1.87.5mm 2.50mm 3.75mm 4.125mm

Questions	Choices
The range of projectile on a downward inclined plane is _____ the range on upward inclined plane for the same velocity of projection and angle of projection.	1. less than 2. equal to 3. more than 4. All of these options
The coefficient of friction depends on	1.area of contact 2.strength of surfaces 3.nature of surface 4.all of these options
A boat is traveling along a circular path having a radius of 20 m. Determine the magnitude of the boat's acceleration if at a given instant the boat's speed is v = 5 m/s and the rate of increase in speed is v = 2 m/s2.	1.a = 2.36 m/s2 2.a = 12.50 m/s2 3.a = 2.00 m/s2 4.a = 1.25 m/s2
A diffuser is used to	1.increase velocity and decrease pressure 2.increase velocity as well as pressure 3.decrease velocity and increase pressure 4.decrease velocity as well as pressure
Which of the following temperature scales doesn't have negative numbers?	1. Celsius 2. Kelvin 3. Fahrenheit 4. Galileo
The ability by which a measuring device can detect small differences in the quantity being measured by it, is called its _____	1. a) Damping 2. b) Sensitivity 3. d) Readability 4. c) Accuracy

Questions	Choices
The usual width of parapet walls along Highways in hilly region, is	1.50 cm 2.60 cm 3.70cm 4.80 cm
The head light of vehicles should be such that its lower beam illuminates objects at	1.10 cm 2.20 cm 3.30cm 4.40 cm
In India the modes of transportation, in the order of their importance, are	1.air transport, shipping, roads, railways 2.shipping, roads, railways, air transport 3.roads, railways, air transport, shipping 4.railways, roads, shipping, air transport
Deviation of the alignment of a trace cut may be permitted in areas involving	1.land slides 2.sand dunes 3.dens 4.terrains
If C is basic capacity per lane, V is velocity in km/hour, S is stopping distance plus length of the vehicles in metres, the formula C=1000V/S is applicable to	1.district roads 2.two lane roads 3.two lane roads in one direction 4.two lane roads in two directions
In water bound macadam roads, binding material is	1.sand 2.stone dust 3.cement 4.Brick dust.
Road makers along roads from the edge of a kerb should not be less than	1.45 cm 2.50 cm 3.55 cm 4.60 cm
For the movement of vehicles at an intersection of two roads, without any interference, the type of grade separator generally preferred to, is	1.delta 2.trumpet 3.diamond interchange 4.clover leaf
The total length of a valley formed by two gradients - 3% and + 2% curve between the two tangent points to provide a rate of change of centrifugal acceleration 0.6 m/sec^2, for a design speed 100 kmph, is	1. 16.0 m 2. 42.3 m 3. 84.6 m 4. 98.4 m

Questions	Choices
In a shape test of aggregate, which one of the following gives the correct slot for flakiness index of a material passing 50 mm sieve and retained on 40 mm sieve?	1. 25 mm 2. 27 mm 3. 30 mm 4. 32 mm
For a flow of 5.7 MLD (Million Litres per Day) and a detention time of 2 hours, the surface area of a rectangular sedimentation tank to remove all particles having settling velocity of 0.33 mm/s is	1. 20 m^2 2. 100 m^2 3. 200 m^2 4. 400 m^2
The moisture content of a clayey soil is gradually decreased from a large value. What will be the correct sequence of the occurrence of the following limits? 1.Shrikage limit 2. Plastic limit 3. Liquid limit	1. 1, 2, 3 2. 2,3,1 3. 3,2,1 4. 1,3,2

Questions	Choices
If a soil sample of weight 0.18 kg having a volume of 10^{-4} m^3 and dry unit wt. of 1600 kg/m^3 is mixed with 0.02 kg of water, then the water content in the sample will be	1. 30% 2. 25% 3. 20% 4. 15%
Sewage sickness occurs when	1. sewage contains pathogenic organisms 2. sewage enters the water supply system 3. sewers get clogged due to accumulation of solids 4. voids of soil get closed due to continuous application of sewage on a piece of land
If carbon monoxide is released at the rate of 0.03 m^3/min from a gasolene engine and 50 ppm is the threshold limit for an 8-hour exposure, the quantity of air which dilutes the contaminant to a safe level will be	1. 60 m^3/min 2. 600 m^3/min 3. 600 m^3/s 4. 60 m^3/s

Questions	Choices
Which one of the following would help prevent the escape of foul sewer gases from a water closet?	1. gully trap 2. p-trap 3. intercepting trap 4. anti-siphon trap
What are the phenomena of global warming and acid rain formation attributed to?	1. SO_2 and CO_2 respectively 2. CO and SO_2, respectively 3. CO_2 and SO_2, respectively 4. CO and CO_2, respectively
Which one of the following types of settling phenomenon can be analysed by the classic sedimentation laws of Newton and Stokes?	1. Discrete settling 2. Flocculent settling 3. Hindered settling 4. Compression settling

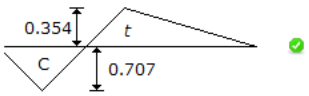
Questions	Choices
In a design of storm sewers, if the time taken by rain-water to flow from the farthest point of the watershed to the sewer inlet is 't_i' and the time of flow of water from the sewer inlet to the point in the sewer that is under consideration is 't_f', then the time of concentration will be	1. t_i 2. t_f 3. $t_i + t_f$ 4. t_i or t_f whichever is greater
Among the following, which is/are not pre-treatment unit (s)?	1. Bar screen and grit chamber 2. Flow equalization and proportioning tank 3. Neutralization for pH adjustment tank 4. Nutrient removal tank
Presence of nitrogen in waste water sample is due to the decomposition of	1. Carbohydrates 2. Proteins 3. Fats 4. Vitamins

Questions	Choices
Air binding may occur in	1. Sewers 2. Artesian well 3. Aerator 4. Filter
In standard penetration test, the splitspoon sampler is penetrated into the soil stratum by giving blows from a drop weight whose weight (in kg) and free fall (in cm) are, respectively,	1. 30 and 60 2. 60 and 30 3. 65 and 75 4. 75 and 65
The void-pressure diagram is shown above. What is the coefficient of compressibility?	1. 0.5 m^2/t 2. 0.73 m^2/t 3. 0.20 m^2/t 4. 0.25 m^2/t

Questions	Choices
According to Boussinesq's theory, the vertical stress at a point in a semi-infinite soil mass depends upon	1. point load, coordinates of the point and modulus of elasticity of soil 2. point load, coordinates of the point, modulus of elasticity of soil and its Poisson's ratio 3. point load and coordinates of the point 4. point load, coordinates of the point, modulus of elasticity of soil and its density.
A and B are Skempton's pore pressure coefficients. For saturated normally consolidated soils,	1. A > 1 and B > 1 2. A > 1 and B < 1 3. A < 1 and B > 1 4. A < 1 and B = 1
In a compaction test on a soil sample, if the compaction energy is decreased (γd = maximum dry density, OMC = optimum moisture content)	1. γd will increase with increase in OMC 2. γd will decrease with increase in OMC 3. γd will decrease with decrease in OMC 4. γd will increase with decrease in OMC

Questions	Choices
A sand deposit has a porosity of 0.375 and a specific gravity of 2.6, the critical hydraulic gradient for the sand deposit is	1. 2.975 2. 2.225 3. 1 4. 0.75
Which one of the following states of field compaction of sand deposit truly represents the corrected standard penetration test value: N (corrected) = 27?	1. Loose 2. Medium dense 3. Dense 4. Very dense
In a particular material, if the modulus of rigidity is equal to the bulk modulus, then the Poisson's ratio will be	1. 1/8 2. 1/4 3. 1/2 4. 1
Two men, one stronger than the other have to lift a load of 1200 N which is suspended from a light rod of length 3 m. The load is suspended between the two persons positioned at the two ends of the rod. The weaker of the two persons can carry a load up to 400 N only. The distance of the load to be suspended from the stronger person such that the weaker person has the full share of 400 N is	1. 0.5 m 2. 1.0 m 3. 1.5 m 4. 2.0 m

Questions	Choices
In a plane strain problem in XY plane, the shear strain = 12 x 10^{-6}, and the normal strain in X and Y direction = 0, For this state of strain, what is the diameter of the Mohr's Circle of strain?	1. 6 x 10^{-6} 2. 8 x 10^{-6} 3. 12 x $l0^{-6}$ 4. 24 x $l0^{-6}$
A horizontal fixed beam is fixed at both it ends A and B. During loading, the right support sinks by an amount δ. Flexural rigidity of the beam is uniform and is equal to*EI*. Length of the beam is *L*. What is the moment developed at the centre of the beam due to sinking of the support?	1. 6 EI δ/L^2 2. 0 3. 3 EI δ/L^2 4. -6 EI δ/L^2
A horizontal beam is hinged at '*R*' and supported on rollers at the end '*S*'. It carries inclined loads. To determine the support reactions, the funicular polygon	1. must start only from the support '*S*' 2. must start only from the support '*R*' 3. could start only from anywhere on the vertical line through '*S*' 4. could start from anywhere between '*R*' and '*S*'

Questions	Choices
The cross sections of the beams of equal length are a circle and a square whose permissible bending stress is same under same maximum bending. The ratio of their flexural weights is,	1. 1.118 2. 1.338 3. 1.228 4. 1.108
A rectangular log of wood is floating in water with a load of 100 N at its centre. The maximum shear force in the wooden log is	1. 50 N at each end 2. 50 N at the centre 3. 100 N at the centre 4. 100 N at the each end
The influence line diagram for the force in member '*a*' of the truss shown below is given by	1. [A].  2. 3. 4.

Questions	Choices
Which one of the following conditions, both elastic and plastic methods of analysis of indeterminate structures have to satisfy	1. yield condition 2. mechanism condition 3. equilibrium 4. compatibility of deformation
The degree of static indeterminacy of the rigid frame having two internal hinges as shown in the figure below, is	1. 8 2. 7 3. 6 4. 5
The outstand of the flange of built-up beams from the line of connection should not extend beyond:(where T is the thickness of flange and t_w is the thickness of web)	1. 10 T 2. 85 T 3. 256… 4. 180t_w

Questions	Choices
The minimum edge distance of a rivet line connecting two or more plates, is kept equal to 37 mm plus (where *t* is the thickness in mm of the thinner outside plate).	1. 2 *t* 2. 4 *t* 3. 6 *t* 4. 8 *t*
The spans are considered approximately equal, if the longest span does not exceed the shortest span by more than	1. 5% 2. 10% 3. 15% 4. 20%
Rolled steel Tee-sections are used	1. as columns 2. as built up sections to resist axial tension 3. with flat strips to connect plates in steel rectangular tanks 4. as built up sections to resist compression

Questions	Choices
For steel members not exposed to weather, the thickness of steel should not be less than	1. 4.5 mm 2. 6 mm 3. 8 mm 4. 10 mm
If *d* is the distance between the flange angles, the vertical stiffeners in plate girders without horizontal stiffeners, are spaced at a distance not less than	1. 0.15 *d* 2. 0.22 *d* 3. 0.33 *d* 4. 0.44 *d*
The maximum permissible slenderness ratio of compression member carrying dead and superimposed load is	1. 180 2. 200 3. 250 4. 350

Questions	Choices
As the percentage of steel increases,	1. depth of neutral axis decreases 2. depth of neutral axis increases 3. lever arm increases 4. lever arm decreases
A reinforced concrete structure has to be constructed along a sea coast. The minimum grade of concrete to be used as per IS : 456-2000	1. M 15 2. M 20 3. M 25 4. M 30
The lateral ties in a reinforced concrete rectangular column are used to :	1. avoid the buckling of the longitudinal steel under compression 2. provide adequate shear capacity 3. provide adequate confinement to concrete 4. reduce the axial deformation of the column

Questions	Choices
The maximum allowable compressive stress corresponding to lateral buckling in a discretely laterally supported symmetrical I beam does not depend upon :	1. the modulus of elasticity 2. the radius of gyration about the minor axis 3. the span length of the beam 4. the ratio of overall depth of thickness of the flange
If the diameter of the main reinforcement in a slab is 16 mm, the concrete cover to main bars is	1. 12 mm 2. 14 mm 3. 16 mm 4. 18 mm
In the zone of R.C.C. beam where shear stress is less than 5 kg/cm^2, nominal reinforcement is provided at a pitch of	1. one-half lever arm of the section 2. one-third lever arm of the section 3. lever arm of the section 4. one fourth lever arm of the section

Questions	Choices
For normal cases, stiffness of a simply supported beam is satisfied, if the ratio of its span to its overall depth does not exceed	1. 10 2. 15 3. 20 4. 25
The floor slab of a building is supported on reinforced cement floor beams. The ratio of the end and intermediate spans is kept	1. 0.7 2. 0.8 3. 0.9 4. 1.0
An R.C.C. beam of 6 m span is 30 cm wide and has a lever arm of 55 cm. If it carries a U.D.L. of 12 t per m and allowable shear stress is 5 kg/cm^2, the beam	1. is safe in shear 2. is safe with stirrups 3. is safe with stirrups and inclined bars 4. needs revision of section

Questions	Choices
Columns may be made of plain concrete, if their unsupported lengths do not exceed their least lateral dimension	1. two times 2. three times 3. four times 4. five times
The zone in which transverse bending is likely to occur may be obtained by drawing a line from the faces of the column making an angle θ° with horizontal, where θ° is	1. 30° 2. 45° 3. 60° 4. 90°
A reinforced concrete column contains longitudinal steel equal to 1 percent of net cross-sectional area of the column. Assume modular ratio as 10. The loads carried (using the elastic theory) by the longitudinal steel and the net area of concrete, are $P_s$and P_c respectively. The ratio P_s/ P_c expressed as percent is	1. 10 2. 1.1 3. 1 4. 0.1

Questions	Choices
A model of a weir made to a horizontal scale of 1/40 and vertical scale of 1/9discharges 1 litre/sec. Then the discharge in the prototype is estimated as	1. 10 lps 2. 108 lps 3. 1080 lps 4. 10800 lps
In a laminar boundary layer, the velocity distribution can be assumed to be given, in usual notations, as Which one of the following is the correct expression for the displacement thickness δ* for this boundary layer?	1. $\delta^* = \delta$ 2. $\delta^* = \delta/2$ 3. $\delta^* = \delta/4$ 4. $\delta^* = \delta/6$
The head loss in a pipe of diameter d, carrying oil at a flow rate Q over a distance l is h. The pipe is replaced by another with half the diameter, all other things remaining the same. The head loss in this case will be	1. 0.5 h 2. 2.0 h 3. 8.0 h 4. 32.0 h

Questions	Choices
A very tiny sphere is settling down in a viscous liquid at Reynolds number = 0.2. Its drag coefficient is equal to	1. 320 2. 120 3. 80 4. 40
If the Froude number of flow in an open channel is more than 1.0, then the flow is said to be	1. critical 2. shooting 3. streaming 4. transitional
When two moving bodies collide with each other, their velocity of separation bears a constant ratio to their velocity of approach. This ratio is termed as coefficient of	1. collidity 2. friction 3. restitution 4. permeability

Questions	Choices
The base width of a soil gravity dam is 25 m. The material of the dam has a specific gravity of 2.56 and the dam is designed as an elementary profile ignoring uplift. What is the approximate allowable height of the dam?	1. 64 m 2. 40 m 3. 164 m 4. 80 m
The ordinate of the Instantaneous Unit Hydrograph (IUH) of a catchment at any time t, is	1. The slope of the 1-hour unit hydrograph at that time 2. The slope of the direct runoff unit hydrograph at that time 3. Difference in the slope of the S-curve and 1-hour unit hydrograph 4. The slope of the S-curve with effective rainfall intensity of 1 cm/hr
For an anisotropic soil, permeability in x and y directions are k_x and k_y respectively in a two dimensional flow. The effective permeability k_{eq} for the soil is given by	1. $k_x + k_y$ 2. k_x/k_y 3. $(k_x^2 + k_y^2)^{1/2}$ 4. $(k_x k_y)^{1/2}$

Questions	Choices
Flow at critical depth takes place in an open channel,	1. for a given specific energy, discharge is maximum 2. for a given discharge, specific energy is maximum 3. discharge is minimum for a given specific energy 4. discharge is maximum for a given specific force
The work output of a Reheat cycle operating under the same temperature limits is:	1. Same as that of Rankine cycle 2. Greater than that of Rankine cycle 3. Lesser than that of Ranking cycle 4. Not able to correlate with provided data.
Critical speed of a shaft with a disc supported in between is equal to the natural frequency of the system in	1. Longitudinal vibration provided the shaft is vertical 2. Transverse vibration 3. Longitudinal vibrations 4. Torsional vibrations

Questions	Choices
If the rotating mass of a rim type flywheel is distributed on another rim type flywheel whose mean radius is half the mean radius of the former, then energy stored in the later at the same speed will be	1.Same as the first one 2.One and half times the first one3.Four times the first one 4.One fourth of the first one
If the speed of the engine varies between 390 and 410 rpm in a cycle of operation, the coefficient of fluctuation of speed will be	1. 0.1 2. 0.2 3. 0.5 4. 0.7
In a flywheel, the safe stress is 25.2 MN/m2 and the density is 7 g/cm3.Then what is the maximum peripheral velocity (in m/s)?	1. 120 2. 60 3. 30 4. 45
A reciprocating engine, running at 80rad/s, is supported on springs. The static deflection of the spring is 1mm.Take g=10m/s2.when the engine runs what will be the frequency of vibration of the system?	1.90 rad/s 2.100 rad/s 3.80 rad/s 4.120 rad/s
The static deflection of a shaft under a flywheel is 4 mm. Take g=10m/s2.What is the critical speed in rad/s?	1.50 2.2.5 3.20 4.40
The balancing weights are introduced in planes parallel to the plane of rotation of the disturbing mass. To obtain complete dynamic balance, the minimum number of balancing weights to be introduced in different planes is	1. 3 2. 4 3. 1 4. 2
Critical damping is a function of	1. Stiffness and natural frequency 2. Mass and damping coefficient 3. Mass and stiffness 4. Natural frequency and damping coefficient

Questions	Choices
Whirling speed of the shaft is the speed at which	1. combination of transverse and longitudinal vibration occurs 2. shaft tends to vibrate vigorously in transverse direction 3. torsional vibrations occur 4. Shaft tends to vibrate in longitudinal direction
In a system subjected to damped forced vibrations, the ratio of maximum displacement to the static deflection is known as	1.Damping factor 2.Magnification factor 3.Critical damping ratio 4.Logarithmic decrement
For steady state forced vibrations, the phase lag at resonance is	1. 45° 2. 90° 3. 0° 4. 180°
In reciprocating engines primary forces	1. are partially balanced 2. are balanced by secondary forces 3. cannot be balanced 4. are completely balanced
A governor is said to be isochronous when the equilibrium speed for all radii of rotation of the balls within the working range	1. varies uniformly 2. has uniform acceleration 3. is not constant 4. is constant
When the sleeve of a Porter governor moves upwards, the governor speed	1.first increases and then decreases 2.remains unaffected 3.increases 4.decreases
When the speed of the engine fluctuates continuously above and below the mean speed, the governor is said to be	1.unstable 2.stable 3.hunt 4.isochronous
In a four stroke I.C. engine, the turning moment during the compression stroke is	1. positive during major portion of the stroke 2. positive throughout 3. negative throughout 4. negative during major portion of the stroke

Questions	Choices
The engine of an aeroplane rotates in clockwise direction when seen from the tail end and the aeroplane takes a turn to the left. The effect of the gyroscopic couple on the aeroplane will be	1. to raise the nose and dip the tail 2. to dip the nose and raise the tail 3. to dip the nose and tail 4. to raise the nose and tail
A motor car moving at a certain speed takes a left turn in a curved path. If the engine rotates in the same direction as that of wheels, then due to the centrifugal forces	1.the reaction on the inner wheels increases and on the outer wheels decreases 2. the reaction on the outer wheels increases and on the inner wheels decreases 3. the reaction on the front wheels increases and on the rear wheels decreases 4. the reaction on the rear wheels increases and on the front wheels decreases
A rigid body, under the action of external forces, can be replaced by two masses placed at a fixed distance apart. The two masses form an equivalent dynamical system, if	1. the sum of two masses is equal to the total mass of the body 2. the centre of gravity of the two masses coincides with that of the body 3. the sum of mass moment of inertia of the masses about their centre of gravity is equal to the mass moment of inertia of the body 4. All of the anwers

Questions	Choices
The maximum fluctuation of energy is the	1. difference between the maximum and minimum energies 2. sum of maximum and minimum energies 3. ratio of the maximum energy and minimum energy 4. ratio of the mean resisting torque to the work done per cycle
The primary unbalanced force is maximum when the angle of inclination of the crank with the line of stroke is	1. 0° 2. 90° 3. 180° 4. 360°
The partial balancing means	1. balancing partially the revolving masses 2. balancing partially the reciprocating masses 3. best balancing of engines 4. all of the above

Questions	Choices
A flywheel of moment of inertia 9.8 kgm^2 fluctuates by 30 rpm for a fluctuation in energy of 1936 Joules. The mean speed of the flywheel is (in rpm)	1. 600 2. 900 3. 968 4. 2940
In a locomotive, the ratio of the connecting rod length to the crank radius is kept very large in order to	1.minimise the effect of primary forces 2. minimise the effect of secondary forces 3. have perfect balancing 4. start the locomotive quickly
The swaying couple is maximum or minimum when the angle of inclination of stroke (θ) is equal to	1. 45° and 135° 2. 90° and 135° 3. 135° and 225° 4.45° and 225°
In a locomotive, the maximum magnitude of the unbalanced force along the perpendicular to the line of stroke, is known as	1. tractive force 2.swaying couple 3. hammer blow 4. Blowing

Questions	Choices
In order to have a complete balance of the several revolving masses in different planes	1.the resultant couple must be zero 2.none of the options 3.the resultant force must be zero 4.both the resultant force and couple must be zero
In a vibrating system, if the actual damping coefficient is 40 N/m/s and critical damping coefficient is 420 N/m/s, then logarithmic decrement is equal to	1.0.2 2.0.4 3.0.6 4.0.8
When a body moves with simple harmonic motion, the product of its periodic time and frequency is equal to	1.0.5 2.6.28 3.1 4.3.14
If the ratio of frequency of excitation to the natural frequency of vibrations is 1.414, then the transmissibility of vibration will the	1. 1 2. 2 3. 0.5 4. 0
A shaft carrying three rotors will have	1. two nodes 2. three nodes 3. no node 4. one node
When a rigid body is suspended vertically and it oscillates with a small amplitude under the action of the force of gravity, the body is known as	1.torsional pendulum 2.second's pendulum 3.simple pendulum 4.compound pendulum
The secondary unbalanced force is maximum _____ in one revolution of the crank.	1.four times 2.eight times 3.two times 4.sixteen times

