Comprehensive Question Preview

Note:

- Yellow highlighted ones are the answers which I think are right
- Red highlighted ones are the questions I am not sure of the answers

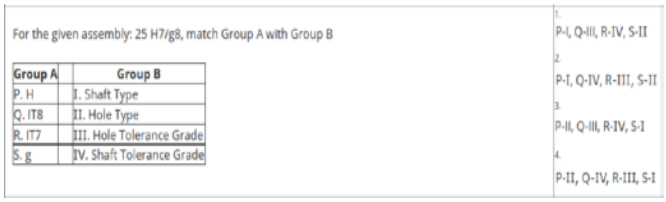
Questions	Choices
Why Micrometer carries a ratchet stop?	1. Ratchet stop applies uniform pressure on the measuring faces. 2. Ratchet stop develops uniform temperature irrespective of operator's skill and strength 3. Ratchet stop protects the instrument from dust 4. Ratchet stop protects the instrument from acoustic troubles
The rate of exergy loss is directly proportional to	1. Entropy generation 2. Increase in energy 3. Leads to increase in irreversibility 4. Efficiency
In Electron beam machining, as the electrons strikes the work piece	1. Their kinetic energy is converted into heat 2. They get scattered 3. Mechanical erosion in work piece takes place 4. Electro-chemical etching takes place
The effect of increase in mean temperature of heat addition in an ideal Rankine cycle leads to	1. decrease in efficiency of the cycle 2. increase in efficiency of the cycle 3. does not affect the efficiency of the cycle 4. first increases and then decreases the efficiency of the cycle
A saturation state is a state from which a change of phase may occur without	1. change in temperature 2. change in pressure 3. change in temperature and pressure 4. volume
An Otto cycle operates with volumes of 40 cm^3 and 400 cm^3 at Top Dead Centre and Bottom Dead Centre respectively. If the power output is 100 kW, what is the heat input in kJ/s?	1. 166 2. 145 3. 110 4. 93

Questions	Choices
Nitrogen gas (molecular weight=28) is enclosed in a cylinder by a piston, at the initial conditions of 2 bar, 298 K and 1 m^3. In a particular process, the gas slowly expands under isothermal condition, until the volume becomes 2 m^3. Heat exchange occurs with the atmosphere at 298 K during this process. The work interaction for the nitrogen gas is	1. 200 kJ 2. 138.6 kJ 3. 2 kJ 4. -200 kJ
The rear teeth of a broach	1. Remove no metal 2. Remove maximum metal 3. Remove minimum metal 4. Perform burnishing operation
Which of the following is the hardest one?	1. Ferrite 2. Cementite 3. Martensite 4. Tempered martensite
A fluid whose viscosity does not change with the rate of deformation or shear strain is known as	1. Newtonian fluid 2. Ideal fluid 3. Real fluid 4. Non-Newtonian fluid
In a eutectic system, two elements are completely	1. insoluble in solid and liquid states 2. insoluble in liquid state 3. soluble in solid state 4. soluble in liquid state
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
A rod is enclosed centrally in a tube and the assembly is tightened by rigid washers. If the assembly is subjected to a compressive load, then	1. rod is under compression 2. both rod and tube are under compression 3. tube is under tension and rod is under compression 4. tube is under compression

Questions	Choices
Any point on a link connecting double slider chain will trace a	1. straight line 2. circle 3. parabola 4. ellipse
The kinematic viscosity of an oil (in stokes) whose specific gravity is 0.95 and viscosity 0.011 poise, is	1. 0.0116 stoke 2. 0.611 stoke 3. 0.116 stoke 4. 0.0611 stoke
The complete phase recrystallization and fine grain structure is obtained in casting, forging and rolled parts by:	1. Austenising 2. Process annealing 3. Normalizing 4. Spheroidizing
Austempering is employed to obtain:	1.100% martensitic structure 2.100% bainitic structure 3. 50% martensitic and 50% bainitic structure 4. 100% pearlitic structure
Work done in a free expansion process is	1. Zero 2. Positive 3. Negative 4. Maximum
Which one of the following is not included in a long-range strategic plan?	1. Customer service objectives 2. Financial objective 3. Market-share objective 4. Workforce objective
Which of the following is a characteristic of an aggregate production plan?	1. It plans and schedules the production of components 2. It calculates the load for most work centers 3. It plans the production of families of products 4. It calculates loads for critical, bottleneck work centers
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