Questions	Choices
For two governors A and B, the lift of sleeve of governor A is more than that of governor B, for a given fractional change in speed. It indicates that	1.both governors A and B are equally sensitive 2.none of the options 3.governor A is more sensitive than governor B 4.governor B is more sensitive than governor A
Which of the following is used to control the speed variations of the engine caused by the fluctuations of the engine turning moment?	1.flywheel 2.none of these options 3.Governor 4.connecting rod
In a spring mass vibrating system, the natural frequency of vibration is reduced to half the value when a second spring is added to the first spring in series. Determine the stiffness of the second in terms of that of the first spring.	1. 1/3 of first spring 2. 3 times of first spring 3. 2 times of first spring 4. as the same of first spring
What is the minimum damping ratio for an underdamped system such that its overshoot is limited to 10 percent?	1. 0.59 2. 0.69 3. 1 4. 1.59

Questions	Choices
If magnification factor is high for constant damping factor	1. the excitation frequency may get resonance or near the resonance 2. the excitation frequency may be higher than resonance 3. the excitation frequency may be lower than resonance 4. none of these
What type of vibration is predominant in the beam structure?	1. Transverse 2. longitudinal 3. torsional 4. none of these
If a number of forces act simultaneously on a particle, it is possible	1.to replace them by a single force 2.to replace them by a couple 3.not to replace them by a single force 4.to replace them by a single force through C.G.
Which of the following do not have identical dimensions ?	1.Momentum and impulse 2.Torque and work 3.Torque and energy 4.None of these options
The weight of a body is due to	1.gravitational pull exerted by the earth 2.centripetal force of earth 3.gravitational force of attraction towards the center of the earth. 4.forces experienced by body in atmosphere

Questions	Choices
Two balls of equal mass and of perfectly elastic material are lying on the floor. One of the ball with velocity v is made to struck the second ball. Both the balls after impact will move with a velocity	1.v 2.v/4 3.v/2 4.v/8
Moment of inertia of a triangular section of base (b) and height (h) about an axis passing through its C.G. and parallel to the base, is	1.bh3/4 2.bh3/12 3.bh3/8 4.bh3/36
A number of forces acting at a point will be in equilibrium if	1.their total sum is zero 2.two resolved parts in two directions at right angles are equal 3.sum of resolved parts in any two perpendicular directions are both zero 4.none of these options
D' Alembert's principle is used for	1.determining stresses in the truss 2.solving kinematic problems 3.reducing the problem of kinetics to equivalent statics problem 4.stability of floating bodies
A heavy ladder resting on floor and against a vertical wall may not be in equilibrium, if	1.the floor is smooth, the wall is rough 2.the floor and wall both are smooth surfaces 3.the floor is rough, the wall is smooth 4.will be in equilibrium under all conditions.
The ratio of limiting friction and normal reaction is known as	1.coefficient of friction 2.angle of repose 3.angle of friction4.friction resistance.
Pick up wrong statement about friction force for dry surfaces. Friction force is	1.dependent on the materials of contact surface2.independent of the area of contact surfaces3.proportional to normal load between the surfaces 4.proportional to velocity of sliding
Coulomb friction is the friction between	1.bodies having relative motion 2.two lubricated surfaces3.two dry surfaces 4.solids and liquids

Questions	Choices
Dynamic friction as compared to static friction is	1.more 2.may be less of more depending on nature of surfaces and velocity 3.same 4.less
The maximum frictional force which comes into play when a body just begins to slide over another surface is called	1.limiting friction 2.rolling friction 3.sliding friction4.kinematic friction
A flywheel on a motor goes from rest to 1000 rpm in 6 sec. The number of revolutions made is nearly equal to	1.25 2.100 3.50 4.250
A boat is traveling along a circular path having a radius of 20 m. Determine the magnitude of the boat's acceleration if at a given instant the boat's speed is v = 5 m/s and the rate of increase in speed is v = 2 m/s2.	1.a = 2.36 m/s2 2.a = 12.50 m/s2 3.a = 2.00 m/s2 4.a = 1.25 m/s2
A train travels along a horizontal circular curve that has a radius of 200 m. If the speed of the train is uniformly increased from 30 km/h to 45 km/h in 5 s, determine the magnitude of the acceleration at the instant the speed of the train is 40 km/h.	1.a = 0.617 m/s2 2.a = 1.451 m/s2 3.a = 1.037 m/s2 4.a = 0.833 m/s2
The mechanism used in a shaping machine is	1. a closed 4-bar chain having 4 revolute pairs 2. a closed 6-bar chain having 6 revolute pairs 3. a closed 4-bar chain having 2 revolute pair and 2 sliding pairs 4. an inversion of the single slider-crank chain

Questions	Choices
The lengths of the links of a 4-bar linkage with revolute pairs only are p, q, r and s units. Given that p < q < r < s. Which of these links should be the fixed one, for obtaining a "double crank" mechanism?	1. links of length 'p' 2. links of length 'q' 3. links of length 'r' 4. links of length 's'
The number of degrees of freedom of a planar linkage with 8 links and 9 simple revolute joint is	1. 1 2. 2 3. 3 4. 4
In a four- bar linkage, S denotes the shortest link length, L is the longest link length, P and Q are the lengths of other two links. At least one of the three moving links will rotate by 360 degree if	1. S + L less than or equal to P + Q 2. S + L > to P + Q 3. S + P less than or equal to L + Q 4. S + P > to L + Q

Questions	Choices
For a four bar linkage in toggle position, the value of mechanical advantage is?	1. 0 2. 0.5 3. 1 4. Infinite
The mechanism used in a shaping machine is	1. a closed 4-bar chain having 4 revolute pairs 2. a closed 6-bar chain having 6 revolute pairs 3. a closed 4-bar chain having 2 revolute pair and 2 sliding pairs 4. an inversion of the single slider-crank chain

Questions	Choices
The lengths of the links of a 4-bar linkage with revolute pairs only are p, q, r and s units. Given that p < q < r < s. Which of these links should be the fixed one, for obtaining a "double crank" mechanism?	1. links of length p 2. links of length q 3. links of length r 4. links of length s
In order to draw the acceleration diagram, it is necessary to determine the Coriolis component of acceleration in the case of	1. crank and slotted lever quick return mechanism 2. slider-crank mechanism 3. four bar mechanism 4. Pantograph
The direction of linear velocity of any point on a link with respect to another point on the same link is	1. parallel to the link 2. perpendicular to the link joining the points 3. at 45 degree to the link joining the points 4. at 30 degree

Questions	Choices
Ball and socket forms a	1. turning pair 2. rolling pair 3. sliding pair 4. Spherical Pair
A combination of kinematic pairs, joined in such a way that the relative motion between link is completely constrained, is called as	1. structure 2. mechanism 3. kinematic chain 4. inversion
which of the following is an inversion of slider crank chain?	1. beam engine 2. watt indicator 3. elliptical trammel 4. whitworth quick return motion mechanism

Questions	Choices
In SHM motion, acceleration is proportional to	1. velocity 2. displacement 3. rate of change of velocity 4. stroke
For a SHM motion of the follower, a cosine curve represents	1. displacement 2. velocity 3. acceleration 4. jerk
cam size depends on	1. base circle 2. prime circle 3. pitch circle 4. outer circle

Questions	Choices
Transmission angle is the angle between	1. Input link and coupler 2. Input link and fixed link 3. Output link and coupler 4. Output link and fixed link
A fixed gear having 200 teeth is in mesh with another gear having 50 teeth. The two gears are connected by an arm. The number of turns made by the smaller gear for one revolution of arm about the centre of bigger gear is	1. 2 2. 4 3. 3 4. 5
In ideal machines, mechanical advantage is _____ velocity ratio.	1. equal to 2. greater than 3. none of these 4. less than
Concurrent forces are those forces whose lines of action	1.meet on the same plane 2.lie on the same line 3.meet at one point 4.none of these options
The motion of a particle round a fixed axis is	1. rotary 2. translatory 3. circular 4. translatory as well as rotatry

Questions	Choices
If a number of forces are acting at a point, theirresultant will be inclined at an angle θ with the horizontal, such that	1. tan θ = ∑Vx∑H 2. tan θ = ∑Vx∑V 3. tan θ = ∑H/∑V 4. tan θ = ∑V/∑H
The unit of energy in S.I. units is	1. watt 2. dyne 3. kg-m 4. joule
Whenever a force acts on a body and the body undergoes a displacement, then	1. work is said to be done 2. power is being transmitted 3. body has kinetic energy of translation 4. none of these
The rate of doing work is known as	1. kinetic energy 2. none of these 3. power 4. potential energy
The resultant of the two forces P and Q is R. If Q is doubled, the new resultant is perpendicular to P. Then	1. Q = 2R 2. Q = R 3. P = Q 4. none of these
When the spring of a watch is wound, it will possess	1. electrical energy 2. heat energy 3. kinetic energy 4. strain energy
The total energy possessed by a system of moving bodies	1. is minimum in the start and maximum at the end 2. is maximum in the start and minimum at the end 3. varies from point to point 4. is constant at every instant

Questions	Choices
The static friction	1. is independent of the area of contact, between the two surfaces 2. always acts in a direction, opposite to that in which the body tends to move 3. bears a constant ratio to the normal reaction between the two surfaces 4. all of the above
Which of the following are vector quantities?	1. Angular velocity 2. Angular displacement 3. all of these 4. Angular acceleration
The term ‘centroid’ is	1.none of the options 2.the point of suspension 3.the point of application of the resultant of all the forces tending to cause a body to rotate about a certain axis 4.the same as centre of gravity
The matter contained in a body, is called	1.momentum 2.mass 3.impulsive force 4.weight
If P is the force acting on the body, m is the mass of the body and a is the acceleration of the body, then according to Newton’s second law of motion,	1.P - m.a = 0 2.P x m.a = 0 3.P + m.a = 0 4.P/m.a = 0
The energy possessed by a body, for doing work by virtue of its position, is called	1.chemical energy 2.electrical energy 3.potential energy4.kinetic energy
In order to completely specify angular displacement by a vector, it must fix	1.magnitude of angular displacement 2.all of these options3.direction of the axis of rotation 4.sense of angular displacement
If a body is acted upon by a number of coplaner non-concurrent forces, it may	1.rotate about itself without moving 2. be completely at rest 3.move in any one direction rotating about itself 4.all of these options
A number of forces acting at a point will be in equilibrium, if	1.sumof resolved parts in the vertical direction is zero (i.e. ¿V = 0) 2.sum of all the forces is zero 3.all the forces are equally inclined 4.none of these options

Questions	Choices
Which is the correct statement about law of polygon of forces ?	1. if any number of forces acting at a point can be represented by the sidesof a polygon taken in order, then the forces are in equilibrium 2. if any number of forces acting at a point can be represented in direction and magnitude by the sides of a polygon, then the forces are in equilibrium 3. if a polygon representing forces acting at a point is closed then forces are in equilibrium 4. none of the above.
The product of either force of couple with the arm of the couple is called	1.resultant couple 2.moment of the forces 3.moment of the couple 4.none of these options
The 2-m-long bar is confined to move in the horizontal and vertical slots A and B. If the velocity of the slider block at A is 6 m/s, determine the bar's angular velocity and the velocity of block B at the instant = 60°.	1. angular velocity of B = 3.46 rad/s , vB = 3.46 m/s 2. angular velocity of B = 3.00 rad/s , vB = 3.00 m/s 3. angular velocity of B = 3.00 rad/s , vB = 6.00 m/s 4. angular velocity of B = 6.00 rad/s , vB = 10.39 m/s

Questions	Choices
A race car starting from rest moves along a straight track with an acceleration as shown in the graph (where for t 10 s, a = 8 m/s2). Determine the time t for the car to reach a speed of 50 m/s.	1. t = 11.25 s 2. t = 6.25 s 3. t = 12.5 s 4. t = 3.53 s
A two-stage missile is fired vertically from rest with an acceleration as shown in the graph. In 15 s the first stage A burns out and the second stage B ignites. How fast is the rocket moving and how far has it gone at t = 20 s? How fast is the missile moving and how far has it gone at t = 20 s?	1. v = 430 m/s, s = 4.30 km 2.v = 395 m/s, s = 3.69 km 3. v = 360 m/s, s = 3.60 km 4. v = 500 m/s, s = 5.00 km
The v-s graph for a rocket sled is shown. Determine the acceleration of the sled when s = 100 m and s = 175 m.	1. a100 = 3.75 m/s2, a175 = -1.250 m/s2 2. a100 = 11.11 m/s2, a175 = -25.0 m/s2 3. a100 = 0.333 m/s2, a175 = -1.000 m/s2 4. a100 = 33.3 m/s2, a175 = -25 m/s2

Questions	Choices
The pilot of flighter plane F is following 1.5 km behind the pilot of bomber B. Both planes are originally traveling at 120 m/s. In an effort to pass the bomber, the pilot in F gives his plane a constant acceleration of 12 m/s2. Determine the speed at which the pilot in the bomber sees the pilot of the fighter plane pass at the start of the passing operation the bomber is decelerating at 3 m/s2. Neglect the effect of any turning.	1. vF/B = 150 m/s 2. vF/B = 367 m/s 3. vF/B = 90 m/s 4. vF/B = 212 m/s
A car, initially at rest, moves along a straight road with constant acceleration such that it attains a velocity of 60 ft/s when s = 150 ft. Then after being subjected to another constant acceleration, it attains a final velocity of 100 ft/s when s = 325 ft. Determine the average velocity and average acceleration of the car for the entire 325-ft displacement.	1.vavg = 80.0 ft/s, aavg = 15.15 ft/s2 2.vavg = 45.2 ft/s, aavg = 13.91 ft/s2 3.vavg = 80.0 ft/s, aavg = 12.57 ft/s2 4.vavg = 55.0 ft/s, aavg = 15.15 ft/s2
The motorcyclist attempts to jump over a series of cars and trucks and lands smoothly on the other ramp, i.e., such that his velocity is tangent to the ramp at B. Determine the launch speed vA necessary to make the jump.	1. vA = 11.90 m/s 2. vA = 11.07 m/s 3. vA = 16.83 m/s 4. vA = 15.66 m/s

Questions	Choices
A ball thrown vertically upward from the top of a building with an initial velocity of vA = 35 ft/s. Determine (a) how high above the top of the building the ball will go before it stops at B, (b) the time tAB it takes to reach its maximum height, and (c) the total time tAC needed for it to reach the ground at C from the instant it is released.	1. h = 62.4 ft, tAB = 3.57 s, tAC = 7.14 s 2. h = 19.02 ft, tAB = 1.087 s, tAC = 2.17 s 3. h = 19.02 ft, tAB = 1.087 s, tAC = 3.30 s 4. h = 62.4 ft, tAB = 3.57 s, tAC = 8.56 s
As the instant shown, cars A and B are traveling at speeds of 20 mi/h and 45 mi/h, respectively. If B is acceleration at 1600 mi/h2 while A maintains a constant speed, determine the magnitudes of the velocity and acceleration of A with respect to B.	1. vA/B = 33.9 mi/h, aA/B = 1600 mi/h2 2. vA/B = 60.8 mi/h, aA/B = 1600 mi/h2 3. vA/B = 33.9 mi/h, aA/B = 1426 mi/h2 4. vA/B = 60.8 mi/h, aA/B = 1426 mi/h2
A boy throws a snowball such that it strikes the wall of the building at the maximum height of its trajectory. If it takes t = 1.5 s to travel from A to B, determine the velocity vA at which it was thrown, the angle of release , and the height h.	1. vA = 12.00 ft/s, = 24.4E, h = 21.7 ft 2. vA = 49.8 ft/s, = 76.0E, h = 39.7 ft 3. vA = 36.3 ft/s, = 24.4E, h = 18.2 ft 4. vA = 48.3 ft/s, = 65.6E, h = 39.7 ft

Questions	Choices
For a short time the missile moves along the parabolic path y = (18 - 2x2) km. If motion along the ground is measured as x = (4t - 3) km, where t is in seconds, determine the magnitudes of the missile's velocity and acceleration when t = 1 s.	1. v = 5.66 km/s, a = 4.0 km/s2 2. v = 16.49 km/s, a = 64.0 km/s2 3. v = 16.00 km/s, a = 22.6 km/s2 4. v = 4.00 km/s, a = 16.03 km/s2
A chain that has a negligible mass is draped over a sprocket which has a mass of 2 kg and a radius of gyration of kO = 50 mm. If the 4-kg block A is released from rest in the position shown, s = 1 m, determine the angular velocity which the chain imparts th the sprocket when s = 2 m.	1. 44.3 rad/s 2. 39.6 rad/s 3. 41.8 rad/s 4. 59.1 rad/s
The 50-kg cylinder has an angular velocity of 30 rad/s when it is brought into contact with the horizontal surface at C. If the coefficient of friction is c = 0.2, determine how long it takes for the cylinder to stop spinning. What force is developed at the pin A during this time? The axis of the cylinder is connected to two symmetrical links. (Only AB is shown.) For the computation, neglect the weight of the links.	1. t = 1.529 s, A = 0 2. t = 3.06 s, A = 0 3. t = 1.529 s, A = 49.1 N 4. t = 3.06 s, A = 49.1 N

Questions	Choices
A cord of negligible mass is wrapped around the outer surface of the 2-kg disk. If the disk is released from rest, determine its angular velocity in 3 s.	1. 183.9 rad/s 2. 735 rad/s 3. 245 rad/s 4. 263 rad/s
The irregular area has a moment of inertia about the AA axis of 35 (106) mm4. If the total area is 12.0(103) mm2, determine the moment of inertia if the area about the BB axis. The DD axis passes through the centroid C of the area.	1. IBB = 5.00(106) mm4 2. IBB = 17.00(106) mm4 3. IBB = 16.80(106) mm4 4. IBB = 55.4(106) mm4
The radial distance of a tooth from pitch circle to the bottom of the tooth is called	1. dedundum 2. addendum 3. clearance 4. working depth

Questions	Choices
The module is reciprocal of	1. diametrical pitch 2. circular pitch 3. pitch diameter 4. pressure angle
The condition for correct gearing is	1. pitch line velocities of teeth be same 2. radius of curvature of two profile be same 3. common normal to the pitch surface cuts the line of centres at a fixed point 4. pitch line velocities of teeth different
Interference can be avoided in involute gears with 20 degree pressure angle by	1. cutting involute correctly 2. using as small number of teeth as possible 3. using more than 20 teeth 4. using more than 8 teeth

Questions	Choices
In simple gear train, if the number of idle gears is odd, then the motion of driven gear will	1. be same as that of driving gear 2. be opposite as that of driving gear 3. depend upon the number of teeth on the driving gear 4. depend upon the number of teeth on the driven gear
The train value of gear is	1. equal to velocity ration of a gear train 2. reciprocal of velocity ratio of a gear train 3. always greater that unity 4. always less than unity
In a gear train, when the axes of the shafts, over which the gears are mounted, move relative to a fixed axis is called	1. epicyclic gear train 2. reverted gear train 3. compound gear train 4. simple gear train

Questions	Choices
A differential gear in automobile is used to	1. reduce the speed 2. assist in changing in speed 3. provide jerk free movement of vehicle 4. help in turning
The angle between the direction of the follower motion and a normal to the pitch curve is called	1. pitch angle 2. prime angle 3. base angle 4. pressure angle
The following is not included in title block of drawing sheet.	1.Sheet No 2.Scale 3.Method of Projection 4. Size of sheet
Which of the following represent reducing scale?	1.1:1 2.**1:2** 3.2:1 4.10:1
In first angle projection method, object is assumed to be placed in	1.First quadrant 2.Second quadrant 3.Third quadrant4.Fourth quadrant
Metric thread of 10mm diameter is represented by	1.10M 2.M10 3.M^10 4.None of the above

Questions	Choices
In a radial cam, the follower moves	1. in a direction perpendicular to the cam axis 2. in a direction parallel to cam axis 3. in any direction irrespective of the cam axis 4. along the cam axis
This means that a feature of a finished product contains the maximum amount of material permitted by the toleranced dimensions for that feature:	1. Maximum material condition 2. Machined material condition 3. Maximum machined indication 4. Machine mark indication
A radial follower is one	1. That reciprocates in the guides 2. that oscillates 3. in which the follower translates along an axis passing through the cam centre of rotation 4. translates

Questions	Choices
This is the theoretically exact size from which limits of size are determined:	1. Actual Size 2. Dimensioned size 3. Production size 4. Basic size
offset is provided to a cam follower mechanism to	1. minimise the side thrust 2. accelerate 3. avoid jerk 4. reduced the noise
Acceptable parts must not extend beyond this:	1. Boundary limits 2.Hole limits 3. Specification 4. Tolerances
This practice considers an individual part's dimensions and tolerances and that part's relation to its related parts:	1. Applying allowances 2. Geometric dimensioning and tolerancing 3. Creating datum references 4. Angular dimensioning tolerances

Questions	Choices
These weld symbols have no arrow-side or other-side significance:	1. Projection or seam weld 2. Back or backing weld 3. Surface or groove weld 4. Flash and upset weld
Welding drawings are a special type of this kind of drawing:	1. Symbol 2. Perspective 3. Assembly 4. Isometric
For a low and moderate speed engines, the cam follower should move with	1. uniform velocity 2. simple harmonic motion 3. uniform acceleration and retardation 4. cycloidal motion

Questions	Choices
The typical parts list should include the	1. part number 2. manufacturing material 3. number of parts needed 4. all of the above
For high speed engines, the cam and follower should move with	1. uniform velocity 2. simple harmonic motion 3. uniform acceleration and retardation 4. cycloidal motion
The title block used on working drawings should include the	1. sheet number 2. line type 3. layer set 4. all of the above

Questions	Choices
The text used on a typical detail sheet should be	1. placed horizontally 2. in bold text 3. in an architectural text style 4. none of the above
In an exploded assembly drawing it is customary for the drafter to use a _ line to illustrate how parts fit together.	1. Phantom 2. hidden 3. dashed 4. center
which of the following displacement diagrams should be chosen for better dynamic performance of cam follower motion	1. simple harmonic motion 2. parabolic motion 3. cycloidal motion 4. tangent

Questions	Choices
It is customary for the first sheet of a working drawing set to include	1. a parts list 2. exploded assembly 3. assembled assembly 4.all of the above
The thread note for a typical bolt will include the	1.major diameter of the thread 2.material 3.center line 4.offset distance
A combination of kinematic pairs, joined in such a way that the relative motion between the linkage is completely constrained is called as	1. structure 2. mechanism 3. kinematic chain 4. inversion

Questions	Choices
The mechanism forms a structure, when the number of degree of freedom is equal to	1. 0 2. 1 3. 2 4. -1
In a four bar chain or quadric cycle	1. each of the four pairs is turning pair 2. one is a turning pair and three sliding pairs 3. three are turning pairs and one is sliding pair 4. all are sliding pairs
This is an angled surface used on cylinders to make them easier to handle:	1. Fillet 2. Taper 3. Chamfer 4. Lug

Questions	Choices
These are used to attach parts to a cylinder so they won't turn on it:	1. Lugs and bearings 2. Keyseats and bearings 3. Knurls and keys 4. Keys and keyways/keyseats
This is a flat or rounded tab protruding from a surface, usually to provide a method for attachment:	1. Lug 2.Boss 3. Chamfer 4. Spotface
This is a hollow cylinder that is often used as a protective sleeve or guide or as a bearing:	1. Lug 2.Bushing 3. Chamfer 4. Knurl
The total number of instantaneous centres for a mechanism consisting of n links are	1. n/2 2. n 3. (n-1)/2 4. [n(n-1)]/2

Questions	Choices
The two parallel and coplanar shafts are connected by gears having parallel teeth to the axis of the shaft. the arrangement is called	1. spur gearing 2. helical gearing 3. bevel gearing 4. spiral gearing
An imaginary circle which by pure rolling action gives the same motion as the actual gear is called	1. addendum circle 2. dedendum circle 3. pitch circle 4. clearance circle
which of the following is incorrect relationship for gears	1. circular pitch X diametral pitch = 3.14 2. module = pcd/No of teeth 3. dedundum = 1.157 module 4. addendum = 2.157 module
Cam size depends on	1. base circle 2. prime circle 3. outer circle 4. pitch circle

Questions	Choices
The maximum value of pressure angle in case of cam is kept as	1. 10 degree 2. 20 degree 3. 14 degree 4. 30 degree
Consider the following pairs 1. pair of gear in mesh 2. belt and pulley 3. cylinder and pistonn 4. cam and follower Among these, the higher pairs are	1. 1,2 and 4 2. 1,2 and 3 3. 2 and 4 4. 1 and 4
A cam mechanism imparts following motion	1. ocsillating 2. reciprocating 3. rotating 4. all of these options
The contact ratio for gear is	1. 0 2. 1 3. less than 1 4. more than 1
The type of gears used to connect two non parallel and non intersecting shafts is	1. Helical gear 2. Bevel gear 3. Spur gear 4. Spiral gear
Angular acceleration of a link can be determined by dividing the	1. velocity 2. centrepetal component of accelration with length of link 3. tangential component of accelration with length of link 4. resultant with link length
The Kutzbach criterion for determining the number of degrees of freedom (n) is (where l = number of links, j = number of joints and h = number of higher pairs)	1. n = 3(l-1)-3j-h 2. n = 2(l-1)-3j-h 3. n = 3(l-1)-2j-h 4. n = 2(l-1)-2j-h
Any point on a link connecting double slider chain will trace a	1. straight line 2. circle 3. parabola 4. ellipse

Questions	Choices
The coriolis component of acceleration leads the sliding velocity by	1. 45° 2. 180° 3. 90° 4. 135°
which of the gear train is used for higher velocity ratios in small space?	1. reverted gear train 2. epicyiclic gear train 3. compound gear train 4. simple gear train
In ideal machines, mechanical advantage is _____ velocity ratio.	1.none of these options 2.equal to 3.less than 4.greater than
In order to draw the acceleration diagram, it is necessary to determine the Coriolis component of acceleration in the case of	1. pantograph 2. crank and slotted lever quick return mechanism 3. four bar mechanism 4. slider-crank mechanism
which of the gear train is used for higher velocity ratios in small space?	1. reverted gear train 2. epicyiclic gear train 3. compound gear train 4. simple gear train
A term used to describe the concept of perfect form at MMC is	1. datum reference frame 2. the envelope principle 3. departure from MMC 4. None of the above

Questions	Choices
Which of the following is descriptive of the datum reference frame?	1. six degrees of freedom 2. located based on the functionality of the part 3. three orthogonal planes 4. all of the above
A vast majority of functional gages are made to check _____ tolerances	1. position 2. runout 3. circularity 4. flatness
In establishing datums and datum features the bottom surface of a part is called the _____ and the surface plate is called the _____.	1. datum, datum feature 2. datum feature, datum 3. datum control, datum feature 4. none of the above

Questions	Choices
Maximum material condition (MMC) is the condition with which a part will	1. weigh the least 2. weigh the most 3. have the straightest and flattest elements 4. have its largest allowable tolerance
For practical purposes, any inspection instrument will be considered as "perfect" if it is at least _____ more accurate than the part being measured.	1. 5 times 2. 10 times 3. 50 times 4. 100 times
The number of variables used in locating a part in space are referred to as	1. three degrees of freedom 2. four degrees of freedom 3. six degrees of freedom 4. eight degrees of freedom

Questions	Choices
Which symbol is used to indicate a dimension refers to the diameter of a hole?	1. R 2. O 3. Ø 4. W
In _____ dimensioning, a datum is established for each Cartesian coordinate direction.	1. baseline 2. symmetric 3. hole basis 4. none of the above
In current ANSI/ASME standards, a _____ is indicated by a 'V' shaped symbol	1. counterbore 2. datum surface 3. countersink 4. drill

Questions	Choices
A limited length or area (such as a polished end of shaft) is indicated with a _____ line.	1. hidden 2. Chain 3. Section 4. Dimension
As per standards, a blind hole dimension would have to contain which designation?	1. DP 2. THRU 3. C'BORE 4. CSK
As per standards, a clearance hole dimension would have to contain which designation?	1. DP 2. THRU 3. C'BORE 4. CSK

Questions	Choices
The _____ of an external feature is the upper limit.	1. maximum material condition 2. runnout 3. minimum material condition 4. allowance
The _____ of an internal feature is the upper limit.	1. maximum material condition 2. runnout 3. minimum material condition 4. allowance
The total amount a dimension may vary and is the difference between the maximum and minimum limits is called _____	1. tolerance 2. limits 3. fit 4. offset

Questions	Choices
The type of fit that occurs when two toleranced mating parts are sometimes an interference fit and sometimes a clearance fit when assembled.	1. intervention fit 2. clearance fit 3. transition fit 4. geometric fit
A titleblock contains all of the following information, except:	1. name and address of the company 2. parts list 3. drawing sheet size letter designation 4. drawing number
An assembly drawing normally consists of all of the following pieces, except:	1. parts drawn in their operating position 2. detail numbers of the parts 3. engineering change orders 4. bill of materials

Questions	Choices
Which fastening method uses the shape of the components to hold them together.	1. mechanical fastening 2. bonding 3. forming 4. none of the above
What is the tool used to form external threads?	1. crest 2. die 3. chamfer 4. tap
What defines the distance a screw will travel when rotated 360 degrees?	1. crest 2. root 3. pitch 4. lead

Questions	Choices
All of the following are part of the English thread specification, except:	1. thread form 2. major diameter 3. tap drill 4. class of fit
All of the following are part of a metric thread specification, except:	1. general purpose tolerance 2. pitch 3. nominal size 4. thread series
Which type of threaded fastener was designed to prevent rotation between parts?	1. bolt 2. set screw 3. stud 4. cap screw

Questions	Choices
All of the following are part of the basic weld symbol, except:	1. weld temperature 2. leader line and arrow 3. dimensions 4. tail
When constructing an assembly model using 3-D solid modeling software, the assembly model normally begins with	1.a feature 2.an instance 3.a sub component 4.a base component
In solid modeling software, defining the geometric relations between components in a 3-D assembly model is primarily done with _____ and _____ tools.	1. feature & coordinate plane 2. mate & align 3. instance & component 4. parallel & perpendicular

Questions	Choices
What is Maximum Material Condition for Hole_____and Pin_____?	1. 0.515, 0.500 2. 0.500,0.515 3. 0.515,0.495 4. 0.540,0.495
What is the LMC for Hole_____and Pin _?	1. 0.515, 0.495 2. 0.540, 0.495 3. 0.515, 0.500 4. 0.495, 0.540
What is the geometric tolerance for Hole __ and Pin _____?	1. 0.1, 0.05 2. 0.01, 0.005 3. 0.005,0.01 4. 0.1,0.5
What material condition modifier is specified in the above figure for Hole_____and Pin _?	1. MMC, LMC 2.LMC, MMC 3.MMC, MMC 4. LMC, LMC

Questions	Choices
What datum feature(s) control(s) perpendicularity for Hole _____and Pin _____?	1. A,B 2. A,A 3. B,B 4. None of the above
What datum feature(s) control(s) location for Hole _____and Pin_____?	1. B&C, B&C 2. A&C, B&C 3. B&C, A&C 4. A&C,A&C
Conventional representation of Aluminium and its alloys are illustrated as	1. 2. 3. 4.

Questions	Choices
Conventional representation of Lead, Zinc, Tin are illustrated as	1. 2. 3. 4.
Conventional representation of cork, linoleum are illustrated as	1. 2. 3. 4.
Conventional representation of a mixture of cement, sand and gravel is illustrated as	1. 2. 3. 4.

Questions	Choices
What is the conventional representation of the figure shown in figure below.	1. 2. 3. 4. None of the above
What is the conventional representation of the figure shown in figure below	1. 2. 3. 4.
What is the conventional representation of the figure shown in figure below	1. 2. 3. 4.

Questions	Choices
What is the conventional representation of the figure shown in figure below	1. 2. 3. 4.
What is the conventional representation of spur gear?	1. 2. 3. 4.
This type of section is limited by a break line:	1. Removed section 2. Revolved section 3. Broken-out section 4. Half section

Questions	Choices
If a client of yours is having difficulty visualizing a design, what type of drawing would be the easiest to understand?	1. axonometric 2. three-view orthographic 3. one-view orthographic 4. bimetric
Which of the following is not a pictorial drawing?	1. isometric 2. multiview 3. perspective 4. axonometric
In a flange coupling, the flanges are coupled together by means of	1. studs 2. bolts and nuts 3. headless taper bolts 4. none of these options.
A transmission shaft includes	1. over head shaft 2. line shaft 3.counter shaft 4.all of these options

Questions	Choices
Slenderness ratio is the ratio of	1. maximum size of column to minimum size of column 2. width of column to depth of column 3. effective length of column to least radius of gyration of the column 4. effective length of column to width of column
Each screen point is referred to as	1. Resolution 2. Pixel 3. Persistence 4. Dot Pitch
Which of the following line algorithms used integer only arithmetic to rasterize lines?	1. Bresenham's Line Algorithm 2. DDA Line Algorithm 3. FFTW Line Algorithm 4. All the answer
The purpose of refreshing a CRT is	1. To avoid flickering 2. To maintain steady picture 3. To avoid fading of pixels 4. All the answer

Questions	Choices
Which of the following is not an object-space hidden surface removal algorithm?	1. Back-Face Culling 2. Depth Buffer 3. Painter's Algorithm 4. All the answer
CAD programs which incorporate parametric modeling utilize a system in which the dimensions control the _____.	1. colouring 2. size and shape of the model features 3. perspective of the model 4. shading used to render the model
During the execution of a CNC part program block NO20 G02 X45.0 Y25.0 R5.0 the type of tool motion will be	1. linear Interpolation 2. circular Interpolation - counter clockwise 3. circular Interpolation – clockwise 4. rapid feed
The default position of the UCS icon is positioned at _____ on the AutoCAD grid.	1. 0,0,0 2. 10,10,10 3. 20,20,20 4. -10,-10,-10
CAD programs which incorporate parametric modeling utilize a system in which the dimensions control the _____.	1. colouring 2. size and shape of the model features 3. perspective of the model 4. shading used to render the model
The advantage of implementing CAD is to	1. Expertise in the area of data base manufacturing management 2. Increase productivity 3. Improve communication 4. Increase quality of design

Questions	Choices
In a CNC machine tool, encoder is used to sense and control	1. spindle speed 2. table velocity 3. spindle position 4. coolant flow
Interpolation in the controller refers to control of which one of the following in a CNC machine?	1. Loading/unloading of jobs on machine 2. Axes of machine for contouring 3. Coolant and miscellaneous functions on machine 4. Loading/unloading of tools from the tool changer
Feed drives in CNC milling machines are provided by	1. synchronous motors 2. induction motors 3. stepper motors 4. servo-motors.
During the execution of a CNC part program block NO20 G02 X45.0 Y25.0 R5.0 the type of tool motion will be	1. linear Interpolation 2. circular Interpolation - counter clockwise 3. circular Interpolation – clockwise 4. rapid feed
The basic transformations include	1. Translation 2. Rotation 3. Scaling 4. All the answer

Questions	Choices
The transformation in which an object is moved in a minimum distance path from one position to another is called	1. Rotation 2. Replacement 3. Translation 4. Scaling
Forming products of transformation matrices is often referred as	1. Concatenation 2. Composition 3. both a&b 4. only a
The ..... combines the volumes occupied by overlapping 3D objects using set operations	1. CSG method 2. B-rep method 3. Sweep representation 4. All the answer

Questions	Choices
..... is created by revolution of a circle about an axis lying in its plane.	1. Sphere 2. Ellipsoid 3. Torus 4. Cylinder
The point about which an object is rotated is called	1. Fixed point 2. Central point 3. Pivot point 4. None
A surface of revolution is generated by a ..... of a 2D curve.	1. Translational sweep 2. Rotational sweep 3. union 4. intersection

Questions	Choices
Identify line clipping algorithms from the following	1. Cohen- Sutherland algorithm 2. Liang-Barsky clipping 3. Nicholl-Lee-Nicholl clipping 4. All the answer
The transformation in which the dimension of an object are changed relative to a specified fixed point is called	1. Rotation 2. Reflection 3. Translation 4. Scaling
With incremental tool positioning, ____.	1. each tool movement is made with reference to the last tool position 2. all tool movement is measured from a fixed point or origin 3. all tool movement is measured from a zero point 4. No tool Movement

Questions	Choices
By using CIM to control all phases of manufacturing, firms hope to reap what benefits?	1. Increased productivity 2. Improved quality 3. Enhanced flexibility 4. All of the answer
Which type of model is likely to be created with a rapid prototyping system?	1. Mathematical model 2. Wireframe model 3. Surface model 4. Scale model
Which of the following process technologies is associated with low volume and high variety?	1. Flexible manufacturing systems 2. Dedicated systems 3. Flexible transfer lines 4. Computer numerically controlled machines

Questions	Choices
Which of the following is not true of computer numerically controlled (CNC) machines?	1. They can 'learn' from process errors. 2. They can eliminate operator error. 3. They can give better productivity to the process. 4. They give more accuracy and precision to the process.
A sliding bearing which can support steady loads without any relative motion between the journal and the bearing is called	1. Zero film bearing 2. boundary lubricated bearing 3. Hydrodynamic lubricated bearing 4. hydrostatic lubricated bearing
In a boundary lubricated bearing, there is a ..... of lubricant between the journal and the bearing	1. Thick film 2. thin film 3. zero film 4. solid film

Questions	Choices
When the bearing is subjected to large fluctuations of load and heavy impacts, the bearing characteristic number should be ..... the bearing modulus.	1. 5 times 2. 10 times 3. 15 times 4. 20 times
If Z = Absolute viscosity of the lubricant in kg/m-s, *N* = Speed of the journal in r.p.m., and *p* =Bearing pressure in N/mm^2, then the bearing characteristic number is	1. Zp/n 2. Zn/p 3. Z/pn 4. pn/Z
The ball bearings are usually made from	1. Low carbon steel 2. medium carbon steel 3. high speed steel 4. chrome nickel steel

Questions	Choices
In radial bearings, the load acts	1. Along the axis of rotation 2. parallel to the axis of rotation 3. Perpendicular to the axis of rotation 4. in any direction
When the length of the journal is less than the diameter of the journal, then the bearing is said to be a	1. short bearing 2. long bearing 3. long bearing 4. square bearing
The angular contact ball bearing can be used for	1. Radial load only 2. axial load only 3. both radial and axial loads 4. to adjust for misalignments

Questions	Choices
A bearing is designated by the number 305. It means that a bearing is of	1. Light series with bore of 25 mm 2. medium series with bore of 25 mm 3. Heavy series with bore of 25 mm 4. extra light series with width of 25 mm
The spherical roller bearing can be used for	1. Radial load only 2. axial load only 3. both radial and axial loads 4. to adjust for misalignments
If the centre distance of the mating gears having involute teeth is increased, then the pressure angle	1. increases 2. decreases 3. remains unchanged 4. none of these

Questions	Choices
Lewis equation in spur gears is applied	1. only to the pinion 2. only to the gear 3. to stronger of the pinion or gear 4. to weaker of the pinion or gear
In helical gears, the distance between similar faces of adjacent teeth along a helix on the pitch cylinders normal to the teeth, is called	1. normal pitch 2. axial pitch 3. diametral pitch 4. Module
The root angle of a bevel gear is equal to	1. pitch angle – addendum angle 2. pitch angle + addendum angle 3. pitch angle – dedendum angle 4. pitch angle + dedendum angle

Questions	Choices
The contact ratio for gears is	1. zero 2. less than one 3. greater than one 4. none of these
The allowable static stress for steel gears is approximately _____of the ultimate tensile stress.	1. one-fourth 2. one-third 3. one-half 4. double
When bevel gears having equal teeth and equal pitch angles connect two shafts whose axes intersect at right angle, then they are known as	1. angular bevel gears 2. crown bevel gears 3. internal bevel gears 4. mitre gears

Questions	Choices
When the spiral angle of a bevel gear is zero, it is called as_____	1. crown gear 2. zero bevel gear 3. meter gear 4. spiral bevel gear
The property of a bearing material which has the ability to accommodate small particles of dust, grit etc., without scoring the material of the journal, is called	1. bondability 2. embeddability 3. comformability 4. fatigue strength
The material used for lining of friction surfaces of a clutch should have ..... coefficient of friction.	1. low 2. high 3. medium 4. Zero

Questions	Choices
In case of a multiple disc clutch, if n_1 are the number of discs on the driving shaft and n_2 are the number of the discs on the driven shaft, then the number of pairs of contact surfaces will be	1. $n_1 + n_2$ 2. $n_1 + n_2 - 1$ 3. $n_1 + n_2 + 1$ 4. none of these
A jaw clutch is essentially a	1. positive action clutch 2. cone clutch 3. friction clutch 4. disc clutch
Total slip will occur in a belt drive when	1. angle of rest is zero 2. angle of creep is greater than angle of rest 3. angle of rest is greater than angle of creep 4. angle of creep is zero

Questions	Choices
The basic load rating of a ball bearing is	1. the maximum static radial load that can be applied without causing any plastic deformation of bearing components. 2. the radial load at which 90% of the group of apparently identical bearings run for one million revolutions before the first evidence of failure. 3. the maximum radial load that can be applied during operation without any plastic deformation of bearing components. 4. a combination of radial and axial loads that can be applied without any plastic deformation.
The difference between tensions on the tight and slack sides of a belt drive is 3000 N. if the belt speed is 15 m/s, the transmitted power in kW is	1. 45 2. 22.5 3. 90 4. 100

Questions	Choices
The ratio of tension on the tight side to that on the slack side in a flat belt drive is	1. proportional to the product of coefficient of friction and lap angle 2. an exponential function of the product of coefficient of friction and lap angle 3. proportional to the lap angle 4. proportional to the coefficient of friction
A 1.5 kW motor is running at 1440 rev/min, it is to be connected to a stirrer running at 36 rev/min. The gearing arrangement suitable for this application is	1. Differential gear 2. helical gear 3. spur gear 4. worm gear
The property of a material which enables it to resist fracture due to high impact loads is known as	1. Elasticity 2. endurance 3. strength 4. Toughness

Questions	Choices
If a load W is applied instantaneously on a bar, then the stress induced in bar will	1. Be independent of ration of mass of load W to mass of bar (γ) 2. increase with increase in γ 3. decrease with decrease in γ 4.dependent on other considerations
If a material fails below its yield point, failure would be due to	1. Straining 2. fatigue 3. creep 4. impact loading
In testing a material for endurance strength, it is subjected to	1. Static load 2. dynamic load 3. impact load 4. completely reversed load

Questions	Choices
Guest's theory of failure is applicable for following type of materials	1. Brittle 2. ductile 3. elastic 4. plastic.
With the percentage increase of carbon in steel	1. Strength of steel decreases 2. hardness of steel decrease 3. brittleness of steel decrease 4. ductility of steel decrease
The maximum percentage of carbon content in cast iron is _____.	1. 2% 2. 6.67% 3. 5% 4. 4.8 %

Questions	Choices
In most machine members, the damping capacity of the material should be	1. Low 2. zero 3. high 4. could be anything
Stress concentration is caused due to	1. variation in properties of material from point to point in a member 2.areas at which loads on a member are applied 3. Abrupt change of section 4. all of the above.
Resilience of a material is important, when it is subjected to	1. Fatigue 2. thermal stress 3. wear and tear 4. shock loading.