Questions	Choices
The thermal efficiency of theoretical Otto cycle	1. increases with increase in compression ratio 2. increases with increase in isentropic index γ 3. does not depend upon the pressure ratio 4. follows all the above.
What is the term for the maximum amount of time each workstation has to complete its assigned task?	1. output rate 2. task time 3. station time 4. cycle time
Group technology creates groupings of products primarily based on what?	1. Product cost 2. Raw materials requirements 3. Similar processing requirements 4. Operating characteristics
What technique eliminates unnecessary tasks and improves the process for completing tasks?	1.Time study 2.Work sampling 3.Ergonomics 4.Method study
Which of the following statement is true:	1. Heat can be completely converted into work. 2. Entropy of the universe is always constant. 3. The energy of the universe keeps on increasing 4. All work can be converted into heat.
A circular shaft fixed at, *A* has diameter *D* for half of its length and diameter *D*/2 over the other half. If the rotation of *B* relative to *A* is 0.1 radian, the rotation of *C* relative to *B* will be	1. 3.2 radian 2. 0.4 radian 3. 0.8 radian 4. 1.6 radian
For a canteen, the actual demand for disposable cup was 500 units in January, 600 units in February. The forecast for the month of January was 400 units. the forecast for the month of March considering smoothing coefficient as 0.75 is	1. 550 2. 568.75 3. 575 4. 580
Legal rights such as patents and local, state, or federal licenses can present formidable:	1. barriers to entry. 2. barriers to mobility. 3.barriers to exit. 4. none of these.

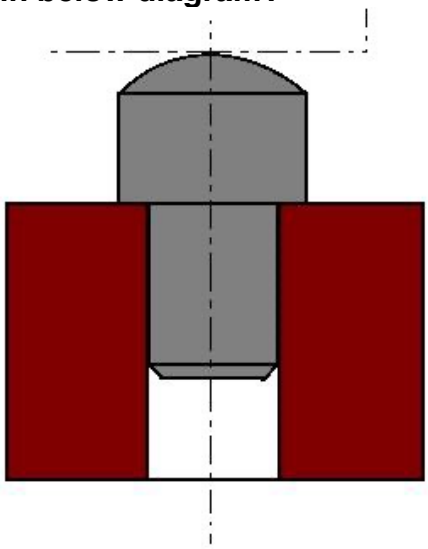
Questions	Choices
In Ultrasonic machining, the material is removed by	1. thermal melting 2. abrasive action 3. electrochemical oxidation 4. anodic dissolution
A hemispherical tank of radius (*R*) has an orifice of cross-sectional area (*a*) at its bottom and is full of liquid. The time required to empty the tank completely is	1. $14\pi R^{7/2}/15C_d \times a\sqrt{(2g)}$ 2. $14\pi R^{1/2}/15C_d \times a\sqrt{(2g)}$ 3. $14\pi R^{3/2}/15C_d \times a\sqrt{(2g)}$ 4. $14\pi R^{5/2}/15C_d \times a\sqrt{(2g)}$
In Electron beam machining, the order in which electrons passed after emitted by filament cathode	1. diaphragm – anode –focusing lens – Deflector coil 2. anode – diaphragm – focusing lens – Deflector coil 3. Deflector – coil anode – diaphragm – focusing lens 4. focusing lens – anode – diaphragm –Deflector coil
In Electron beam machining, workpiece is held in	1. electrolyte 2. vacuum chamber 3. dielectric medium 4. none of these
Plasma is a mixture of 1. free electrons 2. positively charged ions 3. neutral atoms	1. 1 & 3 2. 2 & 3 3. 1 & 2 4. 1,2 & 3
The process utilizing mainly thermal energy for removing material is	1. Laser Beam Machining 2. Abrasive Jet Machinine 3. Electrochemical Machining 4. Ultrasonic Machining
Which of the following is used as gas laser in Laser beam machining? 1. Helium-neon 2. Agron 3. CO_2	1. All of these 2. 2 & 3 3. 1& 2 4. 1 only