Questions	Choices
Factor of safety is the ratio of	1. Yield stress / working stress 2. tensile stress / working stress 3. compressive stress / working stress 4. bearing stress / working stress.
Slow plastic deformation of metals under a constant stress is known as	1. Creep 2. fatigue 3. endurance 4. Plastic deformation
Two solid circular shafts of radii $R1$ and $R2$ are subjected to same torque. The maximum shear stresses developed in the two shafts are 1 t and 2 t . If $R1/R2=2$, then 2 t / 1 t is _____.	1. 10 2. 8 3. 15 4. 20

Questions	Choices
A solid circular shaft of 60 mm diameter transmits a torque of 1600 N.m. The value of maximum shear stress developed is	1. 37.72 MPa 2. 47.72 MPa 3. 57.72 MPa 4. 67.72 MPa
A solid shaft of diameter, d length and length L is fixed at both ends. Aa torque, T_0 is applied at a distance L/4 from the left end. The maximum shear stress in the shaft is	1. $16T_o / \pi d^3$ 2. $12T_o / \pi d^3$ 3. $8T_o / \pi d^3$ 4. $4T_o / \pi d^3$
A solid circular shaft needs to be designed to transmit a torque of 50 Nm. If the allowable shear stress of the material is 140 MPa, assuming a factor of safety of 2, the minimum allowable design diameter in mm is	1. 8 mm 2. 16 mm 3. 24 mm 4. 32 mm

Questions	Choices
The piston rod and the crosshead in a steam engine are usually connected by means of	1. Cotter joint 2. Knuckle joint 3. Ball joint 4. Universal joint
Square key of side "d/4" each and length *l* is used to transmit torque "T" from the shaft of diameter "d" to the hub of a pulley. Assuming the length of the key to be equal to the thickness of the pulley, the average shear stress developed in the key is given by	1. 4T/Id 2. 16T/Id ^{2} 3. 8T/Id ^{2} 4. 16T/Id ^{3}
A 60 mm long and 6 mm thick fillet weld carries a steady load of 15 kN along the weld. The shear strength of the weld material is equal to 200 MPa. The factor of safety is	1. 2.4 2. 3.4 3. 4.8 4. 6.8

Questions	Choices
A spur gear transmitting power is connected to the shaft with a key of rectangular section. The type (s) of stresses developed in the key is fare.	1. Shear stress alone 2. bearing stress alone 3. Both shear and bearing stresses 4. shearing, bearing and bending stresses .
In a fillet welded joint, the weakest area of the weld is	1. Toe 2. root 3. throat 4. Face
A double fillet welded joint with parallel fillet weld of length L and leg B is subjected to a tensile force P. Assuming uniform stress distribution, the shear stress in the weld is given by	1. 2P/ B.L 2. P/3.B.L 3. P/2.B.L 4. 3P/ B.L

Questions	Choices
The bolts in a rigid flanged coupling connecting two shafts transmitting power are subjected to	1. Shear force and bending moment 2. axial force 3. Torsion and bending moment 4. Torsion
A clutch has outer and inner diameters 100 mm and 40 mm respectively. Assuming a uniform pressure of 2 MPa and coefficient of friction of liner material 0.4, the torque carrying capacity of the clutch is	1. 148 Nm 2. 196 Nm 3. 372 Nm 4. 490 Nm
Total slip will Occur in a belt drive when	1. Angle of rest is zero 2. Angle of creep is zero 3. Angle of rest is greater than angle of creep 4. Angle of creep is greater than angle of rest

Questions	Choices
Which one of the following is not a friction clutch?	1. Disc or plate clutch 2. Cone clutch 3. Centrifugal clutch 4. Jaw clutch
Which one of the following belts should not be used above 40°C?	1. Balata belt 2. Rubber belt 3. Fabric belt 4. Synthetic belt
Which type of gear is used for shaft axes having an offset?	1. Mitre gears 2. Spiral bevel gears 3. Hypoid gears 4. Zerol gears

Questions	Choices
When two shafts are neither parallel nor intersecting, power can be transmitted by using	1. A pair of spur gears 2. a pair of helical gears 3. An Oldham's coupling 4. a pair of spiral gears
In the formulation of Lewis equation for toothed gearing, it is assumed that tangential tooth load F_t, acts on the	1. Pitch point 2. tip of the tooth 3. Root of the tooth 4. whole face of the tooth
If reduction ratio of about 50 is required in a gear drive, then the most appropriate gearing would be	1. spur gears 2. bevel gears 3. Double helical gears 4. worm and worm wheel

Questions	Choices
The shearing area of a key of length 'L', breadth 'b' and depth 'h' is equal to	1. b x h 2. Lx h 3. Lx b 4. Lx (h/2)
Consider the following statements: A splined shaft is used for 1. Transmitting power 2. Holding a flywheel rigidly in position 3. Moving axially the gear wheels mounted on it 4. Mounting V-belt pulleys on it. Of these statements	1. 2 and 3 are correct 2. 1 and 4 are correct 3. 2 and 4 are correct 4. 1 and 3 are correct
In the welded joint shown in the given figure, if the weld at B has thicker fillets than that at A, then the load carrying capacity P, of the joint will	1. increase 2. decrease 3. remain unaffected 4. exactly get doubled

Questions	Choices
Which of the following stresses are associated with the design of pins in bushed pin-type flexible coupling? 1. Bearing stress 2. Bending stress 3. Axial tensile stress 4. Transverse shear stress Select the correct answer using the codes given below	1. 1, 3 and 4 2. 2, 3 and 4 3. 1, 2 and 3 4. 1, 2 and 4
The angle of twist for a transmission shaft is inversely proportional to	1. Shaft diameter 2. (Shaft diameter)^2 3. (Shaft diameter)^3 4. (Shaft diameter)^4
A muff coupling is	1. rigid coupling 2. flexible coupling 3. shock absorbing coupling 4. none of these

Questions	Choices
The maximum shear stress in the spring is induced at	1. inner surface of the coil 2. outer surface of the coil 3. central surface of the coil 4. end coils
When a helical spring is cut into two halves, the stiffness of each spring will be	1. same as original spring 2. double of original spring 3. half of original spring 4. one fourth of original spring
Fatigue failure results due to fluctuating stresses when the stress magnitude is	1. more than ultimate tensile strength 2. more than yield strength but lower than the ultimate tensile strength 3. lower than yield strength 4. none of these

Questions	Choices
Rankine theory of failure is applicable to	1. ductile materials 2. elastic materials 3. brittle materials 4. plastic materials
Distortion energy theory of failure is applicable to	1. component made of plain carbon steel 2. component made of composites 3. component made of cast iron 4. component made of non-metals
Griffith's law states that fracture strength brittle material is	1. directly proportional to the square root of the crack length 2. inversely proportional to the square root of the crack length 3. directly proportional to the square of the crack length 4. inversely proportional to the square of the crack length

Questions	Choices
Flat head rivets are used in	1. ship hulls 2. light sheet metal work 3. structural work 4. air conditioning ducts
Maximum shear stress theory is used for	1. cast iron shafts 2. steel shafts 3. flexible shafts 4. plastic shafts
Resilience of a material is important, when it is subjected to	1. Fatigue 2. thermal stress 3. wear and tear 4. shock loading

Questions	Choices
Stress concentration in static loading is more serious in	1. Ductile materials 2. brittle materials 3. equally serious in both cases 4. unpredictable
Bushed pin flexible coupling is used to joint two shafts which	1. have lateral misalignment. 2. whose axes intersect at a small angle 3. are not in exact alignment 4. all of the above
The sleeve or muff coupling is designed as a	1. thin vessel. 2. solid shaft. 3. hollow shaft. 4. continuous shaft.

Questions	Choices
Following type of pipe joint is mostly used for pipes carrying water at low pressures	1. socket. 2. union. 3. spigot and socket. 4. sleeve and cotter.
For two parallel shafts, the distance between whose axes is small and variable, which coupling will you use?	1. hydraulic coupling 2. universal coupling 3. flange coupling 4. oldham's coupling.
The trap end of the a connecting rod of steam engine is joined by	1. gib of cotter joint 2. sleeve and cotter joint 3. knuckle joint 4. universal joint

Questions	Choices
Which of the following pipe joints would be suitable for pipes carrying steam	1. flanged 2. threaded 3. bell & spigot 4. expansion joint
Universal coupling is used to join two shafts	1. have lateral misalignment. 2. whose axes intersect at a small angle 3. are not in exact alignment. 4. all of the above
The most important dimension in the design of nut is	1. outside diameter of nut 2. inside diameter 3. height 4. pitch diameter.

Questions	Choices	
The valve rod in a steam engine is connected to an eccentric rod by	1. cotter joint 2. bolted joint 3. knuckle joint 4. universal coupling	
Strain energy is the	1. energy stored in a body when strained within elastic limits	
The object of caulking in a riveted joint is to make the joint	1.free from corrosion 2.stronger in tension 3.free from stresses 4.	lea k- pro of
A steel bar of 5 mm is heated from 15° C to 40° C and it is free to expand. The bar Will induce	1.no stress 2.shear stress 3.tensile stress 4.compressive stress	

Questions	Choices
A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress will be	1. 400 MPa 2.500 MPa 3.900 MPa 4.1400 MPa
A body is subjected to a tensile stress of 1000 MPa on one plane and another tensile stress of 500 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 250 MPa on the same planes. The maximum normal stress will be	1. 1000 MPa 2. 1100 MPa 3. 1200 MPa 4. 1300 MPa
A body is subjected to a tensile stress of 1000 MPa on one plane and another tensile stress of -1000 MPa on a plane at right angles to the former. It is also subjected to no shear stress on any planes. The maximum shear stress will be	1. 250 MPa 2. 500 MPa 3. 750 MPa 4. 1000 MPa
CAD programs which incorporate parametric modeling utilize a system in which the dimensions control the _____.	1. colouring 2. size and shape of the model features 3. perspective of the model 4. shading used to render the model

Questions	Choices
CAD programs which incorporate parametric modeling utilize a system in which the dimensions control the _____.	1. colouring 2. size and shape of the model features 3. perspective of the model 4. shading used to render the model
Which of the following operating systems is used with CAD systems?	1. LINUX 2. all the answers 3. UNIX 4. DOS
With incremental tool positioning, ____.	1. each tool movement is made with reference to the last tool position 2. all tool movement is measured from a fixed point or origin 3. all tool movement is measured from a zero point 4. No tool Movement

Questions	Choices
The point-to-point NC movement system ____.	1. permits controlled tool travel along one axis at a time 2. is used for operations performed at a fixed location in terms of a two-axis coordinate position 3. precisely controls machine and tool movement at all times and in all planes 4. All the answers
A straight-cut system ____.	1. permits controlled tool travel along one axis at a time 2. is used for operations performed at a fixed location in terms of a two-axis coordinate position 3. precisely controls machine and tool movement at all times and in all planes 4. permits controlled tool travel along three axis at a time

Questions	Choices
When the contour or continuous path system is used, ____.	1. tool travel is controlled along one axis at a time 2. machine and tool movements are precisely controlled at all times and in all planes 3. tool movement from one point to the next does not have to follow a specific path 4. No movement of tool
With contour or continuous path NC movement system, ____.	1. cutter size and other variables must be considered when the program is prepared 2. cutter location is monitored continuously 3. cutting is continuous and can be in six axes simultaneously 4. All of the answers
In a CAD package, mirror image of a 2D point P (5, 10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be	1. (7.5, 5) 2. (10, 5) 3. (7.5, -5) 4. (10, -5)

Questions	Choices
The shape of the Bezier curve is controlled by:	1. Control points 2. Knots 3. End points 4. All of the answers
The degree of the B-spline with varying knot vectors:	1. Increases with knot vectors 2. Decreases with knot vectors 3. Remains constant 4. No influence with knot vectors
IGES stands for	1. Initial Graphics Exchange System 2. Initial Graphics Exchange Software 3. Initial Graphic Exchange Solution 4. Initial Graphics Exchange Specification

Questions	Choices
B-Rep is a methods of _____	1. Solid modeling 2. Surface modeling 3. Wire frame modeling 4. 2D modeling
The tool of an NC machine has to move along a circular arc from (5, 5) to (10,10) whileperforming an operation. The centre of the arc is at (10, 5). Which one of the following NC tool path commands performs the above mentioned operation?	1. N010G02 X10 Y10 X5 Y5 R5 2. N010G03 X10 Y10 X5 Y5 R5 3. N010G01 X5 Y5 X10 Y10 R5 4. N010G02 X5 Y5 X10 Y10 R5
What are the main components of an NC machine? 1. Part program 2. Machine Control Unit 3. Servo meter	1. 1, 2 and 3 2. 1 and 2 only 3. 2 and 3 only 4. 1 and 3 only

Questions	Choices
Which of the following are the rules of programming NC machine tools in APT language? 1. only capital letters are used 2. A period is placed at the end of each statement 3. Insertion of space does not affect the APT word	1. 1 and 2 2. 2 and 3 3. 1and 3 4. 1 alone
Which of the following are valid statements for point to point motion of the tool in APT language? 1. GOTO/..... 2. GO DLTA/..... 3. GO/TO, …….	1. 1 and 2 2. 2 and 3 3. 1 and 3 4. 1, 2 and 3
The stress induced in a body, when suddenly loaded, is _____ the stress induced when the same load is applied gradually.	1.equal to 2. one-half 3.twice 4.four times

Questions	Choices
The bending moment at a point on a beam is the algebraic _____ of all the moments on either side of the point.	1. sum 2. difference 3. multiplication 4. Division
The deformation per unit length is called	1.tensile stress 2.compressive stress 3.shear stress 4.strain
A thin cylindrical shell of diameter (d) and thickness (t) is subjected to an internal pressure (p). The ratio of longitudinal strain to volumetric strain is	1. $\frac{m-1}{2m-1}$ 2. $\frac{2m-1}{m-1}$ 3. $\frac{m-2}{3m-4}$ 4. $\frac{m-2}{5m-4}$

Questions	Choices	
In the torsion equation $\frac{T}{J} = \frac{\tau}{R} = \frac{C\theta}{l}$ the term J/R is called	1.shear modulus 2.section modulus 3.polar modulus 4. Young's modulus	
Strain resetters are used to	1.measure shear strain 2.measure linear strain 3.measure volumetric strain 4. relieve strain	
The torque transmitted by a solid shaft of diameter (D) is (where τ = Maximum allowable shear stress)	1.	$\frac{\pi}{4}$ x τ x D^3
When a rectangular cantilever beam is loaded transversely, the maximum compressive stress is developed on the	1.top layer 2.bottom layer 3.neutral axis 4.every cross-section	

Questions	Choices
When a rectangular simply supported beam is loaded transversely, the maximum compressive stress is developed on the	1.every cross-section 2.bottom layer 3.neutral axis 4.top layer
When a rectangular cantilever beam is loaded transversely, the maximum tensile stress is developed on the	1.top layer 2.bottom layer 3.neutral axis 4.every cross-section
When a machine member is subjected to torsion, the torsional shear stress set up in the member is	1. zero at the centroidal axis and maximum at the outer surface of the member 2. maximum at the centroidal axis and zero at the outer surface of the member 3. maximum at both the centroidal axis and outer surface of the member 4. zero at both the centroidal axis and outer surface of the member
A shaft is subjected to fluctuating loads for which the normal torque (T) and bending moment (M) are 1000 N-m and 500 N-m respectively. If the combined shock and fatigue factor for bending is 1.5 and combined shock and fatigue factor for torsion is 2, then the equivalent twisting moment for the shaft is	1.2050 N-m 2.2136 N-m 3.2000 N-m 4.2100 N-m

Questions	Choices
The value of stress concentration factor depends upon	1. material of the part 2. geometry of the part 3. material and geometry of the part 4. none of these options
Stress concentration is caused due to	1. abrupt change of cross-section 2. variations in properties of materials in a member 3. variations in load acting on a member 4. all of these options
When a machine member is subjected to torsion, the torsional shear stress set up in the member is	1. zero at the centroidal axis and maximum at the outer surface of the member 2. maximum at the centroidal axis and zero at the outer surface of the member 3. maximum at both the centroidal axis and outer surface of the member 4. zero at both the centroidal axis and outer surface of the member
The strain energy stored in a spring, when subjected to maximum load, without suffering permanent distortion, is known as	1. impact energy 2. modulus of resilience 3. proof resilience 4. proof stress
A rod of length L having uniform cross-sectional area A is subjected to a tensile force P. If the Young's modulus of the material varies linearly from E1 to E2 (Given that; E1>E2) along the length of the rod, the normal stress developed at the mid section of the beam is	1. [P(E1-E2)]/[A(E1+E2)] 2. PE2/AE1 3. P/A 4. PE1/AE2
The bending stress in a beam is _____ section modulus.	1. directly proportional to 2. not directly proportional to 3. not inversely proportional to 4. inversely proportional to

Questions	Choices
Two identical circular rods of same diameter and same length are subjected to same magnitude of axial tensile force. One of the rods is made out of mild steel having the modulus of elasticity of 206 GPa. The other rod is made out of cast iron having the modulus of elasticity of 100 GPa. Assume both the materials to be homogeneous and isotropic and the axial force causes the same amount of uniform stress in both the rods. The stresses developed are within the proportional limit of the respective materials. Which of the following observations is correct?	1. As the stresses are equal strains are also equal in both the rods 2. Mild steel rod elongates more than the cast iron rod 3. Both rods elongate by the same amount 4. Cast iron rod elongates more than the mild steel rod
In a sample of water an increase of pressure by 18 MN/m^2 caused 1% reduction in the volume. The bulk modulus of elasticity of this sample, in MN/m^2 is	1. 1.8 2. 180 3. 1800 4. 0.18
If the principal stresses in a plane stress problem, are 100MPa, and 40MPa, the magnitude of the maximum shear stress (in MPa) will be	1. 20 MPa 2. 10 MPa 3. 40 MPa 4. 30 MPa
Which of these factors doesn't affect the stress of a wire?	1. diameter 2. load 3. original length 4. cross sectional area
Stress concentration is caused due to	1. variation in properties of material from point to point in a member 2. abrupt change of section 3. pitting at points or areas at which loads on a member are applied 4. all of these
Which of the following is not a basic type of strain?	1. Shear strain 2. Volume strain 3. Compressive strain 4. Area strain

Questions	Choices
Which bearing is best for space constraint?	1. journal bearing 2. needle bearing 3. roller bearing 4. thrust bearing
A thin cylinder of inner radius 500mm and thickness 10mm is subjected to an internal pressure of 5MPa. The average circumferential (hoop) stress in MPa is	1. 750 2. 500 3. 250 4. 1000
A disk clutch is required to transmit 5 kW at 2000 rpm. The disk has a friction lining with coefficient of friction equal to 0.25. Bore radius of friction lining is equal to 25 mm. Assume uniform contact pressure of 1 MPa. The value of outside radius of the friction lining is	1. 39.4 mm 2. 49.5 mm 3. 97.9 mm 4. 142.9 mm
When shear force at a point is zero, then bending moment is _____ at that point.	1. zero 2. minimum 3. maximum 4. infinity
A clutch has outer and inner diameters 100 mm and 40 mm respectively. Assuming a uniform pressure of 2MPa and coefficient of friction of liner material is 0.4, the torque carrying capacity of the clutch is	1. 148 N m 2. 196 N m 3. 372 N m 4. 490 N m

Questions	Choices
The clutch used in scooter is	1. multi plate clutch 2. single plate clutch 3. centrifugal clutch 4. cone clutch
Match List-I with List-II and select the correct answer using the codes given below the lists: List-I List-II A. Single-plate friction clutch 1. Scooters B. Multi-plate friction clutch 2. Rolling mills C. Centrifugal clutch 3. Trucks D. Jaw clutch 4. Mopeds	1. 1 3 4 2 2. 1 3 2 4 3. 3 1 2 4 4. 3 1 4 2
The commonly used angle between leather or asbestos friction lining surface and axis of cone clutch for a cone clutch is	1. 14.5 2. 20 3. 12.5 4. 45

Questions	Choices
In a band brake the ratio of tight side band tension to the tension on the slack side is 3. If the angle of overlap of band on the drum is180^{o}, the coefficient of friction required between drum and the band is	1. 0.20 2. 0.25 3. 0.30 4. 0.35
In block brakes, the ratio of shoe width and drum diameter is kept between	1. 0.1 to 0.25 2. 0.25-0.50 3. 0.50-0.75 4. 0.75-1.0
Fabric belts are used in industrial applications because	1. they are cheap 2. they can work at high temperature 3. they are unaffected by moisture and humidity 4. none of the above

Questions	Choices
The power transmitted by the belt drive can be increased by	1. increasing the initial tension in the belt 2. dressing the belt to increase the coefficient of friction 3. increasing wrap angle by using idler pulley 4. all of the above methods
In a 6×20 wire rope, No.6 indicates the	1. diameter of the wire rope in mm 2. Number of strands in the wire rope 3. Number of wires 4. Gauge number of the wire
In a flat belt drive the belt can be subjected to a maximum tension T and centrifugal tension Tc . What is the condition for transmission of maximum power?	1. T=Tc 2. T=4Tc 3. T=2Tc 4. T=3Tc

Questions	Choices
Interference between the teeth of two meshing involute gears can be reduced or eliminated by 1. Increasing the addendum of the gear teeth and correspondingly reducing the addendum of the pinion. 2. Reducing the pressure angle of the teeth of the meshing gears. 3. Increasing the centre distance Which of the statements given above is/are correct?	1. 1 and 2 2. 2 and 3 3. 1 only 4. 3 only
Match List-I with List-II and select the correct answer using the codes given below the lists: List-I List-II A. Undercutting 1. Beam strength B. Addendum 2. Interference C. Lewis equation 3. Large speed reduction D. Worm and wheel 4. Intersecting axes 5. Module	1. 2 5 1 3 2. 1 5 4 3 3. 1 3 4 5 4. 2 3 1 5
The dynamic load capacity of 6306 bearing is 22 kN. The maximum radial load it can sustain to operate at 600 rev/min, for 2000 hours is	1. 4.16 kN 2. 3.60 kN 3. 6.25 kN 4. 5.29 kN

Questions	Choices
In sliding contact bearings, a positive pressure can be built up and a load supported by a fluid only by the use of a:	1. Diverging film 2. Converging-diverging film 3. Converging film 4. Flat film
Assertion (A): In hydrodynamic journal bearings, the rotating journal is held in floating condition by the hydrodynamic pressure developed in the lubricant. Reason (R): Lubricant flows in a converging-diverging channel.	1. Both A and R are individually true and R is the correct explanation of A 2. Both A and R are individually true but R is not the correct explanation of A 3. A is true but R is false 4. A is false but R is true
The steering of a ship means	1. movement of a complete ship up and down in vertical plane about transverse axis 2. turning of a complete ship in a curve towards right or left, while it moves forward 3. tilting of a complete ship 4. rolling of a complete ship side-ways

Questions	Choices
What are the upper and lower limits of the shaft represented by 60f8? Use the following data Diameter step is 50 - 80mm. Fundamental tolerance unit i=0.45D^(1/3) + 0.001D, where D is the representative size in mm, Tolerance value for IT8 = 25i, Fundamental deviation for f shaft = -5.5D^0.41	1. Upper and lower limits = 59.97mm 2. LOwer limit = 59.924mm Upper limit = 60.000mm 3. Upper limit = 60.046mm Lower limit = 59.970 4. None of the answers are correct
What does N, P and L mean in N.P.L. Gauge interferometer?	1. Nikon pulsed laser 2. Nuclear plasma laboratory 3. National Physics Laboratory 4. Nuclear physics laboratory
According to Taylor's principle which type of gauge checks both size and geometric features?	1. GO gauge 2. NOGO gauge 3. Snap gauge 4. None of the options are correct

Questions	Choices
What effect does pitch error have on nut and bolt?	1. Major diameter of nut decreases and effective diameter of bolt increases 2. Effective diameter of nut decreases and effective diameter of bolt increases 3. Effective diameter of nut increases and effective diameter of bolt decreases 4.None of the options are correct
What is ten point height method?	1. It is the average sum of ten highest points measured within sampling length 2. It is the average difference of five highest points and five deepest valleys measured within sampling length 3. It is the sum of ten highest points divided by sum of ten deepest valleys measured within sampling length 4. None of the options are correct
Which type of surface in a fringe pattern exhibits the movement of fringes towards the centre?	1. Convex 2. Concave 3. Flat 4. Circular

Questions	Choices
At which angle does a glass plate reflector set in N.P.L. interferometer?	1. 45 degrees 2. 90 degrees 3. 35.5 degrees 4. 85.5 degrees
Which type of deviation is observed while calculating hole dimensions?	1. positive 2. Negative 3. Zero 4. All the options are correct
The snap gauge having go dimension corresponds to _____	1. MMC 2. MMMC 3. LMC 4. LMMC

Questions	Choices
Find the missing term in the equation which represents the standard tolerance unit.	1. 0.005D 2. 0.001D 3. 0.056D 4. 0.0012D
As the size of a part to be manufactured increases, the tolerance limits within which the part can be manufactured _____	1. increases 2. decreases 3. remains unaltered 4. None of the options are correct
What description of fit suits the vacant box?	1. Normal running fit 2. loose fit 3. tight fit 4. interference fit

Questions	Choices
Describe the fit in relation to the following data	1.Slight clearance 2. No clearance 3. Slightly tight 4. none of the options are correct
What type of fit does the following description represent?	1. Clearance fit 2. transition fit 3. Interference fit 4. wide fit
What is the value of the fundamental tolerance unit"i" for the shaft and hole pair designated by	1. 0.7327micro meter 2. 0.7327milli meter 3. 0.3727micro meter 4. 0.3727milli meter

Questions	Choices
The figure given below represents the disposition of tolerance zone around the zero line Find the Min. Clearance and Max. Clearance	1. Min. Clearance 24 micrometer and Max. Clearance 4 micrometer 2. Min. Clearance 24 mm and Max. Clearance 4 mm 3. Max. Clearance 24 micrometer and Min. Clearance 4 micrometer 4. Min. Clearance 42 mm and Max. Clearance 24 mm
Internal diameter of any workpiece can be measured using _____	1. Solex pneumatic comparator 2. Sigma comparator 3. Johansson microcator 4. None of these options
Which among the following is measured using four ball method?	1. Diameter 2. Length 3. angle 4. Radius

Questions	Choices
Match the following Group 1 items (Type of error) with Group 2 items (characteristics) and select the correct option **1. Gross error ----------A. Magnitude and direction vary** **2. Systematic error ----------B. Caused by electrostatic fields** **3. Random error ----------C. Human fault** **4. Environmental error ----------D. Magnitude and direction are definite**	1. 1-B, 2-A, 3-D, 4-C 2. 1-A, 2-C, 3-D, 4-B 3. 1-C, 2-D, 3-A, 4-B 4. 1-D, 2-A, 3-B, 4-C
Which of the following is a characteristic of End standard?	1. accuracy of ± 0.2 mm 2. the accuracy of ± 0.050 mm 3. accuracy of ± 0.001 mm 4. accuracy of ± 1.00 mm
Which ISO standard is used in international automobile companies to set automotive quality system standards ?	1. ISO 14000 2. TS 16949 3. TSISO 9000 4. None of the options are correct

Questions	Choices
ISO 14000 quality standard is related with	1. Eliminating poor quality 2. Environmental management systems 3. Automotive quality standards 4. Customer satisfaction
Which of the following is a contact type of automated inspection method?	1. Laser scanning 2. Electric field 3. Inspection probe 4. None of the options are correct
Which of the following statements is true?	1. In three wire method, each flank of a thread is touched by a wire in axial plane section and this is valid only for a thread having rank angle 2. Compression error is always subtracted from effective diameter value obtained 3. The value of θ is assumed 30^{o} while calculating best wire diameter for Whitworth thread 4. Floating carriage type of micrometer is used for two wire method

Questions	Choices
Calculate diameter of best wire for a Withworth thread of M 24 x 7 mm size.	1. 3.94mm 2. 4.94mm 3. 2.03mm 4. 8.68mm
Which of the following methods is <u>unreliable</u> to evaluate the surface finish?	1. Electrical stylus profilometer 2. Wallace surface dynamometer 3. Profilograph 4. Tomlinson surface tester
Which principle does Taylor-Hobson-Talysurf tester work on?	1. Capacitive demodulating principle 2. Intensity modulating principle 3. Inductive modulating principle 4. Carrier modulating principle

Questions	Choices
Which type of light source is used in N.P.L. type of flatness interferometer?	1. Mercury nickel vapour lamp 2. Cadmium and mercury vapour lamp. It depends on the type of the specimen 3. Cadmium lamp 4. Mercury vapour lamp
The closeness of the measured value to the actual value is _____	1.Accuracy 2.Repeatability 3.Sensitivity 4.Precision
Side rake angle of a single point cutting tool is the angle	1.between the surface of the flank immediately below the point and a line drawn from the point perpendicular to the base 2.by which the face of the tool is inclined towards back3.between the surface of the flank immediately below the point and a plane at right angles to the centre line of the point of the tool 4.by which the face of the tool is inclined sideways
A measurement system only includes operators and gauges	1. Always True 2. Can't predict 3. False 4. May be true or false
Precision is related to the accuracy of the measurements	1. Always False 2. May be true or false 3. True 4. can't predict
This is a solid shape that fits inside the mold and forms a hole in a cooled cast metal or molten plastic object:	1. Core 2. Cavity 3. Prototype 4. Hole mold

Questions	Choices
When a metal is specified as "tough" in the part drawing, the manufacturing engineer should understand that this metal:	1. resists being broken or deformed by mechanical shock forces 2. dulls tools almost immediately 3. does not deform plastically but breaks into pieces when stressed 4. resists grinding
Which of the following is the best engineering plastics material that has high tensile strength, high compressive strength, with minimal elongation to use for a product that will be injection molded?	1. polycarbonate 2. polystyrene 3. phenolic 4. epoxy
The best process for making a kitchen drawer divider tray out of plastic sheets is:	1. pultrusion 2. thermoforming 3. compression forming 4. blow molding
A turning operation is to be done on a piece of alloy steel that has a diameter of 90mm. If the depth of cut is set at 3.175 mm, the feed is set at 0.30 mm per revolution, and the recommended cutting speed using a carbide tool is 90 meters per minute, what rotational speed you will set on the machine, from the following available speeds on machine, in rpm?	1. 218 2. 118 3. 418 4. 318
In foundry work, a runner is which one of the following:	1. channel in the mold leading from the downsprue to the main mold cavity 2. none of the options 3. vertical channel into which the metal is poured into the mold from a laddle 4. foundryman who moves the hot molten metal from the furnace to the mold

Questions	Choices
Total solidification time is defined as which one of the following: (a) time between pouring and complete solidification, (b) time between pouring and cooling to room temperature, (c) time between solidification and cooling to room temperature, or (d) time to give up the heat of fusion?	1. (d) time to give up the heat of fusion 2. (c) time between solidification and cooling to room temperature 3. (b) time between pouring and cooling to room temperature 4. (a)time between pouring and complete solidification
In a sand-casting mold, the V/A ratio of the riser should be	1. none of these options 2. smaller than the V/A ratio of the casting itself 3. greater than the V/A ratio of the casting itself 4. equal to the V/A ratio of the casting itself
In a sand-casting mold, the V/A ratio of the riser should be	1. none of these options 2. smaller than the V/A ratio of the casting itself 3. greater than the V/A ratio of the casting itself 4. equal to the V/A ratio of the casting itself
In sand casting, the volumetric size of the pattern is	1. bigger than the cast part 2. same size as the cast part 3. smaller than the cast part 4. none of these options
Given that Wm = weight of the molten metal displaced by a core and Wc = weight of the core, the buoyancy force is which one of the following?	1. downward force =Wm - Wc 2. downward force = Wm + Wc 3. upward force = Wm + Wc 4. upward force = Wm - Wc
Which of the following materials require largest shrinkage allowance while making a pattern for a casting?	1. Plain Carbon steel 2. Cast Iron 3. Brass 4. Aluminum

Questions	Choices
Shrinkage allowance on pattern is provided to compensate for shrinkage when	1. temperature of liquid metal drops from pouring to freezing temperature of the metal 2. metal changes from liquid state to solid state at freezing temperature 3. temperature of metal drops from pouring to room temperature 4. temperature of solid phase drops from freezing temperature to room temperature
In sand molding, core prints are used to	1. all of these options 2. strengthen the core so that it will not crumble while pouring 3. form seat to support and hold the core in place 4. fabricate the core
In sand molding draft is provided on the	1. casting 2. pattern 3. none of these options 4. cavity
In a casting process, fluidity is mostly influenced by	1. solidification temperature 2. pouring temperature 3. tapping temperature 4. melting temperature
Sprue in sand casting refers to	1. vertical passage 2. gate 3. runner 4. riser
The purpose of sprue is to	1. act as a reservoir for molten metal 2. help feed the casting until the solidification takes place 3. feed molten metal from pouring basin to gate 4. feed the cavity at a rate consistent with the rate of solidification

Questions	Choices
In sand mold, the purpose of gate is to	1. feed the cavity at a rate consistent with the rate of solidification 2. act a a reservoir for molten metal 3. feed molten metal from pouring basin to the gate 4. help feed the casting until all solidification takes place
The purpose of riser is to	1. feed molten metal from pouring basin to gate 2. help feed the casting until solidification takes place 3. feed the cavity at a rate consistent with the rate of solidification 4. act as a reservoir for molten metal
In sand molding there is no need to provide one of the following allowance, it is	1. distortion allowance 2. draft allowance 3. Shrinkage allowance 4. machining allowance
The purpose of chaplets in a mould is to	1. to support the core 2. compensate for shrinkage from pouring temperature to freezing temperature 3. provide venting 4. induce directional solidification
In metrology, a feeler gauge is used to check	1. Radius 2. Screw pitch 3. Surface roughness 4. Thickness of clearance
In surface roughness measurements, the term "secondary texture" represents _____	1.Lay direction 2.Flaw 3.roughness 4.Waviness
Tomlinson's surface meter and Taylor Hobson Talysurf are _____ instruments	1. surface roughness measuring 2. Surface waviness measuring 3. lay direction measuring 4. none of these
Slip gauges are _____standards	1. wave length 2. secondary 3. end 4. Line

Questions	Choices
Dial gauge is a _____	1. Angular measuring instrument 2. None of these 3. Surface measuring instrument 4. linear measuring instrument
Among the various terminologies related to surface roughness, 'Ra' represents _____	1. Roughness average 2. sampling length 3. Root Mean square value 4. Mean roughness depth
The least measurement that can be detected by a measuring instrument is _____	1. calibration 2. Precision 3. accuracy 4. Sensitivity
The closeness of the measured value to the actual value is _____	1. Repeatability 2. Precision 3. Sensitivity 4. Accuracy
The comparators eliminate the _____	1. need for machining 2. surface roughness 3. surface waviness 4. Measuring time
The scientist 'Carl Edvard Johansson' invented _____	1. Surface table 2. Slip gauges 3. Sine bar 4. Comparators
Primary standards are kept at all leading industries across the globe	1. - 2. - 3. True 4. False
The closeness among the measured value is _____	1. Repeatability 2. Precision 3. Accuracy 4. Calibration
In metrology, angular measurements are made using _____	1.Sine bar and slip gauges 2.Slip gauge alone 3.surface platesand slip gauges 4.sine bar alone

Questions	Choices
_____ is equal to the differences of the two limits of size of the part	1. a) Tolerance 2. b) Low limit 3. c) High limit 4. d) Design size
The amount by which the actual size of a shaft is less than the actual size of mating hole in an assembly	1. a) Clearance 2. b) Interference 3. c) Allowance 4. d) None of the options
_____ is the basis of interferometry	1. a) Monochromatic light source 2. b) Halogen lights 3. c) High intensity flash lights 4. d) None of the options
A 1.5mm surface is being measured on an interferometer. A lamp is used which can emit wave lengths as follows. Red: 0.842 µm, Blue: 0.6628 µm. What are the nominal fractions expected for the gauge for the two wave lengths?	1. b) For Blue light, Nf = 0.3568 For red light, Nf = 1.2589 2. a) For Blue light, Nf = 0.2222 For red light, Nf = 0.9999 3. c) For Blue light, Nf = 0.2523 For red light, Nf = 0.9454 4. d) For Blue light, Nf = 0.2666 For red light, Nf = 35.9454
Cylindricity measurement comes under the category of _____	1. a) Form measurement 2. b) linear measurement 3. c) surface measurement 4. d) alignment testing
"Piston -profile tester" is an instrument to check _____	1. c) Piston minor diameter 2. a) Piston ovality 3. b) Piston major diameter 4. d) All the options are correct

Questions	Choices
NO-GO gauge checks the _____	1. d) Least material condition 2. c) Both maximum and least material condition 3. b) Maximum material condition 4. a) None of the answers are correct
GO gauge checks the _____	1. Least material condition 2. Both maximum and least material condition 3. Maximum material condition 4. None of the answers are correct
In unilateral tolerance system, the gauge tolerance zones lie entirely within the _____	1. d) none of the options are correc 2. c) gauge tolerance zone t 3. b) work tolerance zone 4. a) maximum tolerance zone
Which option given here is not the limitations/disadvantages of limit gauges	1. a) Do not indicate the actual size of the component 2. d) None of the options are correct 3. c) Conveniently used in mass production for controlling various dimensions 4. b) Require frequent checking of gauge dimensions
Which option given here is not the advantages of limit gauges	1. b) Require frequent checking of gauge dimensions 2. c) Economical in its own cost as well as engaging cost. 3. d) None of the options are correct 4. a) Conveniently used in mass production for controlling various dimensions

Questions	Choices
Reference gauges are also known as _____	1. b) Master gauges 2. d) Work gauges 3. c) GO- gauges 4. a) limit gauges
_____ may be used to check the contour of a profile of work piece for conformance to certain shape.	1. d) snap gauges 2. a) taper gauges 3. b) form gauges 4. c) thread gauges
A template gauge comes under the category of _____	1. a) thread gauges 2. b) form gauges 3. d) none of the options are correct 4. c) taper gauges
The tool maker's microscope is based on the principle of _____	1. c) TEMSEM 2. d) SEMTEM 3. b) OPTICS 4. a) SEMITEM
A collimator is a device that narrows a beam of particles or waves	1. c) Partially true 2. b) False 3. a) True 4. d) None of the options
Inter-changeability is the ability to select components for assembly at random and fit them together within proper tolerances	1. d) None of the options 2. c) True 3. a) partially true 4. b) false
. In a lathe, to check the Parallelism of the Main Spindle to Saddle Movement, we conduct _____	1. a) form test 2. b) alignment test 3. c) taper test 4. d) parallel test

Questions	Choices
An _____ interferometer is a device in which two or more light waves are combined together to produce interference	1. c) Level 2. b) diametric 3. a) Magnetic 4. d) None of the options are correct – optical (ans)
A screw thread measurement involves _____	1. a) major diameter 2. b) thread form 3. c) thread pitch 4. d) all the options are correct
2-wire and 3-wire methods measure _____	1. a) effective thread length 2. b) shape of the bold head 3. c) Diameter of the bolt head 4. d) Effective diameter of screw thread
Calibration is performed to _____	1. d) None of the options are correct 2. c) fix the size of the equipment and to promote easy machining 3. b) to ascertain the accuracy of the instrument's reading 4. a) clean the equipment for dust and water
What a calibration certificate contains	1. d) All the options are correct 2. c) it is an unambiguous statement of the results, including an uncertainty statement 3. b) it uniquely identifies the instrument and its owner 4. a) it establishes the identity and credibility of the calibrating laboratory
Gauge blocks are a system for producing precision lengths	1. c) Partially true 2. b) False 3. a) True 4. d) Sometimes true

Questions	Choices
An important feature of gauge blocks is that they can be joined together with very little dimensional uncertainty	1. a) False 2. c) True 3. d) sometimes true 4. b) Partially true
The _____ __ on thickness of tooth is the variation of actual thickness of tooth from its theoretical value	1. a) Permissible error 2. b) tolerance value 3. c) both permissible error / tolerance value are correct 4. d) transverse value
Why Micrometer carries a ratchet stop?	1. Ratchet stop applies uniform pressure on the measuring faces. 2. Ratchet stop develops uniform temperature irrespective of operator's skill and strength. 3. Ratchet stop protects the instrument from dust 4. Ratchet stop protects the instrument from acoustic troubles

Questions	Choices
What are the reasons behind false reading on Micrometer while taking measurements?	1. There is zero error in Micrometer. 2. Dirty work piece or measuring faces of micrometer. 3. Taking measurement when the job is moving 4. All the options are reasons

Questions	Choices
Mention the features of a Universal Bevel Protractor?	1. Minimum reading is 5 minutes. 2. Fine adjustment of the blade insures the precision measuring and laying out of angle 3. Main parts are of hardened stainless steel to prevent rust. 4. All the options are features
An eutectoid steel consists of	1. wholly pearlite 2. wholly austenite 3. pearlite and ferrite 4. pearlite and cementite

Questions	Choices
Shock resisting steels should have	1. low wear resistance 2. low hardness 3. low tensile strength 4. Toughness
Cast iron is a	1. ductile material 2. malleable material 3. brittle material 4. tough material
The hardness is the property of a material due to which it	1. can be drawn into wires 2. breaks with little permanent distortion 3. can cut another metal 4. can be rolled or hammered into thin sheets

Questions	Choices	
Malleable cast iron is produced	1. by adding magnesium to molten cast iron 2. by quick cooling of molten cast iron 3. from white cast iron by annealing process 4. none of these	
The percentage of carbon in cast iron varies from	1. 0.1 to 0.5 2. 0.5 to 1 3.	1 to 1.7
Brass is an alloy of	1. copper and zinc 2. copper and tin 3. copper, tin and zinc 4. none of these	

Questions	Choices
A material is said to be allotropic, if it has	1. fixed structure at all temperatures 2. atoms distributed in random pattern 3. different crystal structures at different temperatures 4. any one of the above
Closed packed hexagonal space lattice is found in	1. zinc, magnesium, cobalt, cadmium, antimony and bismuth 2. gamma-iron, aluminium, copper, lead, silver and nickel 3. alpha-iron, tungsten, chromium and molybdenum 4. none of the above
The hardness and tensile strength in austenitic stainless steel can be increased by	1. hardening and cold working 2. normalising 3. martempering 4. full annealing

Questions	Choices
The quenching of steel from the upper critical point results in a fine grained structure.	1. Agree 2. Disagree 3. 4.
When the steel is normalised, its	1. yield point increases 2. ductility decreases 3. ultimate tensile strength increases 4. all of these
The lower critical point for all steels is	1. 600°C 2. 700°C 3. 723°C 4. 913°C
The material in which the atoms are arranged regularly in some directions but not in others, is called	1. mesomorphous material 2. crystalline material 3. none of these 4. amorphous material

Questions	Choices
Iron-carbon alloys containing 1.7 to 4.3% carbon are known as	1. eutectic cast irons 2. hypo-eutectic cast irons 3. hyper-eutectic cast irons 4. none of these
The hardness of steel increases if it contains	1. pearlite 2. ferrite 3. cementite 4. Martensite
In full annealing, the hypo-eutectoid steel is heated from 30° C to 50° C above the upper critical temperature and then cooled	1. in still air 2. slowly in the furnace 3. suddenly in a suitable cooling medium 4. any one of these

Questions	Choices
The lower critical temperature	1. decreases as the carbon content in steel increases 2. increases as the carbon content in steel increases 3. is same for all steels 4. depends upon the rate of heating
Which of the following is an amorphous material?	1. Mica 2. Silver 3. Lead 4. Glass
Preheating of parent metal plates before welding is done to	1. prevent cold cracks 2. burn away oil, grease, etc from the plate surface 3. make the steel softer 4. prevent plate distortions
Metal better weldable with itself is	1. stainless steel 2. copper 3. bronze 4. mild steel
Metal which can be suitable welded by TIG welding is	1. aluminum 2. pure titanium 3. stainless steel 4. all of these options

Questions	Choices
Main advantage of MIG welding (GMAW) over TIG welding is that	1. the former can be used to weld hard metals 2. welding rate is very fast 3. former permits use of large currents there by allowing higher deposition 4. welding is completely automatic
Thermit welding is	1. a process which uses a mixture of iron oxide and granular aluminum 2. a process in which arc is maintained under a blanket of flux 3. accomplished by maintaining a hot molten metal pool between plates 4. not a welding process
Submerged arc welding is	1. a process which uses a mixture of iron oxide and granular aluminum 2. a process in which arc is maintained under a blanket of flux 3. accomplished by maintaining a hot molten metal pool between the plates 4. none of these options
Submerged arc welding is	1. a process which uses a mixture of iron oxide and granular aluminum 2. a process in which arc is maintained under a blanket of flux 3. accomplished by maintaining a hot molten metal pool between the plates 4. none of these options
In gas welding, maximum temperature occurs at	1. next to the inner cone 2. the inner cone 3. the tip of flame 4. at the outer cone
Temperature of the plasma torch is of the order of	1. 1000 deg C 2. 5000 deg C 3. 10000 deg C 4. 30000 deg C

Questions	Choices
In reverse polarity welding	1. work is positive and the holder is earthed 2. holder is positive and the work is earthed 3. electrode holder is connected to negative polarity and the work to the positive poloarity 4. electrode holder is connected to positive polarity and the work to the negative polarity
Amperage setting in the electric arc welding (SMAW) depends on	1. work thickness 2. electrode rod diameter 3. arc gap 4. None of the options
Consumable electrode is used in the following welding process: -	1. TIG 2. MIG(GMAW) 3. LBM 4. Thermit
Ratio of oxygen to acetylene for complete combustion is	1. 1.5:1 2. 2:1 3. 2.5:1 4. 1:1
If two pieces of different metals are to be welded by projection welding, then the projection should be done on the metal piece having	1. lower conductivity 2. none of the options 3. same conductivity 4. higher conductivity
Multi spot welding is in fact a	1. percussion welding 2. thermit welding 3. projection welding 4. seam welding
Material difficult to be spot welded is	1. stainless steel 2. copper 3. mild steel 4. none of these options