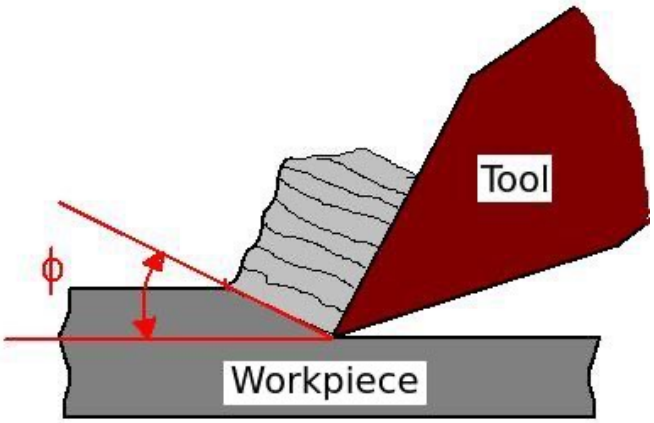
Questions	Choices
Successful companies	1. must cover allocated fixed overhead costs during off-peak periods. 2. ignore fixed costs when the firm is operating at full capacity. 3. differentiate markups according to variations in product demand elasticities. 4. set prices based on standard costs per unit, irrespective of short-term variations in actual unit costs.
Breakeven analysis identifies the	1. profit-maximizing level of output 2. level of output where economic profit is equal to zero. 3. level of output where marginal revenue is equal to marginal cost. 4. All of the above are correct.
The profit-maximizing level of output occurs where:	1. marginal cost equals average cost. 2. marginal revenue equals zero. 3. total profit equals zero. 4. marginal cost equals marginal revenue.
	1. 0.015mm 2. 0.012mm 3. 0.0125mm 4. 0.235mm
	The answer is the fourth option
In an interchangeable assembly, shafts of size $25.000^{+0.040}_{-0.010} mm$ mate with holes of size $25.000^{+0.030}_{+0.020} mm$. The maximum interference (in *microns*) in the assembly is	1. 30 2. 20 3. 45 4. 40
A hole is dimension $\phi 9^{+0.015}_{+0}$ mm. The corresponding shaft is of dimension $\phi 9^{+0.010}_{+0.001}$ mm. The resulting assembly has	1. loose running fit 2. transition fit 3. clearance fit 4. double fit

Questions	Choices
A hole is specified as $40^{0.050}_{0.000}$ mm. The mating shaft has a clearance fit with minimum clearance of 0.01 mm. The tolerance on the shaft os 0.04 mm. The maximum clearance in mm between the hole and the shaft is	1. 0.10 2. 0.20 3. 0.105 4. 0.215
To convert a (≤) – inequality constraint to an equation, a ---------- is added to the left hand side of the constraint.	1. Slack Variable 2. Surplus Variable 3. Negative Slack Variable 4. Negative Surplus Variable
Any values of decision variables that satisfy all the constraints constitute a ----------Solution.	1. Unbounded 2. Infeasible 3. Basic 4. Feasible
Graphical Method of solving LPP is used when number of decision variables are less than or equal to ----------	1. Three 2. Two 3. Four 4. One
---------- method is used to solve when LPP consists of (≥) and/or (=) constraints	1. MODI 2. Two phase or Big M 3. Least Cost 4. All the above
Brittle fracture is more dangerous than ductile fracture because	1. No warning sign 2. Crack propagates at very high speeds 3. No need for extra stress during crack propagation 4. All of the options
Induction hardening is basically a	1. none of these options 2. core-hardening process 3. surface hardening process 4. carburising process
Mention the features of a Universal Bevel Protractor?	1. Main scale and Vernier scale are on the same plane to eliminate the reading parallax. 2. Main parts are of hardened stainless steel to prevent rust. 3. Combined with an attachment or Height gauge, a wide range of measurements is available. 4. All the options are features

Questions	Choices
A perfectly competitive industry has identical firms and identical consumers. Each consumer earns $10,000 a year. The demand curve is Q = 100 – 5P. The supply curve is Q = 20 + 3P. What is the equilibrium price and equilibrium quantity?	1. 10,10 2. 50,10 3. 10,50 4. 50,50
Given the price, if the cost of production increases because of higher price of raw materials, the supply	1.Decreases 2. Remains same 3.Increases 4.None of the above
If automobile manufacturers are producing cars faster than people want to buy them,	1. there is an excess supply and price can be expected to decrease 2. there is an excess supply and price can be expected to increase 3. there is an excess demand and price can be expected to decrease 4. there is an excess demand and price can be expected to increase
Which of the following is a variable cost?	1. Interest payments 2. Raw materials costs 3. Property taxes 4. All of the above are variable costs.
Which of the following is not a casting defect?	1. Swell 2. Shrinkage 3. Hot tears 4. Hot cracks
The jigs and fixtures can be constructed through	1. Casting 2. fabrication 3. Welding 4. All of the above
V-blocks (Vee locators) are used for clamping as well as locating when faces are inclined upto	1. 30° 2. 12° 3. 9° 4. 3°