Questions	Choices
In fusion welding, porosity defect is due to	1. poor base metal 2. wrong size of electrode 3. low welding speed 4. high welding speed
Which of the following is the hardest one?	1. Ferrite 2. Cementite 3. Martensite 4. Tempered martensite
What is the major driving force for any phase transformation?	1. Volume change 2. Chemical compositional 3. Free energy reduction 4. None of these
Voltage during the arc-striking compared to the voltage during welding in electric arc welding is	1. same 2. more 3. less 4. unpredictable

Questions	Choices
Electroslag welding is	1. a process which uses a mixture of iron oxide and granular aluminum 2. accomplished by maintaining a hot molten metal pool between plates 3. there is nothing called electro slag welding 4. a process in which arc is maintained under a blanket of flux
Arc length in an arc welding should be equal to	1. half the diameter of the electrode rod 2. diameter of the elecrode rod 3. twice the diameter of the electrode rod 4. 2.5 times the electrode rod diameter
Filler material is essentially used in	1. gas welding 2. spot welding 3. seam welding 4. all of these options
Grey iron is generally welded by	1. arc welding 2. TIG welding 3. MIG welding 4. gas welding
Copper is	1. suitable for spot welding just as anyother metal 2. very difficult to be spot welded 3. easily spot welded 4. prefered to be welded by spot welding
An example of plastic welding is	1. arc welding 2. gas welding 3. forge welding 4. none of these options
In sintering stage of powder metallurgy, which of the following process take place?	1. all the pores reduce in size 2. the powder particles fuse and join together 3. some of the pores grow 4. Particles do not meet, but a bond is formed between them

Questions	Choices
In production of precision components, the use of powder metallurgy technique mainly reduces	1. equipment cost 2. machining cost 3. material cost 4. tool-related costs
Widely used metal powder production method for powder metallurgy is	1. crushing using impact 2. liquid metal spray 3. none of these options 4. electrolytic deposition
One of the process used to manufacture crankshafts is	1. cold heading 2. casting 3. pressure die casting 4. investment casting
Most suitable process for manufacturing carburettor body is	1. pressure die casting 2. investment casting 3. casting 4. cold heading
Most suitable process for manufacturing nails is	1. cold heading 2. casting 3. pressure die casting 4. investment casting
Extrusion process can effectively reduce the cost of production through	1. none of these options 2. saving in adminstrative cost 3. material saving 4. in-process tooling costs
Major problem in hot extrusion is	1. design of die 2. wear and tear of die 3. design of punch 4. wear of punch
Upsetting or cold heading is a	1. bending process 2. forging process 3. rolling process 4. extrusion process
Material good for extrusion is	1. stainless steel 2. low carbon work hardened steel 3. brass casting 4. low carbon annealed steel

Questions	Choices
Seam less tube can be produced by	1. ring rolling combined with stretch forming 2. piercing 3. steam hammer forging 4. two high rolling mill
A tooth paste tube can be produced by	1. solid backward extrusion 2. hollow forward extrusion 3. solid forward extrusion 4. hollow backward extrusion
Rolling process can not be used to produce	1. a T section bar 2. an I-section bar 3. a channel section bar 4. a hollow circular section
If temperature of a solid surface changes from 300 K to 900 K, then its emissive power changes in the ratio of	1. 3 2. 9 3. 27 4. 81
In a gas turbine cycle, the turbine output is 600 kJ/kg, the compressor work is 400 kJ/kg and the heat supplied is 1000 kJ/kg. The thermal efficiency of this cycle is :	1. 80% 2. 60% 3. 40% 4. 20%
. In an internal combustion engine, during the compression stroke the heat rejected to the cooling water is 50 kJ/kg and the work input is 100 kJ/kg. The change in internal energy of the working fluid is	1. 50 kJ/kg, loss 2. 50 kJ/kg, gain 3. 0 4. 100 kJ/kg, loss
The efficiency of standard Diesel cycle depends on	1. compression ratio in the cycle 2. cut-off ratio in the cycle 3. cut-off ratio and compression ratio 4. mean effective pressure

Questions	Choices
Which process is included in air standard Diesel cycle?	1. Isochoric and isobaric heat addition 2. Isobaric heat addition 3. Isochoric heat addition 4. Polytropic compression
Which one of the following is part of air standard Braytion cycle?	1. Isochoric heat addition 2. Isobaric heat addition 3. Isochoric and isobaric heat addition 4. Polytropic compression
The mean effective pressure of an engine is defined as	1. work done per cycle/cylinder volume 2. work done/stroke volume 3. work done per kg/stroke volume 4. work done per cycle/stroke volume
An Otto cycle operates with volumes of 40 cm3 and 400 cm3 at Top Dead Centre and Bottom Dead Center respectively. If the power output is 100 kW, what is the heat input in kJ/s?	1. 145 2. 166 3. 93 4. 110
A low wet bulb temperature indicates very _____ humidity.	1. high 2. low or high depends on other properties 3. low 4. None of the options
In a turbojet engine, subsequent to heat addition to compressed air, to get the power output, the working substance is expanded in	1. exit nozzle, which is essentially an isentropic process. 2. exit nozzle, which is a constant volume process. 3. turbine blades, which is essentially an isentropic process. 4. turbine blades, which is essentially an isochoric process.
A nozzle is said to have choked flow when	1. Nozzle exit pressure is more than the critical pressure. 2. Discharge is zero. 3. Throat velocity is sonic. 4. Discharge is minimum.

Questions	Choices
The unit of thermal conductivity is ----------.	1. J/mK 2. W/mK 3. J/m^2K 4. W/m^2K
The ratio of heat flow Q_1/Q_2 from two walls of same thickness having their thermal conductivities $K_1 = 2K_2$ will be --------.	1. 0.25 2. 0.5 3. 1 4. 2

Questions	Choices
Absorptivity of a body equals its emissivity	1. at all temperatures 2. at one particular temperature 3. when system is under thermal equillibrium 4. at critical temperature
The zone of transition between laminar sublayer and turbulent core is called	1. transition zone 2. buffer layer 3. boundary layer 4. turbulent layer
Cooling with adiabatic humidification Process is known as	1. Adiabatic chemical dehumidification 2. Evaporative cooling 3. cooling and dehumidification 4. heating and humidification
The volumetric efficiency of compressor with increase in compression ratio will	1. increase 2. remain same 3. none of the above 4. decrease
A two satge compressor takes in air at 1.1. bar and discharges at 20 bar. for minimum compression work, the intermediate pressure is	1. 4.7 bar 2. 7.33 bar 3. 5.5 bar 4. 10.55 bar

Questions	Choices
In a single stage air-compressor, the clearance volume is 1/19th of the swept volume. It delivers 7.6 m3 of free air per minute from 100 kpa to 900 kpa. Assume the index of compression and expansion as 1.2. Find the volumetric efficiency of compressor	1. 62.4 % 2. 72.4 % 3. 90.4 % 4. 82.4 %
A 20 m3 of air per minute is compressed from 1 bar and 20 degree Celsius to 10.24 bar. Calculate the minimum power required to drive the compressor with 2-stage compression. Assume the index of compression is 1.3	1. 88.9 kW 2. 58.8 kW 3. 78.8 kW 4. 68.2 kW
The work input to air compressor is minimum if the compression law followed is	1. $PV^{1.35} = C$ 2. $PV^{\gamma} = C$ 3. PV = C 4. None of the answers
Find the volumetric efficiency of the compressor if air is compressed from 1 bar to 7 bar. The expansion and compression are isentropic (n=1.3)and the clearance volume is 3% of stroke volume.	1. 89.6 % 2. 76.2% 3. 91.5% 4. 85.1%
A mono-atomic ideal gas (ϒ = 1.67,molecular weight = 40) is compressed adiabatically from 0.1 MPa, 300 K to 0.2 MPa. The universal gas constant is 8.314 kJ/ molK. The work of compression of the gas (in kJ/kg) is	1. 29.7 2. 19.9 3. 13.3 4. zero

Questions	Choices
A gas expands in a frictionless piston-cylinder arrangement. The expansion process is very slow and is resisted by an ambient pressure of the 100 kPa. During the expansion process, the pressure of the system (gas) remains consant at 300 kPa. The change in volume of the gas is 0.01 m^3. The maximum amount of work that could be utilized from the above process is	1. Zero 2. 1 kJ 3. 2 kJ 4. 3kJ
For a given set of operating pressure limits of a Rankine cycle, the highest efficiency occurs for	1. Saturated cycle 2. Superheated cycle 3. Reheat cycle 4. Regenerative cycle

Questions	Choices
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^3, the amount of heat lost by the air in the football and the gauge pressure of air in the football at the stadium respectively equal to	1.30.6 J, 1.94 bar 2.21.8 J, 0.93 bar 3. 61.1 J, 1.94 bar 4. 43.7 J, 0.93 bar
The property of a system that does not change when the system is undergoing adiabatic process	1. Pressure 2. Temperature 3. Volume 4. Quantity of Heat
A heat engine takes in some amount of thermal energy and performs 50 J of work in each cycle and rejects 150 J of energy. What is its efficiency?	1. 500 % 2. 400 % 3. 25 % 4. 20 %

Questions	Choices
A rigid container holds an ideal gas (Cv = 0.75 kJ/(kg K)). The container is cooled from 110°C to 20°C. Find the specific heat transfer (kJ/kg) for the process	1. 67.5 kJ/ kg 2. – 67.5 kJ / kg 3. -96 kJ/kg 4. 96 kJ/kg
Match items in List-I (Process) with those in List-II (Characteristic) and select the correct answer using the codes given below the lists: List-I Lis t-II A. Throttling process 1. No work done B. Adiabatic process 2. No heat transfer C. Free expansion 3. Constant internal energy D. Isothermal process 4. Constant enthalpy	1. A B C D 4 2 1 3 2. A B C D 1 2 4 3 3. A B C D 4 3 1 2 4. A B C D 1 3 4 2

Questions	Choices
Think about how a refrigerator works and the system of the refrigerator and the area outside of the refrigerator at ambient temperature. Is the high temperature the body refrigerator or the ambient air around the refrigerator?	1. Not enough information to answer 2. Provided the refrigerator is working, the refrigerator is the higher temperature body 3. Provided the refrigerator is working, the area around the refrigerator is the higher temperature body 4. Provided the refrigerator is working, the bodies are of the same temperature

Questions	Choices
A rigid vessel contains pure substance and it passes through the critical state on heating only if the initial state is	1. subcooled water 2. wet 3. dry 4. superheated
The spark advance is usually specified in terms of	1. engine spped in rev/sec 2. piston displacement from TDC 3. time in seconds 4. degree of crank rotation
In reciprocating compressors, clearance is provided	1. To reduce power consumption of the compressor 2. To accommodate valves 3. To improve the volumetric efficiency of the compressor 4. To account for thermal expansion due to temperature variation
The commercial refrigeration system which is closer to reversed carnot cycle in terms of performance is	1. Air refrigeration system 2. cryogenic system 3. vapour absorption cycle 4. Vapour compression cycle

Questions	Choices
Air (Cp = 1.0 kJ/kg ratio of specific heat = 1.4) enter a compressor at a temperature of 27 deg.C. The compressor ratio is 4. Asuuming an mechanical efficiency of 80%, the compressor work required in kJ/kg is	1. 172 2. 160 3. 225 4. 182
The latent heat load in an auditoriam is 25% of sensible heat load. The value of sensible heat factor(SHF) is equal to	1. 0.25 2. 0.5 3. 0.8 4. 1.0
_____gives the fraction of air which does not come into contact with heating coil surface	1. latent heat factor 2. total heat factor 3. sensible heat factor 4. By pass factor
Fundamental principle of refrigeration is based on _____ law of thermodynamics	1. First 2. second 3. third 4. none of the above
Humidification or Dehumidification process is also called as	1. sensible heat process 2. all the answers 3. total heat process 4. latent heat process
The air refrigeration system is working on _____ cycle	1. VCR cycle 2. carnot cycle 3. bell column cycle 4. driving cycle
A lubrication system in which a scoop connected at the lowest part of the connecting rod is used to spread the lubricating oil on the cylinder wall is called	1. dry sump system 2. petroil system 3. pressure system 4. splash system
The amount of heat removed from 1 ton (1000 kg) of pure water supplied at 0^0C to form ice at 0^0C in 24 hours is known as _____	1. One TR 2.3.5 kW 3. 14000 kJ/hr 4.all the above

Questions	Choices
A 40 kW engine has a mechanical efficiency of 80 %. If the frictional power is assumed to be constant with load, what is the approximate value of the mechanical efficiency at 50% of the rated load?	1. 77% 2. 57% 3. 47% 4. 67%
A refrigerant should have low	1. specific volume of vapour 2.specific heat of liquid 3. boiling point 4.all of the above
Antiknock character of compression ignition engine fuel is increased by	1. Lead ethide 2. Amyl nitrate 3. Tetra ethyl lead 4. Napthane
In computing the engine performance, the heating value of fuel used is _____	1. The Average of lower and higher heating values 2. Higher heating value 3. Lower heating value 4. None of the above
Superheating in vapour compression refrigeration cycle is	1. Increases work of compression 2. Increases the specific volume of refrigerant vapour 3. Increases refrigeration effect 4. All the answers
The ratio of high temperature to low temperature in reversed carnot cycle refrigerator is 1.1. The COP of the refrigerator will be	1. 4 2. 4.5 3. 3.5 4. 10
0.7 kg/s of air enters with a spefic enthalpy of 290 kJ and leaves it with 450 kJ of specific enthalpy. Velocities at inlet and exit are 6 m/s and 2 m/s respectively. Assuming adiabatic process, what is power input to the compressor?	1. 112 kW 2. 115 kW 3. 118 kW 4. 120 kW

Questions	Choices
Which one of the following phenomena occurs when gas in a piston-in-cylinder assembly expands reversibiliy at constant pressure?	1. Heat is added to the gas 2. Heat is removed from the gas 3. Gas undergoes adiabatic expansion 4. Gas does work from its own stored energy
The comfort conditions in air conditioning are at (where DBT = Dry bulb temperature, and RH = Relative humidity)	1.20°C DBT and 80% RH 2.25°C DBT and 100% RH 3.25°C DBT and 40% RH 4.22°C DBT and 60% RH
The dry bulb temperature lines, on the psychrometric chart are	1.horizontal and non-uniformly spaced 2.horizontal and uniformly spaced 3.vertical and uniformly spaced 4.curved lines
The total and static pressures at the inlet of a steam nozzle are 186 kPa and 178 kPa respectively. If the total pressure at the exit is 180 kPa and static pressure is 100 kPa, then the loss of energy per unit mass in the nozzle will be:	1. 2 kPa 2. 6 kPa 3. 8 kPa 4. 78 kPa
In a vapor compression refrigeration cycle, heat is rejected by the refrigerant in a	1.condenser 2.evaporator 3.compressor 4.expansion valve
In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be	1.0.37 2.0.3 3.0.6 4.0.67
During adiabatic saturation process on unsaturated air _____ remains constant.	1.relative humidity 2.dew point temperature 3.wet bulb temperature 4.dry bulb temperature
The difference between dry bulb temperature and wet bulb temperature, is called	1.dew point depression 2.dry bulb depression 3.degree of saturation 4.wet bulb depression
Sub-cooling in a refrigeration cycle	1.increases COP 2.decreases COP 3.COP remains unaltered4.unpredictable
A refrigeration cycle operates between condenser temperature of + 27°C and evaporator temperature of- 23°C. The Cannot coefficient of performance of cycle will be	1.0.2 2.1.2 3.10 4.5

Questions	Choices
I``n vapour compression refrigeration system, refrigerant occurs as liquid and vapour between	1.compressor and evaporator 2.condenser and expansion valve 3.expansion valve and evaporator 4.compressor and condenser
In a vapour compression refrigeration cycle, the flow of refrigerant is controlled by	1.compressor 2.condenser 3.evaporator 4.expansion valve
Where does the lowest temperature occur in a vapour compression cycle ?	1.compressor 2.evaporator 3.condenser 4.expansion valve
Combustion in compression ignition engines is	1.laminar 2.homogeneous and hetrogeneous3.heterogeneous 4.homogeneous
To reduce the possibility of knock in the C.I. engines, the first elements of fuel and air should have	1.high temperature 2.high density 3.all the options 4.short delay
The detonation tendency in petrol engines for specified conditions of fuel rating, compression ratio, speed etc. can be controlled by having	1.smaller cylinder bore 2.bigger cylinder bore 3.medium cylinder bare 4.cylinder bore could be anything as it does not control detonation
Supercharging is the process of	1.supplying the intake of an engine with air at a density greater than the density of the surrounding atmosphere2.Injecting excess fuel for raising more load 3.providing forced cooling air 4.supplying compressed air to remove combustion products fully
The knocking in diesel engines for given fuel, will be	1.enhanced by increasing compression ratio 2.enhanced by decreasing compression ratio 3.dependent on other factors4.unaflected by compression ratio
Ignition quality of diesel-fuel oil is expressed by an index called	1.octane number 2.carbon content 3.calorific value 4.cetane number
Fuel consumption with increase in back pressure in engine will	1.remain unaffected 2.none of the options 3.increase4.decrease
Thermal efficiency of high speed diesel engine at design load may be of the order of	1.70% 2.50% 3.35% 4.20%

Questions	Choices
The ratio of indicated thermal efficiency to the corresponding air standard cycle efficiency is called	1.net efficiency 2.efficiency ratio 3.relative efficiency4.overall efficiency
In petrol engine using a fixed octane rating fuel and fixed compression ratio, super charging will	1.increase the knocking tendency 2.decrease the knocking tendency 3.not affect the knocking tendency4.unpredictable.
A compressor at high altitude will draw	1.more power 2.less power 3.same power 4.none of the options
In a nozzle, whole frictional loss is assumed to occur between	1.inlet and outlet 2.inlet and throat 3.throat and exit 4.all the options
If the intake air temperature of I.C. engine increases, its efficiency will	1.increase 2.decrease 3.unpredictable 4.remain same
The curved lines on a psychrometric chart indicates	1.dry bulb temperature 2.wet bulb temperature 3.relative humidity 4.dew point temperature
One tonne of refrigeration (1TR) means that the heat removing capacity is	1.420 kJ/min 2.210 kJ/min 3.21 kJ/min 4.620 kJ/min
Increase in entropy of a system represents	1. Increase in availability of energy 2. increase in temperature 3. decrease in pressure 4. degradation of energy

Questions	Choices
The temperature of water flowing through the turbine increases from 25°C to 27°C due to friction. If there is no heat transfer, determine the change of entropy of water.	1. 2.8 J/kgK 2. 28J/kgK 3. -2.8kJ/kgK 4. -28kJ/kgK
A paddle wheel fitted with a 300 W motor is used to stir water in a large container. The water in the container is maintained at 300 K and if the motor runs for 2 hours, determine the change in entropy of water.	1. 7200 J/K 2. -7200 J/K 3. 0 4. 72 J/K

Questions	Choices
A system of 100 kg mass undergoes a process in which its specific entropy increases from 0.3 kJ/kgK to 0.4 kJ/kgK. At the same time, the entropy of the surroundings decreases from 80 kJ/K to 75 kJ/K. Determine the process.	1. Reversible and isothermal 2. Irreversible 3. Reversible 4. Impossible
When pressure is raised in an isentropic process, the enthalpy of the substance	1. Remains same 2. Increases 3. decreases 4. First increases and then decreases

Questions	Choices
The dryness fraction at the end of expansion of a Reheat cycle operating under the same temperature limits has	1. Same as that of Rankine cycle 2. More than that of Rankine cycle 3. Less than that of Rankine cycle 4. Not able to correlate with provided data.

Questions	Choices
Which one of the following thermodynamic relations is incorrect	1. T.dS = du + p.dv 2. T.dS = dh + v.dp 3. dH = T.dS + v.dp 4. dG = Vdp − S.dT

Questions	Choices
Which one of the following is the extensive property of a thermodynamic system?	1. Volume 2.Pressure 3. Temperature 4. Density

Questions	Choices
The sequence of events that eventually returns the working fluid to its original state is known as	1. process 2. cycle 3. path 4. property

Questions	Choices
If C is the number of components and φ is the number of phases in a system, the number of independent intensive properties required to specify the state of the system	1. F=C-φ-2 2. F=C+φ+2 3. F=C-φ+2 4. F=C+φ-2

Questions	Choices
Which of the following statements about absolute zero temperature is true?	1. At absolute zero all translational motion of the particles ceases 2. At absolute zero all rotational motion of the particles ceases. 3. Absolute zero is defined at −273.15°C. 4. All the above.
What mass of He gas occupies 8.5 liters at 0°C and 1 atmosphere? (The molar mass of He = 4.00 g/mol.)	1. 10.5 g 2. 1.52 g 3. 0.38 g 4. 2.6 g

Questions	Choices
A gas has a density X at standard temperature and pressure. What is the new density when the absolute temperature is doubled and the pressure increased by a factor of 3?	1. (2/3)X 2. (4/3)X 3. (3/2)X 4. (3/4)X
If a mass of oxygen gas occupies a volume of 8 L at standard temperature and pressure, what is the change in the volume if the temperature is reduced by one half and the pressure is doubled?	1. It increases to 12 L. 2. It increases to 6 L. 3. It increases to 2 L. 4. It increases to 24 L.

Questions	Choices
If the pressure and volume of an ideal gas are both reduced to half their original value, the absolute temperature of the gas is	1. unchanged. 2. increased by a factor of 4. 3. doubled. 4. decreased by a factor of 4.
The relationship between the pressure and the volume of a gas expressed by Boyle's law holds true	1. for some gases under any conditions. 2. for all gases under any conditions. 3. if the container of the gas can expand with increasing pressure. 4. if the temperature is constant.

Questions	Choices
The work output of theoretical Otto cycle	1. increases with increase in compression ratio 2. increases with increase in pressure ratio 3. increases with increase in adiabatic index γ 4. follows all the above.
In Rankine cycle the work output from the turbine is given by	1. change of internal energy between inlet and outlet 2. change of enthalpy between inlet and outlet 3. change of entropy between inlet and outlet 4. change of temperature between inlet and outlet.