Questions	Choices
Jigs and fixtures are	1. machining tools 2. precision tools 3. both a. and b. 4. none of the above
A device, in which a component is held and located for a specific operation and bushes are integrated that guide the tool, is called as	1. Jig 2. Fixture 3. Locator 4. Press
Fixtures are used in connection with	1. drilling operation 2. reaming operation 3. tapping operation 4. milling operation
How jigs are in terms of weight compared to fixtures?	1. jigs are lighter than fixtures 2. Jigs are heavier than fixtures 3. Jigs are equal in weight to fixtures for same operation 4. cannot say
Which of the following sentences are true for jigs and fixtures? 1. Using jigs and fixture produce work rapidly 2. High speed, feed and depth of cut can be used in machining with the help of jigs and fixtures 3. Jigs and fixture cannot be used in machining of complex and heavy components	1. (1) and(2) 2. (1) and(3) 3.(1) and(3) 4. All of the (1), (2) and (3)
The device which place the workpiece in the same position, in jig and fixture, cycle after cycle is called as	1. placing device 2. locating device 3. fixing device 4. positioning device
Which fixtures are used for machining parts which must have machined details evenly spaced?	1. Profile fixtures 2. Duplex fixtures 3. Indexing fixture 4. None of the above

Questions	Choices
The device which is used to remove workpiece from close-fitting locators, after the workpiece has been removed is called as	1. remover 2. ejector 3. escaper 4. blocker
Which type of Support pin or rest button is shown in below diagram? 	1. Fixed type support pin 2. Adjustable type support pin 3. Support pad 4. Wedge type support pin
Fool proofing is used for----------	1. Rigidity 2. Clearance 3. To avoid damages 4. For proper loading of workpiece
If demand decreases while supply increases for a particular good:	1. its equilibrium price will increase while the quantity of the good produced and sold could increase, decrease, or remain constant. 2. its equilibrium price will decrease while the quantity of the good produced and sold could increase, decrease, or remain constant. 3. the quantity of the good produced and sold will decrease while its equilibrium price could increase, decrease, or remain constant. 4. the quantity of the good produced and sold will increase while its equilibrium price could increase, decrease or remain constant
Find out the least count of a vernier caliper when its main scale graduation is 49 mm and the vernier scale is divided in to 50 equal parts?	1. 0.02 2. 0.012 3. 0.013 4. 0.03

Questions	Choices
What is the angle Φ shown in the below diagram of basic mechanism of chip formation? 	1. Shear angle 2. Tool rake angle 3. Chip angle 4. Cutting angle
Continuous chips are formed during metal cutting operation due to	1. ductile work materials 2. large rake angle 3. high cutting speed 4. all of the above
Principle of _____ states that "In order to achieve the maximum accuracy in location the locating points should, therefore, be placed as far apart from one another as it is possible".	1. Six point location 2. Least points 3. Extreme positions 4. Mutually perpendicular planes
The following holds the workpiece securely in a jig or fixture against the cutting forces	1. Locating device 2. Clamping device 3. Guiding device 4. Indexing device
The following is a quick acting clamp	1. Hinged clamp 2. Cam operated clamp 3. Bridge clamp 4. Edge clamp
The following material is commonly used for making locating and clamping devices	1. High carbon steel 2. Low carbon steel 3. High speed steel 4. Die steel

Questions	Choices
The following type of jig is used for machining in more than one plane	1. Template jig 2. Plate type jig 3. Open type jig 4. Box type jig
The following type of jig suits best for drilling of holes in hollow cylindrical components, with relatively smaller outside and inside diameters, such as bushes	1. Solid type jig 2. Pot type jig 3. Box type jig 4. Box type jig
The following type of jig is used to drill a series of equidistant hole along a circle	1. Index jig 2. Plate type jig 3.Open type jig 4.Pot type jig
This type of jig is employed on multi-spindle machines	1.Index jig 2.Universal jig 3.Open type jig 4.Multi-station jig
The following jig can be used for several different work pieces and operations	1.Template jig 2.Multi-station jig 3.Index jig 4.Universal jig
The following is(are) the advantage(s) of cast jigs or fixtures	1.No heat treatments are required for the cast jigs and fixtures 2.It prevents the occurrence of tool chatter in milling 3. if cast jigs or fixture drops down, they don't get misaligned or de-shaped, although it may break 4. All of the above
The ascending order of evolution of materials used for making the cutting tools is	1.bronze – stone – steel – iron 2. iron – steel – bronze – stone 3.stone – bronze – iron – steel 4.bronze – stone – steel – iron
The materials are added to cutting tools to increase their properties. Match the following 1. Tungsten a. Hardness 2. Carbon b. Hot hardness 3. Vanadium c. Wear resistance The correct order is	1. 1-b, 2-a, 3-c 2. 1-c, 2-a, 3-b 3. 1-b, 2-c, 3-a 4. 1-a, 2-b, 3-c

Questions	Choices
Which of the following is second hardest substance known?	1. Ceramics 2. Cermets 3. Cubic Boron Nitride (CBN) 4. Diamond
Which of the following tools are generally manufactured by Powder metallurgy?	1. Low carbon steel 2. Abrasives 3.High carbon steel 4. Cemented carbides
Which of the following is hardest known material?	1. Cemented carbide 2. Ceramics 3.Cubic boron nitride (CBN) 4.Diamond
The built up edge in cutting tools can be eliminated by	1. Fast cutting speed 2. Higher rake angles 3.High pressure cutting fluid 4. All of the above
The cutting speed of High speed steels is ____ times faster than Carbon steel	1. 2 2. 4 3. 6 4. 8
Which of the following cutting tool has highest hot hardness?	1. Ceramics 2. Cast alloys 3. High speed steels 4. Carbon tool steel
Which of the following cutting conditions greatly affects the tool wear?	1. Cutting speed 2. Feed 3. Depth of cut 4. None of the above
Which of the following is not a constituent of High speed steel?	1. V 2. Cr 3. W 4. Ni

Questions	Choices
In a single point turning operation with a cemented carbide and steel combination having a Taylor exponent of 0.25, if the cutting speed is halved, then the tool life will become	1. Half 2. Two times 3. Eight times 4. Sixteen times
The tool life increases with the	1. Increase in side cutting edge angle 2. Decrease in side rake angle 3. Decrease in nose radius 4. Decrease in back rake angle
Match list I and II and select the correct answer using the codes given below the lists: **List I (Cutting tools) List II (Major constituent)** a. Stellite 1. Tungsten b. HSS 2. Cobalt c. Ceramic 3. Alumina d. UCON 4. Columbium 5. Titanium	1. a-5, b-1, c-3, d-4 -5, b-1, c-3, d-4 (C) a-2, b-1, c-3, d-4 (D) a-2, b-5, c-3, d-4 2. a-2, b-1, c-4, d-3 3. a-2, b-1, c-3, d-4 4. a-2, b-5, c-3, d-4
Which of the following tool materials have cobalt as a constituent element? 1. **Tungsten carbide 2. CBN 3. Stellite 4. UCON**	1. 1 & 2 2. 1 & 3 3. 1 & 4 4. 2 & 3
The coating materials for coated carbide tools, include	1. TiC, TiN and NaCN 2. TiC and TiN 3. TiN and NaCN 4. TiC and NaCN
Compound dies performs	1. two or more operations at one station in one stroke 2. two or more operations at different stations in one stroke 3. two or more operations at different stations in one stroke 4. Two operations at two different work stations in the same stroke
Consider the following cutting tool materials used for metal-cutting operation at high speed: 1. Tungsten carbide 2. Cemented titanium carbide 3. High speed steel 4. Cermet The correct sequence in increasing order of the range of cutting speeds for optimum use of these materials is	1. 3, 1, 4, 2 2. 1, 3, 2, 4 3. 3, 1, 2, 4 4. 3, 1, 2, 4