Questions	Choices
Fixed position layout is also known as	1. synthetic layout 2. analytical layout 3. Static product layout 4. none of these
In inventory control theory, the economic order quantity is	1. capacity of a warehouse 2. average level of inventory 3. optimum lot size 4. lot size corresponding to break-even analysis
Production cost refers to prime cost plus	1. factory and administration overheads 2. factory overheads 3. factory, administration and sales overheads 4. factory, administration, sales overheads and profit

Questions	Choices
Which one of the following chart gives simultaneously information about the progress of work and machine loading?	1. Process chart 2. Gantt Chart 3. Machine load chart 4. Man machine chart
Work sampling is applied for	1. estimating the percentage of the time consumed by various job activities 2. estimation of the percentage utilisation of machine tools 3. finding out time standards, specially where the job is not repetitive and where time study by stop watch method is not possible 4. all of the above
A systematic job improvement sequence will consist of	1. motion study 2. Time study 3. job enrichment 4. All of these

Questions	Choices
A diagram showing the path followed by men and materials while performing a task is known as	1. flow process chart 2. travel chart 3. string diagram 4. flow diagram
In time study, the rating factor is applied to determine	1. Standard time of a job 2. merit rating of the worker 3. fixation of incentive rate 4. normal time of a worker
The chart which gives an estimate about the amount of materials handling between various work stations is known as	1. Operation chart 2. process chart 3. Travel chart 4. flow chart

Questions	Choices
String diagram is used	1. where processes require the operator to be moved from one work place to another 2. for checking the relative values of various layouts 3. when a group of workers are working at a place 4. all of the above
The determination of standard time in a complex job system is best done through	1. analysis of standard data system 2. analysis of micromotions 3. grouping timing technique 4. stop watch time study
In a 50% reaction turbine stage, tangential component of absolute velocity at rotor inlet is 537 m/s and the blade velocity is 454 m/s. The power output in kW for unit steam flowrate will be	1. 282 kW 2. 296 kW 3. 260 kW 4. 302 kW

Questions	Choices
In A-B-C analysis, which class of items are generally large in number?	1. **B** 2. A 3. C 4. E
In break even analysis, total cost consists of	1. fixed cost + variable cost 2. Variable cost + sales revenue 3. fixed cost + sales revenue 4. fixed cost + variable cost + profit
Direct expenses include	1. factory expenses 2. administrative expenses 3. selling expenses 4. none of these

Questions	Choices
Which of the following type of layout is suitable for automobile manufacturing concern?	1. product layout 2. fixed position layout 3. combination layout 4. process layout
Work study involes	1. only work measurement 2. method study and work measurement 3. only motion study 4. only method study
Dispatching	1. prescribes the sequence of operations to be followed 2. determines the programme for the operations 3. is concerned with the starting of processes 4. regulates the progress of job through various processes

Questions	Choices
In order to avoid excessive multiplication of facilities, the layout preferred is	1. group layout 2. product layout 3. process layout 4. static layout
Process layout is also known as	1. synthetic layout 2. none of these 3. static product layout 4. analytical layout
For handling materials during manufacture of cement, a _____ is widely used	1. fork lift truck 2. belt conveyor 3. bucket conveyor 4. fork lift truck

Questions	Choices
In product layout	1. machines can not be used to their maximum capacity 2. specialised and strict supervision is required 3. manufacturing cost rises with a fall in the volume of production 4. all of the above
Process layout is employed	1. where similar jobs are manufactured on similar machines 2. all of the above 3. where machines are arranged on functional basis 4. where low volume of production is required
Which one of the following techniques is used for determining allowances in time study?	1. Linear regression 2. Acceptance sampling 3. Performance rating 4. Work sampling

Questions	Choices
In process layout	1. production control is more difficult and costly 2. handling and back-tracking of materials is too much 3. routing and scheduling is more difficult 4. all of the above
Which of the following charts are used for plant layout design?	1. Man machine chart 2. Operation process chart 3. Travel chart 4. all of these
A-B-C analysis	1. is a basic technique of materials management 2. is meant for relative inventory control 3. does not depend upon the unit cost of the item but on its annual consumption 4. all of the above

Questions	Choices
Routing	1. prescribes the sequence of operations to be followed 2. is concerned with starting of processes 3. regulates the progress of job through various processes 4. determines the programme for the operations
Indirect expenses include	1. all of these 2. factory expenses 3. selling expenses 4. administrative expenses
Performance rating is equal to	1. observed performance - normal performance 2. observed performance + normal performance 3. observed performance x normal performance 4. none of the above

Questions	Choices
In jobbing production	1. unit costs are high 2. all of these 3. operations are labour-intensive 4. highly skilled workers are needed
Abbreviated work factor data is applied for	1. material handling operation 2. maintenance operation 3. packing and shipping operation 4. all of these
According to Muther, the basic principle of best layout is	1. Principle of flow 2. principle of flexibility 3. principle of over-all integration 4. all of these

Questions	Choices
What does a symbol D imply in workstudy	1. Inspection 2. Transportation 3. Delay 4. Storage
The time taken by a trained worker to perform an operation, while working a steady pace, is known as	1. normal time 2. representative time 3. standard time 4. None of these
Productivity increases when	1. inputs increase while outputs remain the same 2. inputs decrease while outputs remain the same 3. outputs decrease while inputs remain the same 4. inputs and outputs increase proportionately

Questions	Choices
Which of the following is not a therblig?	1. Use 2. Hold 3. Dispatch 4. Inspect
Micromotion study is	1. enlarged view of motion study 2. analysis of only one stage of motion study 3. time study of small components up to microseconds 4. subdivision of an operation into therbligs and their analysis
Greater flexibility in plant layout is achieved in case of	1. Process layout 2. Product layout 3. Combination layout 4. Fixed position layout

Questions	Choices
-Routing and Scheduling are integral part of	1. Work study 2. Job analysis 3. Quality control 4. Product planning
Which one of the following chart gives simultaneously information about the progress of work and machine loading?	1. Process chart 2. Machine load chart 3. Man-machine chart 4. Gantt chart
Which of the following statement is correct?	1. A-B-C analysis is based on Pareto's principle. 2. Simulation can be used for inventory control. 3. Economic order quantity formula ignores variations in demand pattern 4. all of the above

Questions	Choices
The unit cost in case of batch production is _____as compared to jobbing production.	1. Same 2. Low 3. High 4. None
For a product layout the material handling equipment must	1. Have full flexibility 2. Employ conveyor belts, trucks, tractors etc. 3. Be a general purpose type 4. Be designed as special purpose for a particular application
Which of the following is independent of sales forecast?	1. Productivity 2. Inventory control 3. Production planning 4. Production control

Questions	Choices
Which of the following layouts is suited for mass production?	1. Process layout 2. Product layout 3. Fixed position layout 4. Plant layout
Performance rating is equal to	1. Observed performance + normal performance 2. Observed performance - normal performance 3. Observed performance × normal performance 4. None of the above
In the cost structure of a product, the selling price is determined by the factors such as	1. Sales turn over 2. Lowest competitive price 3. Various elements of the cost 4. All of the above

Questions	Choices
Which one of the following techniques is used for determining allowances in time study?	1. Acceptance sampling 2. Linear regression 3. Performance rating 4. Work Sampling
Merit Rating is the method of determining worth of	1. A job 2. An individual employee 3. A particular division in workshop 4. Machine
Routing is essential in the following type of industry	1. Assembly industry 2. Process industry 3. Job order industry 4. Mass production industry

Questions	Choices
The production scheduling is simpler and high volume of output and high labour efficiency are achieved in the case of	1. Product layout 2. Process layout 3. Fixed position layout 4. A combination of line and process layout
Inventory control in production, planning and control aims at	1. Achieving optimization 2. Ensuring against market fluctuations 3. Acceptable customer service at low capital investment in inventory 4. Discounts allowed in bulk purchase
The allowed time for a job equals standard time plus	1. Policy allowance 2. Interference allowance 3. Process allowance 4. Learning allowance

Questions	Choices
For handling materials during manufacture of cement, a _____ is widely used.	1. Belt conveyor 2. Bucket conveyor 3. Fork lift truck 4. Overhead crane
Process layout is employed	1. Where low volume of production is required 2. Where similar jobs are manufactured on similar machines 3. Where machines are arranged on functional basis 4. All of the above
What does symbol 'O' imply in work study?	1. Inspection 2. Opeartion 3. Dealy 4. Storage

Questions	Choices
For a small scale industry, the fixed cost per month is Rs. 5000. The variable cost per product is Rs. 20 and sales price is Rs. 30 per piece. The break even production per month will be	1. 300 2. 460 3. 500 4. 1000
The type of layout used for manufacturing steam turbines, is	1. Product layout 2. Process layout 3. Fixed position layout 4. Any one of these
Motion study involves analysis of	1. Actions of operator 2. Layout of work place 3. Tooling and equipment 4. All of the above

Questions	Choices
The average time recorded by work study man for an operation is called	1. Standard time 2. Normal time 3. Representative time 4. None of these
Indirect expenses include	1. Factory expenses 2. Selling expenses 3. Administrative expenses 4. All of these
Time study is carried out to determine the time required to complete job by	1. A slow worker 2. A fast worker 3. An average worker 4. An apprentice

Questions	Choices
In order to avoid excessive multiplication of facilities, the layout preferred is	1. Product layout 2. Process layout 3. Group layout 4. Static layout
Father of industrial engineering is	1. Jack Gilbert 2. Gantt 3. Taylor 4. Newton
Choose the wrong statement Time study is used to	1. Determine overhead expenses 2. Provide a basis for setting piece prices or incentive wages 3. Determine standard costs 4. Determine the capability of an operator to handle the number of machines

Questions	Choices
Works cost implies	1. Primary cost 2. Factory cost 3. Factory expenses 4. Primary cost + factory expenses
Which of the following charts are used for plant layout design?	1. Operation process chart 2. Man machine chart 3. Travel chart 4. All of these
In centrifugal compressor terminology, vane-less space refers to the space between	1. impeller tip and diffuser inlet edge 2. diffuser exit and volute casing 3. blades in the impeller 4. the inlet and blade inlet edge
In product layout	1. specialised and strict supervision is required 2. machines can not be used to their maximum capacity 3. manufacturing cost rises with a fall in the volume of production 4. all of the above

Questions	Choices
A company spends considerable amount on publicity to promote sales. This expenditure in break even chart is shown below the	1. fixed cost line 2. variable cost line 3. total cost line 4. sales revenue line
The main objective of work measurement is to	1. plan and schedule of production 2. formulate a proper incentive scheme 3. estimate the selling prices and delivery dates 4. all of the above
In fixed position layout	1. total production cost is less 2. material movement is less 3. capital investment is minimum 4. all of these

Questions	Choices
The ratio of actual whirl velocity to the ideal whirl velocity in the centrifugal compressor is called as	1. Slip factor 2. Work factor 3. Flow coefficient 4. Velocity factor
A systematic job improvement sequence will consist of	1. job enrichment 2. time study 3. motion study 4. All of these
An axial flow compressor stage is suitable for	1. high volume flow rates with a small pressure rise 2. high volume flow rates with high pressure rise 3. low volume flow rates with low pressure rise 4. low volume flow rates with high pressure rise
In aircraft gas turbines, the axial flow compressor is preferred because	1. of low frontal area 2. it is stall free 3. of high pressure rise 4. of high pressure rise per stage

Questions	Choices
An axial flow compressor has	1. larger blades at gas entry and smaller blades at exit 2. size of blades remains same only angles changes 3. identical blades at exit as well as entry 4. smaller blades at gas entry and larger blades at exit
In a centrifugal pump, water enters	1.Axially but leaves radially 2.At an angle but leaves axially3.Axially and leaves axially 4.Radially but leaves axially
Multi stage centrifugal pumps in parallel connection are used to	1.Give high discharge 2.Produce high heads 3.All these options 4.Pump viscous fluids
A centrifugal pump delivers water at the rate of 50 litres/s against a total head of 40 metres. Then the power required to drive the pump is	1. 2 kW 2. 15.2 kW 3. 19.6 kW 4. 25.8 kW
Which one of the following helps in avoiding cavitation in centrifugal pumps?	1. Low delivery pressure 2. High delivery pressure 3. Low suction pressure 4. High suction pressure
A Francis turbine is used when the available head of water is	1. 25 m to 250 m 2. 0 to 25 m 3. none of these options 4. above 250 m
Specific speed of a Kaplan Turbine ranges between	1.1 to 10 2.10 to 100 3.more than 100 4.none of the above

Questions	Choices
Consider the following characteristics: 1. The fluid enters the pump axially and is discharged radially 2. Maximum efficiency may be of the order of 90% 3. Development of a low head 4. A limited suction capacity Which of the above characteristics are possessed by axial flow pumps?	1. 1 and 2 2. 2 and 3 3. 2 and 4 4. 3 and 4
Which one of the following is the correct statement? The degree of reaction of an impulse turbine:	1.is equal to zero 2.is greater than zero 3.is less than zero4.increases with steam velocity at the inlet
Braking jet in an impulse turbine is used	1.to increase the speed of the runner 2.to change the direction of runner 3.to bring the runner to rest in a short time 4.to break the jet of water
Consider the following statements regarding an impulse turbine: 1. Relative velocity at the inlet and exit of the rotor blades are the same. 2. Absolute velocity at the inlet and exit of the rotor blades are the same. 3. Static pressure within the rotor blade channel is constant. 4. Total pressure within the rotor blade channel is constant. Of these statements:	1. 1 and 3 are correct 2. 2 and 3 are correct 3. 1 and 4 are correct 4. 2 and 4 are correct

Questions	Choices
If the enthalpy drops of moving blade and fixed blade of a stage in a reaction turbine are 9 and 11 kJ/kg respectively, then degree of reaction of the stage is	1. 0.1 2. 1.0 3. 0.45 4. 0.55
The degree of reaction of a turbine is the ratio of enthalpy drop in	1. fixed blades to enthalpy drop in the stage 2. moving blades to enthalpy drop in the stage 3. fixed blades to enthalpy drop in moving blades 4. moving blades to enthalpy drop in fixed blades
In motion and time study which of the following is used in product analysis?	1. Process chart 2. man machine chart 3. Multi process chart 4. All of the above

Questions	Choices
Consider the following statements regarding the axial flow in an air compressor: 1. Surging is a local phenomenon while stalling affects the entire compressor. 2. Stalling is a local phenomenon while surging affects the entire compressor. 3. The pressure ratio of an axial compressor stage is smaller than that of a centrifugal compressor stage. Of these statements	1.1 and 3 are correct 2.1, 2 and 3 are correct 3.2 and 3 are correct 4.1 and 2 are correct
The hydraulic efficiency of a reaction turbine, is the ratio of	1. workdone on the wheel to the energy (or head of water) actually supplied to the turbine 2. power produced by the turbine to the energy actually supplied by the turbine 3. actual work available at the turbine to energy imparted to the wheel 4. none of these options
In motion and time study which of the following is used in man analysis?	1. Man and machine analysis chart 2. Man and maching operation time chart 3. Man and machine, process time chart 4. All of the above
The function of the draft tube in a reaction turbine is	1. To enable the shaft of the turbine to be vertical 2. To transform a large part of pressure energy at turbine outlet into kinetic energy 3. To avoid whirl losses at the exit of the turbine 4. To transform a large part of kinetic energy at the turbine outlet into pressure energy

Questions	Choices
Which of the following is unaboidable delay?	1. Waiting for raw material 2. Non-availability of inspection gauge 3. Non-availability of power 4. Tool breakage
The most important objective behind plant layout is	1. Overall simplification, safety of integration 2. Economy in space 3. Maximum travel time in plant 4. To provide conveniently located shops
What is the productivity for a company produces 40kg of plastic parts of acceptable quality by consuming 50kg of raw material	1. 0.8 2. 1.25 3. 0.44 4. 2.25

Questions	Choices
Based on the direction of flow, which one of the following turbines is different from the other three?	1. Pelton turbine 2. Parson's turbine 3. De Laval turbine 4. Kaplan turbine
One of the following doesn't mean "Partial Productivity'	1. Indicates how much of a particular kind of input it takes to produce an output 2. Outputs/(Single kind of input) 3. (Total Output)/(Total Input) 4. How efficiently company use only one input, such as raw material, when creating outputs
For prosperity growth of any business we need	1. Both Effectiveness and Efficiency 2. Effectiveness only 3. Efficiency only 4. None of the above

Questions	Choices
The determination of standard time in a complex job system is best done through	1. Stop watch time study 2. Analysis of micro-motions 3. Grouping timing technique 4. Analysis of standard data system
Which of the following are the principles of material handling?	1. Keep all the handling to the minimum 2. Select only efficient handling equipment 3. Move the heaviest weight to the least distance 4. All of the above
Which of the following type of layout is suitable for automobile manufacturing concern?	1. Product layout 2. Process layout 3. Fixed position layout 4. Combination layout
The stagnation pressure rise in a centrifugal compressor takes place	1.in the inlet guide vanes only 2.in the impeller only 3.in the diffuser only 4.in the diffuser and impeller

Questions	Choices
For a single stage impulse turbine with a rotor diameter of 2 m and a speed of 3000 rpm when the nozzle angle is 20^0, the optimum velocity of steam in m/s is	1. 356 2. 334 3. 711 4. 668
Manometric efficiency of a centrifugal pump is defined as the ratio of	1. head imparted by the impeller to water to the suction head 2. manometric head to the head imparted by the impeller to water 3. suction head to the head imparted by the impeller to water 4. manometric head to the head imparted by the impeller to water
Which one of the following helps in avoiding cavitation in centrifugal pumps?	1. Low suction pressure 2. High suction pressure 3. Low delivery pressure 4. High delivery pressure
In a pelton Wheel the bucket peripheral speed is 10 m/s, the water jet velocity is 25 m/s and volumetric flow rate of the jet is $0.1 m^3/s$. If the jet deflection angle is 120^0 and the flow is ideal, the power developed is	1. 15 kW 2. 37.5 kW 3. 7.5 kW 4. 22.5 kW
A Pelton wheel turbine is,	1. Outward flow impulse turbine 2. Inward flow reaction turbine 3. Inward flow impulse turbine 4. Tangential flow impulse turbine
Kaplan turbine need to have the following for maintaining high efficiency	1. Variable angle blades 2. More number of blades 3. Less number of blades 4. Fixed angle blades
A Kaplan turbine is,	1. Low head axial flow turbine. 2. An reaction turbine, outward flow type 3. An impulse turbine, inward flow type 4. A high head mixed flow turbine

Questions	Choices
Which of the following components of reaction turbine increases the head on the turbine by an amount equal to the height of runner outlet above the tail race?	1. Scroll casing 2. Draft tube 3. Guide vanes 4. Moving vanes
Steam enters the rotor of a reaction turbine with an absolute velocity of 236 m/s and the relative velocity of 132 m/s. It leaves the rotor with a relative velocity of 232 m/s absolute velocity of 126 m/s. The specific work output is	1. 40.1 kJ/kg 2. 47.4 kJ/kg 3. 38.1 kJ/kg 4. 43.8 kJ/kg
Consider the following statements: 1. Almost all flow losses take place in the diverging part of a nozzle. 2. Normal shocks are likely to occur in the converging part of a nozzle. 3. Efficiency of reaction turbines is higher than that of impulse turbines. Of these statements	1. 2 and 3 are correct 2. 1 and 3 are correct 3. 1, 2 and 3 are correct 4. 1 and 2 are correct
Which of the followings are the demerits of single impulse stage 1. Requirement of C-D nozzle 2. Enhanced shock associated losses 3. More boundary layer associated losses in comparison with single reaction stage	1. 1 and 2 only 2. 1 and 3 only 3. 2 and 3 only 4. 1,2 and 3
The pressure rise in the impeller of centrifugal compressor is achieved by	1. the centrifugal and diffusion action 2. the centrifugal and push-pull action 3. the centrifugal action and decrease in volume 4. the decrease in volume and diffusion action
Stalling of blades in axial- flow compressor is the phenomenon of	1. motion of air at sonic velocity 2. air steam not able to follow the blade contour 3. unsteady, periodic and reversed flow 4. air stream blocking the passage

Questions	Choices
An impulse turbine produces 50 kW of power when the blade mean speed is 400 m/s. What is the rate of change of momentum tangential to the rotor?	1. 150 N 2. 125 N 3. 200 N 4. 175 N
Considering the variation of static pressure and absolute velocity in an impulse steam turbine, across one row of moving blades	1. both pressure and velocity decrease 2. pressure remains constant, while velocity decreases 3. pressure decreases but velocity increases 4. pressure remains constant, while velocity increases
The static temperature and Mach number at the inlet of a centrifugal compressor are 303 K and 0.5 respectively. The stagnation temperature of the air at the inlet will be:	1. 34.6 degree Celcius 2. 60.3 degree Celcius 3. 45.15 degree Celcius 4. 31.5 degree Celcius
When n = 1.3 and γ = 1.4, the polytropic efficiency of a turbine is	1. 80.7% 2. 70.7% 3. 60.7% 4. 90.7%
The overall efficiency of the compressor is _____than the stage efficiency	1. less 2. higher 3. same 4.