Questions	Choices
Brittle material are machined with tools having zero or negative rake angle because it	1. results in lower cutting force 2. improves surface finish 3. provides adequate strength to cutting tool 4. results in more accurate dimensions
11-18-4-1 High speed steel has	1. 1% chromium 2. 4% tungsten 3. 18% vanadium 4. 0.7 % carbon
The angle on which the strength of the tool depends is	1. Rake angle 2. Cutting angle 3. Clearance angle 4. Lip angle
The following contains up to 0.15% carbon	1. Mild steel 2. Low carbon steel 3. High carbon steel 4. Dead mild steel
The metal in machining operation is removed by	1. Tearing chips 2. Distortion of metal 3. Shearing of metal across a zone 4. Cutting of metal across a zone
Cutting and forming operations can be done in a single operation on	1. Simple die 2. Compound die 3. Combination die 4.None of the above
In blanking operation the clearance provided is	1. 50% on punch and 50% on die 2. on die 3. on punch 4. on die or punch depending upon designer's choice
The tool life increases with	1. increase in side cutting edge angle 2.decrease in side rake angle 3. decrease in nose angle 4. decrease in back rake angle

Questions	Choices
In forging, the compressive forces can be exerted by i. Hammer ii. Press iii. An upsetting machine iv. Rollers	1. a. i & ii 2. a. i, ii & iii 3. a. i, ii & iv 4. a. All of these
The type of force applied through die in forging is	1. a. Tensile force 2. a. Compressive force 3. a. Shear force 4. a. Any of the above
Which of the following open die forging operation reduces the height of a forging and increases its diameter?	1. a. Cogging 2. a. Upsetting 3. a. Expanding 4. a. Hollow forging
The term applied to the first operation in an impression die forging is called	1. a. Fullering 2. a. Blocking 3. a. Trimming 4. a. Coining
In a blanking die, the device that clears the sheet metal from the punch after blanking is called which one of the following	1. clearance device 2. punch holder 3. stop 4. Stripper
In forging die (without ejectors), to facilitate removal of forgings from die, the draft for inside force must be	1. a. 1 – 4° 2. a. 4 – 7° 3. a. 7 – 10° 4. a. 10 – 13°
The material which is squeezed out between the faces of the dies is known as	1. a. Slag 2. Flash 3. a. Scale 4. a. Misrun
The change in entropy during a process is zero when	1. Reverse and adiabatic. 2. When it is reversible 3. When there is no heat transfer 4. All of these

Questions	Choices
Which of the following defect in forging is not due to melting practice?	1. a. dirt 2. a. slag 3. a. blow hole 4. a. seams
in drop forging i. closed impression dies are used ii. final shape is obtained in a number of steps iii. excess metal is provided purposely to ensure complete filling of dies Which of the above is (are) true?	1. a. i & ii 2. a. i & iii 3. a. i, ii & iii 4. a. only i
The material which is squeezed out between the faces of the dies is known as	1. a. misrun 2. a. hot short 3. a. laps 4. a. segregation
A die is used in	1. a. casting process 2. a. forging process 3. a. extrusion process 4. a. All of these
The screw type mechanical press is used for the forging of	1. a. Steel 2. a. Copper 3. a. Brass 4. a. Aluminium
Bolts are produced by	1. a. Upset forging 2. a. Hammer forging 3. a. Press forging 4. a. Hot bar forging
The operation of producing cup shaped parts from flat sheet metal blanks by bending and plastic flow of metal, is known as	1. Drawing 2. Squeezing 3. Coining 4. Planishing

Questions	Choices
The Electrical Discharge machining (EDM) process is	1. Capable of producing sharp corners 2. Burr free 3. Not for hard metal 4. Direct contact machining
Blanking and piercing operations can be performed simultaneously in a	1. progressive die 2. simple die 3. Compound Die 4. Combination die
In a compound die	1. two or more cutting operations are performed at one station of the press in every stroke of the ram 2. only one operation is performed at each stroke of the ram 3. both cutting and non-cutting operations are performed at one station of the press in every stroke of the ram 4. two or more operations are performed simultaneously at the single stroke of the ram
Notching is the operation of	1. removal of metal to the desired shape from the edge of a plate 2. cutting a sheet of metal in a straight line along the length 3. cutting a sheet of metal through part of its length and then bending the cut portion 4. bending a sheet of metal along a curved axis
Lancing is the operation of	1. cutting a sheet of metal in a straight line along the length 2. cutting a sheet of metal through part of its length and then bending the cut portion 3. removal of metal to the desired shape from the edge of a plate 4. bending a sheet of metal along a curved axis
The demand curve for automobiles produced in the United States expresses the relation between the quantity demanded and:	1. import prices. 2. wage rates. 3. interest rates 4. none of these
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

Questions	Choices
Average cost will fall as output expands so long as:	1. marginal revenue is less than average revenue. 2. marginal cost equals zero. 3. marginal cost is less than average cost. 4. fixed costs equal zero
Profit-maximizing firms always:	1. sell at lower prices than revenue-maximizing firms 2. sell less output than revenue-maximizing firms. 3. set marginal cost equal to average cost. 4. none of these
In the housing market, a rise in interest rates will:	1. increase demand. 2. decrease demand. 3. decrease the quantity demanded 4. increase the quantity demanded.
Satisficing behaviour is most common:	1. in vigorously competitive markets. 2. when institutional shareholders are vigilant 3. when economic profits are low. 4. in markets sheltered from competition.
The arc price elasticity of demand shows the percentage change in:	1. demand following a change in the price of a product itself. 2. the quantity demanded following a change in price of a product itself. 3. price following a change in the quantity demanded 4. the price of a product itself following a change in demand.
The law of diminishing marginal utility:	1. states that as an individual increases consumption of a given product within a set period of time, the marginal utility gained from consumption eventually becomes negative. 2. contradicts the non-satiation principle. 3. measures the added satisfaction derived from a one unit increase in consumption of a particular good or service, holding consumption of other goods and services constant. 4. gives rise to a downward-sloping demand curve for all goods and services.

Questions	Choices
A market:	1. consists of all firms and individuals willing and able to buy or sell a particular product at a given time and place. 2. is confined to individuals and firms currently engaged in buying and selling a particular product. 3. describes the competitive environment in the market for any good or service. 4. is limited to individuals or firms posing a sufficiently credible threat of market entry to affect the price/output decisions of incumbent firms.
A forecast method that gives feedback to panel members in a manner that prevents direct identification of individual positions is called:	1. personal insight. 2. panel consensus. 3. the Delphi method 4. qualitative analysis.
The marginal revenue product concept describes the:	1. profit gained through expanding employment 2. breakeven profit level. 3. added revenue from expanding employment. 4. cost of expanding employment
In the long run, all costs are:	1. fixed 2. variable 3. sunk 4. none of these
If marginal cost is less than average cost at all output levels:	1. marginal cost must be falling. 2. average cost must be falling. 3. average cost must be rising. 4. none of these.
When demand is perfectly elastic, regulatory costs are never borne by:	1. consumers. 2. management 3. stockholders 4. government
Regulation of business has the potential to yield economic benefits to society by:	1. increasing positive and negative externalities 2. increasing the availability of substitutes 3. restricting entry. 4. mandating economies of scale.

Questions	Choices
A market dominated by few buyers is called:	1. monopoly. 2. oligopsony. 3. monopsony. 4. perfectly competitive.
In an oligopoly market, firms always:	1. offer products that are not perfect substitutes 2. make decisions in light of expected reactions from other firms. 3. set price equal to marginal cost 4. are price takers
The Herfindahl Hirschmann Index (HHI) is a popular measure of competitor size inequality that reflects size differences among large and small firms. Which of the following is true?	1. HHI approaches zero for industries characterized by a large number of very small competitors 2. Calculated in percentage terms, the HHI is the sum of the market shares for all n industry competitors 3. A monopoly industry with a single dominant firm is described by a HHI = 100. 4. A vigorously competitive industry where each of the leading four firms enjoy market shares of 25% is described by a HHI = 100.
The so-called Prisoner's Dilemma:	1. is a one-shot game with ongoing interaction between competitors. 2. is a repeated game. 3. has no dominant strategy. 4. exists because both would be better off if they could be assured that the other would confess.
Market penetration pricing by newcomers is apt to be most successful when:	1. network externalities lead to significant first-mover advantages. 2. established and thriving firms enjoy customer lock-in effects. 3. aggressive predatory pricing strategies are necessary to limit competitor entry 4. applied in competitive markets.
For two projects with the same cost, the one that is more risky has the:	1. lowest standard deviation. 2. lowest expected profit. 3. highest standard deviation. 4. highest expected profit.