Questions	Choices
The pressure of the working fluid changes in both stator and rotor for a impulse stage of turbine	1. Yes 2. No 3. 4.
What is the ratio of isentropic work to Euler work in an centrifugal compressor called?	1.Work coefficient 2. Velocity coefficient 3. Pressure coefficient 4. Flow coefficient
The ratio of actual whirl velocity to the ideal whirl velocity in the centrifugal compressor is called as _____.	1. velocity factor 2. slip factor 3. work factor 4. none of the above
For a zero percent reaction stage of axial flow turbine, $\beta_2 = \beta_3$	1. Yes 2. No 3. 4.all the above

Questions	Choices
Vaneless diffusers are suitable for _____.	1. only low pressure rise 2. only high pressure rise 3. both low as well as high pressure rise 4.
The diffuser blades are kept _____ the number of impeller blades.	1. 1/10 th of 2. 1/3 rd of 3. 10 times 4. 3 times
The function of _____ is to convert high kinetic energy of gases into pressure energy.	1. impeller 2. diffuser 3. casing 4. None of the above
What is the number of jets generally employed in an impulse turbine without jet interference?	1. 6 2. 5 3. 7 4. 4

Questions	Choices
The number of blades for a Francis turbine lies between	1. 16 to 24 2. 24 to 48 3. 0 to 6 4. 10 to 20
Which of the following statement is correct as regard to water wheels?	1. they have slow speed 2. they give constant efficiency even if the discharge is not constant 3. they are suitable even for low loads 4. all the above
Which of the following is not an impulse turbine?	1. Kaplan turbine 2. Girad turbine 3. Turgo turbine 4. Pelton wheel

Questions	Choices
Which of the following statement is wrong ?	1. The angle of taper on draft tube is less than 8^0 2. Francis turbine is an impulse turbine 3. The reaction turbines are used for low head and high discharge 4. An impulse turbine is generally fitted
Francis, Kaplan and propeller turbines fall under the category of	1. impulse turbine 2. axial flow turbines 3. mixed flow 4. reaction turbine
A turbine develops 10000 kW under a head of 25 meters at 135 r.p.m. Its specific speed is	1. 175.4 2. 215.5 3. 275.4 4. 241.5
For harnessing lower variable water heads, the suitable hydraulic turbine with high percentage of reaction and runner adjustable vanes is,	1. Pelton 2. Francis 3. Kaplan 4. Impeller

Questions	Choices
A Curtis stage, Rateau stage and a 50% reaction stage in a steam turbine are examples of	1. different types of reaction stages 2. a simple impulse stage, a velocity compounded impulse stage and reaction stage 3. different types of impulse stages 4. velocity compounded impulse stage, a simple impulse stage and a reaction stage
Which of the following components of reaction turbine increases the head on the turbine by an amount equal to the height of runner outlet above the tail race?	1. Guide vanes 2. Moving vanes 3. Draft tube 4. Scroll casing
Which of the following is a reaction turbine?	1. Pelton turbine and Francis turbine 2. Kaplan and Pelton turbine 3. Francis turbine and Kaplan turbine 4. Pelton and Propeller Turbine
Which of the followings are the demerits of single impulse stage 1. Requirement of C-D nozzle 2. Enhanced shock associated losses 3. More boundary layer associated losses in comparison with single reaction stage	1. 1 and 2 only 2. 1 and 3 only 3. 2 and 3 only 4. 1,2 and 3
Which one of the following is used to bring down the speed of an impulse steam turbine to practical limits?	1. A gear box 2. A centrifugal governor 3. A large flywheel 4. Compounding of the turbine
An impulse turbine produces 50 kW of power when the blade mean speed is 400 m/s. What is the rate of change of momentum tangential to the rotor?	1. 150 N 2. 125 N 3. 200 N 4. 175 N

Questions	Choices
In a circular pipe of certain length carrying oil at a Reynolds number 100, it is proposed to triple the discharge. If the viscosity remains unchanged, the power input will have to be	1. decreased to 1/3 its original value 2. increased by 100% 3. increased to 3 times the original value 4. increased to 9 times its original value
An oil of kinematic viscosity 0.25 stokes flows through a pipe of diameter 10cm. The flow is critical at a velocity of	1.0.72 m/s 2.5.0 m/s 3.7.2 m/s 4.0.5 m/s
Oil of viscosity 1.5 Pa.s and relative density 0.9 flows through a circular pipe of diameter 5cm with a mean velocity of 1.2 m/s. The shear stress at the wall in Pa is	1.180 2.144 3.288 4.360
The viscosity of	1. fluids increases with temperature 2. liquids increases with temperature 3. fluids decreases with temperature 4. gases increases with temperature
A U-tube manometer measures	1. absolute pressure at a point 2. local atmospheric pressure 3. difference in total energy between two points 4. difference in pressure between two points
In water jet machining, the water jet is issued through a 0.3mm diameter orifice at a pressure of 400 MPa. THe density of water is 1000 kg/cubic meter. The coefficient of discharge is 1.0. Neglecting all loses during water jet formation through the orifice, the power of the water in kW is _____	1. 75.9 2. 101.2 3. 25.3 4. 50.6
Two identical pipes of length L, diameter D and friction factor f, are connected in parallel between two reservoirs. The size of a pipe of length L and of the same friction factor f, equivalent to the above pipes, is	1.2.0D 2.0.5D 3.1.40D 4.0.87D

Questions	Choices
When all the conditions are identical, in the case of flow through pipes with heat transfer, the velocity profiles will be identical for:	1. Gas heating and gas cooling 2. Liquid heating and liquid cooling 3. Heating and cooling of any fluid 4. Liquid heating and gas cooling
Minor losses in a pipe flow are those losses	1.which can be neglected always 2.which are insignificantly small 3.caused by local disturbance due to pipe fittings4.caused by frictional resistance
Two pipelines of equal length and diameter of 20 cm and 30 cm respectively are connected in parallel between two reservoirs. If the friction actor f is the same for both the pipes, the ration of the discharges in the smaller to the larger size of the pipe is	1. 0.444 2. 0.363 3. 0.667 4. 0.137
Bernoulli equation is applicable between any two points	1. in steady, irrotational flow of an incompressible fluid 2. in steady rotational flow of an incompressible fluid 3. in any rotational flow of an incompressible fluid 4. in any type of irrotational flow of a fluid
A perfect fluid (also known as an ideal fluid is)	1.incompressible and frictionless 2.the one which obeys perfect gas laws 3.a real fluid 4.compressive and gasseous
Typical example of a non-Newtonian fluid of pseudoplastic variety is	1.Water 2.Blood 3.Air 4.Printing ink
The fall velocity of a sand grain in water is to be modelled by using particles of the same relative density as sand and a liquid whose kinematic viscosity is 100 times larger than that of water. The diameters of the particles in the model that will have the same fall velocity as the prototype will be	1.100 times larger 2.100 times smaller 3.10 times smaller4.10 times larger

Questions	Choices
The potential function exist for	1. irrotional motion of incompressible fluids only 2. for two-dimensional irrotational flow only 3. irrotational motion of fluids whether compressible or incompressible 4. for steady flows only
Given that Wm = weight of the molten metal displaced by a core and Wc = weight of the core, the buoyancy force is which one of the following?	1. downward force =Wm - Wc 2. downward force = Wm + Wc 3. upward force = Wm + Wc 4. upward force = Wm - Wc
The centre of buoyancy of a submerged body	1. coincides with the centre of gravity of the body 2. is always below the centre of gravity of the body 3. coincides with the centroid of the displaced volume of the fluid 4. is always above the centroid of the displaced volume of liquid
A triangular gate with a base width of 2m and a height of 1.5 m lies in a vertical plane. The top vertex of the gate is 1.5m below the surface of a tank which contains oil of specific gravity 0.8. Considering the density of water and acceleration due to gravity to be 1000 kg/cu.m and 9.81 m/s2 respectively, the hydrostatic force (in KN) exerted by the oil on the gate is	1. 4.5 2. 2.5 3. 1.4 4. 3.4 ANS-29.43

Questions	Choices
Consider the following statements: 1. If a condensing liquid does not wet a surface drop wise, then condensation will take place on it. 2. Drop wise condensation gives a higher heat transfer rate than filmwise condensation. 3. Reynolds number of condensing liquid is based on its mass flow rate. 4. Suitable coating or vapour additive is used to promote film-wise condensation. Of these statements:	1. 4 alone is correct 2. 1 and 2 are correct 3. 2, 3 and 4 are correct 4. 1, 2 and 3 are correct
The friction factor f in a laminar pipe flow was found to be 0.04.The Reynolds number of the flow was	1.800 2.2000 3.1000 4.1600
The Reynolds number for the flow of oil in a certain pipe is 640. The Darcy-Weisbach friction factor f for the flow is	1. 0.1 2. 0.02 3. 0.064 4. 0.01
In a turbulent flow through a pipe the centreline velocity is 3.61 m/s and the friction factor f=0.002. The mean velocity of the flow in m/s is	1. 3.00 2. 0.96 3. 2.21 4. 4.80
In a steady flow	1. streamlines and pathlines are identical but are different from streakline 2. streakline and pathlines are identical but are different from streamlines 3. streamline, streakline and pathline can all be different from each other 4. none of these options
If B=centre of buoyancy, G=is the centre of gravity and M=metacentre of a floating body, the body will be in stable equilibrium if	1. MG=0 2. M is below G 3. BG=0 4. M is above G
The head loss in 100m length of a 0.1m diameter pipe (f=0.02) carrying water is 10m. The boundary shear stress, in kPa, is	1. 0.0245 2. 0.298 3. 9.79 4. 0.1958

Questions	Choices
A circular pipe has a diameter of 1m, bed slope of 1in 1000, and Manning's roughness coefficient equal to 0.01. It may be treated as an open channel flow when it is flowing just full, i.e., the water level just touches the crest. The discharge in this condition is dented by Q(full). Similarly, the discharge when the pipe is flowing half-full, i.e. with a flow depth of 0.5m, is denoted by Q(half). The ratio of Q(full)/ Q(half)	1. 1.414 2. 1 3. 2 4. 4
In a hydraulic jump occurring in a horizontal rectangular channel the sequent depths are 0.25m and 1.25m. The energy loss in this jump is	1. 1.25m 2. 1.0m 3. 0.8m 4. 1.50m
In a two-dimensional, steady, horizontal, uniform laminar flow the shear gradient in the normal direction is equal to	1.the pressure gradient in the normal direction 2.the velocity gradient in the normal direction 3.the velocity gradient in the longitudinal direction 4.the pressure gradient in the direction of flow
In hydraulic modelling of flow pattern around a body submerged in a fluid the non-dimensional number which has to be kept the same in the model and prototype is	1.Reynolds number 2.Strouhal number 3.Froude number4.Weber number
Which of the following is a dimensionless number:	1.Hazen-William coefficient CH 2.Pipe friction factor f 3.Manning's coefficient n 4.Chezy coefficient C
The lift force on a body	1.is the component of the resultant force in a vertical directions 2.is due to buoyant force 3.is always in the direction of the gravity 4.is the component of the resultant force in a direction normal to relative velocity

Questions	Choices
The discharge Q in a pipe of known f is estimated by using the head loss hf in a length L and diameter D. If an error of 1% is involved in the measurement of D, the corresponding error in the estimation of Q is	1. 2.5% 2. 1.0% 3. 0.4% 4. 5%
The linear momentum equation applied to a control volume in a flow through a nozzle yielded the resultant reaction force R, on the fluid in the control volume. The force required to keep the nozzle in position is	1.equal to R but opposite in direction 2.the same as R in magnitude and direction 3.equal to the x-component of R4.equal to R minus the friction force
Hydraulic grade line for flow in a pipe of constant diameter is	1.always above the energy grade line 2.always above the centreline of the pipe 3.always sloping downwards in the direction of the flow 4.coincides with the pipe centerline
For a single stage impulse turbine with a rotor diameter of 2 m and a speed of 3000 rpm when the nozzle angle is 20^0, the optimum velocity of steam in m/s is	1. 356 2. 334 3. 711 4. 668
Non-coplanar concurrent forces are those forces which	1. do not meet at one point and their lines of action do not lie on the same plane 2. meet at one point, but their lines of action do not lie on the same plane 3. meet at one point and their lines of action also lie on the same plane 4. do not meet at one point, but their lines of action lie on the same plane
Which of the following statement is correct?	1.The kinetic energy of a body during impact remains constant. 2.The kinetic energy of a body before impact is less than the kinetic energy of a body after impact. 3.The kinetic energy of a body before impact is equal to the kinetic energy of a body after impact. 4.The kinetic energy of a body before impact is more than the kinetic energy of a body after impact.

Questions	Choices
The slender 200-kg beam is suspended by a cable at its end as shown. If a man pushes on its other end with a horizontal force of 30 N, determine the initial acceleration of its mass center G, the beam's angular acceleration, and the tension in the cable AB.	1. aG = 0, = 0.225 rad/s2, T = 1.962 kN 2. aG = 0.0750 m/s2, = 0.1125 rad/s2, T = 1.962 kN 3. aG = 0, = 0.1125 rad/s2, T = 1.962 kN 4. aG = 0.1500 m/s2, = 0.225 rad/s2, T = 1.962 kN
The purpose of a riser in a mold is	1. to do a function same as the cope while preparing the mold 2. to help raise the mold from the floor while preparing the mold 3. to feed liquid metal into the body of casting as it solidifies 4. to enhance the draft
The acceleration of a body sliding down an inclined surface is	1.g sin(theta) 2.g tan(theta) 3.g cos(theta) 4.none of these options
According to the law of moments, if a number of coplanar forces acting on a particle are in equilibrium, then	1.their algebraic sum is zero 2.the algebraic sum of their moments about any point in their plane is zero 3.the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point. 4.their lines of action are at equal distances
The centroid of a semi-circle area lies at a distance of _____ from its base measured along the vertical radius.	1.3r/4pi 2.3r/ 8 3.4r/ 3pi 4.8r/3
Which of the following is a scalar quantity?	1.Velocity 2.Acceleration 3.Speed 4.Force

Questions	Choices
The rate of change of momentum is directly proportional to the impressed force, and takes place in the same direction in which the force acts. This statement is known as	1. Newton's first law of motion 2. Newton's third law of motion 3. none of these 4. Newton's second law of motion
A couple produces	1. combined translatory and rotational motion 2. none of these 3. translatory motion 4. rotational motion
A rubber ball is dropped from a height of 2 m. If there is no loss of velocity after rebounding, the ball will rise to a height of	1. 4 m 2. 3 m 3. 2 m 4. 1 m
Moment of inertia of a triangular section of base (b) and height (h) about an axis passing through its vertex and parallel to the base, is _____ than that passing through its C.G. and parallel to the base.	1.seven times 2.nine times 3.five times 4.six times
A ladder is resting on a smooth ground and leaning against a rough vertical wall. The force of friction will act	1.away from the wall at its upper end 2.downward at its upper end 3.towards the wall at its upper and 4.upward at its upper end
Which of the following statement is correct in connection with projectiles?	1.A path, traced by a projectile in the space, is known as trajectory. 2.The velocity with which a projectile is projected, is known as the velocity of projection. 3.The angle, with the horizontal, at which a projectile is projected is known as angle of projection. 4.all of the above

Questions	Choices
	1. 2. 3. 4.
Imperial standard yard is made of _____	1. Silver 2. Platinum 3. Bronze 4. None of the options are correct
Adding 'C' to pure Fe will,	1. Reduce the melting point 2. Increase the melting point 3. No change 4. Change volume drastically
If the resultant of two equal forces has the same magnitude as either of the forces, then the angle between the two forces is	1.30° 2.90° 3.60° 4.120°

Questions	Choices
Moment of inertia of a circular section about an axis perpendicular to the section is	1.pi d3/32 2.pi d4/64 3.pi d3/16 4.pi d4/32
If a rigid body is in equilibrium under the action of three forces, then	1.the lines of action of these forces are parallel 2.these forces are equal 3.the lines of action of these forces meet in a point 4.none of these options
Two coplanar couples having equal and opposite moments	1.cannot balance each other. 2.produce a couple and an unbalanced force 3.balance each other 4.are equivalent
A single force and a couple acting in the same plane upon a rigid body	1.cannot balance each other 2.none of these options3.balance each other 4.produce moment of a couple
A body moves, from rest with a constant acceleration of 5 m per sec. The distance covered in 5 sec is most nearly	1.96 m 2.kinematic friction 3.38 m 4.62.5 m
Error of measurement = _____	1. a) True value – Measured value 2. c) Measured value – Precision 3. b) Precision – True value 4. d) Measures value - 0.5x precision
Which of the following curve has a negative slope for water as working fluid in the P-T phase diagram	1. Fusion curve 2. evaporation curve 3. triple point line 4. sublimation curve.

Questions	Choices
Filler metal is used in	1. electric spot welding 2. seam welding 3. projection welding 4. none of these options – arc welding
Comparing an unknown with a standard through calibrated system is called _____	1. b) Indirect comparison 2. a) Direct comparison 3. c) Drastic calibration 4. d) None of the options
. Among the following options, pick the line standard of measurement	1. d) End bars 2. c) Micrometer 3. a) Measuring tape 4. b) Slip gauge
The angle gauge by Dr. Tomlinson consists of a set of _____	1. d) 16 gauges 2. c) 14 gauges 3. a) 10 gauges 4. b) 12 gauges
The principle of 'Inter-changeability' is normally employed for _____	1. c) Mass production 2. b) Production of identical parts 3. a) Parts within the prescribed limits of sizes 4. d) For all the options
Following is the theoretical size which is common to both the parts of a mating pair	1. d) None of the options 2. c) Base size 3. a) Normal size 4. b) Actual size
A force acting on a body may	1.introduce internal stresses 2.retard its motion 3.balance the other forces acting on it 4.all of these options
When trying to turn a key into a lock, following is applied	1.non-coplanar forces 2.moment 3.coplanar force 4.couple

Questions	Choices
Fill up the blank	1. Precision 2. mean value 3. Reynolds constant 1.4 4. Systematic error
The main function of CAD is	1. Documentation 2. Curing 3. Marketing 4. Manufacturing
The unit cells	1. contain the smallest number of atoms which when taken together have all the properties of the crystals of the particular metal 2. have the same orientation and their similar faces are parallel 3. may be defined as the smallest parallelopiped which could be transposed in three coordinate directions to build up the space lattice 4. all the above
Emulsified oils which are used in machine shop are	1. lubricating oils diluted with naphta, kerosene or other petroleum-base solvents. 2. mixture of oil and water used for lubricating and cooling 3. oils that have degraded over time 4. high in sulphur content

Questions	Choices
Chills are used in moulds to	1. reduce the possibility of blow holes 2. achieve directional solidification 3. reduce freezing time 4. smoothen metal flow for reducing splatter
Disposable patterns are made of	1. polystyrene 2. metal 3. rubber 4. wood
Shell moulding requires	1. Polystyrene patterns 2. Wooden patterns 3. Sand patterns 4. Metal patterns
A system in dynamic balance implies that	1. there will absolutely no wear of bearings 2. there is no critical speed in the system 3. the system is critically damped 4. the system is also statically balanced
Analytical checking of gears includes checking of _____	1. tooth profile 2. vibrations 3. noise level 4. None of the options are correct

Questions	Choices
A rigid container of air is at atmospheric pressure and 27ºC. To double the pressure in the container, heat it to	1. 54ºC 2. 300ºC 3. 327ºC 4. 600ºC
Center of gravity of a solid cone lies on the axis at the height	1.one-third of the total height above base 2.none of these options 3.one-fourth of the total height above base 4.three-eighth of the total height above the base
A package is dropped from the plane which is flying with a constant horizontal velocity of vA = 150 ft/s at a height h = 1500 ft. Determine the radius of curvature of the path of the package just after it is released from plane at A.	1. 9860 ft 2. 3000 ft 3. 1500 ft 4. 8510 ft
The uniform pole has a mass of 15 kg and falls from rest when = 90° until it strikes the edge at A, = 60°. If the pole then begins to pivot about this point after contact, determine the pole's angular velocity just after the impact. Assume that the pole does not slip at B as it falls until it strikes A.	1. angular velocity = 1.146 rad/s 2. angular velocity = 0.537 rad/s 3. angular velocity = 2.15 rad/s 4. angular velocity = 1.528 rad/s

Questions	Choices
The air around us has 78% nitrogen and 21% oxygen. If the pressure is 1 atm, the pressure due to oxygen is	1. 0.21 atm 2. 0.78 atm 3. 1 atm 4. 0.67 atm
The disadvantage of product layout is	1. High initial investment for the specialized facilities 2. Skilled labour to operate machines 3. Production time is longer, requiring more goods in inventory 4. High cost of inspection

Questions	Choices
Work sampling is applied for	1. estimation of the percentage utilisation of machine tools 2. estimating the percentage of the time consumed by various job activities 3. finding out time standards, specially where the job is not repetitive and where time study by stop watch method is not possible 4. all of the above
In manufacturing management, the term 'Dispatching' is used to describe	1. Dispatch of sales order 2. Dispatch of factory mail 3. Dispatch of finished product of the user 4. Dispatch of work orders through shop floor
Friction power of the IC engine will _____ if the engine speed is increased.	1. increases 2. no effect 3. decreases 4. depends of other engine torque
Euler equation for turbomachines is derived on the basis of	1. Rate of change of angular momentum 2. Rate of change of linear momentum 3. Conservation of mass 4. Rate of change of velocity

Questions	Choices
Rankine cycle efficiency of well maintained steam power plant is in the range of	1. 35% to 45% 2. less than 10% 3. 50% to 60% 4. 10% to 20%
This is a conical-shaped recess around a hole, often used to receive a tapered screw head:	1. Boss 2. Spotface 3. Counterbore 4. Countersink
This is a rounded exterior blend between surfaces:	1. Fillet 2. Round 3. Taper 4. Chamfer
The instantaneous centres which vary with the configuration of the mechanism are called	1. permanent instantaneous centres 2. fixed instantaneous centres 3. neither fixed nor permanent instantaneous centres 4. flexible instantaneous centres

Questions	Choices
Module of a gear is (T- number of teeth; D- Diameter of the gear)	1. T/D 2. 2D/T 3. 2T/D 4. D/T
A reversible thermodynamic cycle containing only three processes and producing work is to be constructed. The constrains are (a) there must be one isothermal process, (b) there must be one isentropic process, (c) the maximum and minimum cycle pressures and clearance volume are fixed and (d) polytrophic processes are not allowed. Then the number of possible cycles is/are	1. 1 2. 2 3. 3 4. 4
Which of the following operating systems is used with CAD systems?	1. LINUX 2. all the answers 3. UNIX 4. DOS
During the execution of a CNC part program block NO20 GO2 X45.0 Y25.0 R5.0 the type of tool motion will be	1. Circular Interpolation - clockwise 2. Circular Interpolation - counterclockwise 3. Linear Interpolation 4. Rapid feed

Questions	Choices
Group technology and CAPP are the activities of	1. Computer Aided Engineering 2. Computer Aided Manufacturing 3. Computer Integrated Manufacturing 4. Flexible manufacturing
Which of the following could NOT be used to indicate a temperature change? A change in:	1. Colour of a metal rod 2. Length of a liquid column 3. Electrical resistance 4. Mass of one mole of gas at constant pressure
The temperature recorded by a thermometer when its bulb is surrounded by a wet cloth exposed to air.	1. Dew point temperature 2. Dry-bulb temperature 3. Wet-bulb temperature 4. None of the answers

Questions	Choices
The most useful secondary datum feature can be	1. a hole that is perpendicular to the primary datum 2. a set of straight parallel grooves. 3. circular features parallel to the primary datum 4. any flat feature perpendicular to the primary datum
All geometric form controls are variations and combinations of	1. straightness 2. cylindricity 3. flatness 4. roundness
Which of the following are intensive properties	1. Gibb's free energy 2. Enthalpy 3. Entropy 4. Density

Questions	Choices
Which symbol is used with angular dimensions?	1. R 2. ° 3. Ø 4. W