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 internal rate of return (IRR) is the:	1. component cost of capital. 2. rate of return on stockholders' equity. 3. after-tax weighted average cost of capital. 4. discount rate that equates the present value of cash inflows and outflows.
In 2008, M and M's candy maker Mars teamed up with billionaire Warren Buffett to buy chewing gum manufacturer Wm Wrigley Jr. Co. to create the world's largest confectionery company. This was a:	1. market extension merger 2. conglomerate merger 3. horizontal merger. 4. vertical merger.
When a manager can list all outcomes and assign probabilities to each,	1. the manager should use the maximin rule for decision making 2. both risk and uncertainty exist. 3. risk exists. 4. a. uncertainty exists.
The deflection of a spring with 20 active turns under a load of 1000N is 10 mm.The springs is made into two pieces each of 10 active coils and places in parallel under the same load. The deflection of this system is (in mm)	1. 100 2. 2.5 3. 10 4. 20
The MaxiMin rule...	1. a. ignores bad outcomes. 2. is used by optimistic managers 3. a. minimizes the potential regret. 4. a. chooses the maximum worst payoff.
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. One and half times the first one 2. One fourth of the first one 3. Same as the first one 4. Four times the first one

Questions	Choices
In a four cylinder 4 stroke inline IC engine, the angle between two successive crank should be 180 degree. But this rule is violated for cranks 2 and 3 (i.e. inner cranks) and the angle is made 0 degree. This is done to achieve primary force	1. and secondary couple balancin 2. and secondary force balancing 3. secondary force and primary couple balancing 4. primary and secondary couple balancin
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. 0.07 2. 0.01 3. 0.02 4. 0.05
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. 60 2. 120 3. 45 4. 30
Firms that compete in the global marketplace typically face two types of competitive pressures, namely, the pressures for _____ and _____.	1.global integration; local responsiveness 2.cost reductions; marginal costs 3.politically sensitivity; market leadership 4.price reductions; cost reductions
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?(in rad/s)	1. 100 2. 120 3. 90 4. 80
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. 40 3. 2.5 4. 20
Hammer blow	1. is the maximum horizontal unbalanced force caused by the mass provided to balance the reciprocating masses. 2. is the maximum vertical unbalanced force caused by the mass added to balance the reciprocating masses 3. varies inversely with the square of the speed 4. varies as the square root of the speed
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. 2 2. 1 3. 3 4. 4

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

Questions	Choices
The partial balancing means	1. balancing partially the revolving masses 2. all of the above 3. balancing partially the reciprocating masses 4. best balancing of engines
It is the operation of cutting a sheet metal in two part an like cutting off	1. Parting 2. Notching 3. Blanking 4. Cutting off
It is the operation of production of coins metal ornamental parts by squeezing operation	1. Cupping 2. coining 3. Pluging 4. All of the above
It is the operation of cutting of the flat sheet of the derived shape	1. Blanking 2. Performating 3. Cutting off 4. parting
A flywheel of moment of inertia 9.8 kgm2 fluctuates by 30 rpm for a fluctuation in energy of 1936 Joules. The mean speed of the flywheel is (in rpm)	1. 600 2. 968 3. 2940 4. 900
In a locomotive, the ratio of the connecting rod length to the crank radius is kept very large in order to	1. start the locomotive quickly 2. minimise the effect of primary forces 3. have perfect balancing 4. minimise the effect of secondary forces
The reciprocating member of the press that slides with in the press and guides and supports the punch at its bottom end	1. Bloster plate 2. Clutch 3. Base 4. Fly wheel
Secondary forces in reciprocating mass on engine frame are	1. twice the frequency as of primary forces 2. of same frequency as of primary forces 3. four times the frequency as of primary forces 4. none of the above

Questions	Choices
In order to have a complete balance of the several revolving masses in different planes	1. none of the above 2. the resultant couple must be zero 3. both the resultant force and couple must be zero 4. the resultant force must be zero
It is the operation of production of a number of holes evenly spaced in a regular pattern on a sheet metal	1. Blanking 2. Cutting off 3. Parting 4. Perforating
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 0.6 is the answer	1. 0.2 2. angular acceleration of the body 3. centripetal acceleration 4. position of balancing weights
When a body moves with simple harmonic motion, the product of its periodic time and frequency is equal to	1. 1 2. centripetal acceleration 3. angular accelaration of the body 4. position of balancing weights
If the ratio of frequency of excitation to the natural frequency of vibrations is 1.414, then the transmissibility of vibration will the	1. 2 2. 0.5 3. 0 4. 1
In under damped vibrating system, the amplitude of vibration	1. increases exponentially with time 2. decreases linearly with time 3. increases linearly with time 4. decreases exponentially with time
It is the operation of production of holes in a sheet metal by the punch and die	1. Punching 2. Shearing 3. Piercing 4. All of the above

Questions	Choices
The steering of a ship means	1. turning of a complete ship in a curve towards right or left, while it moves forward 2. movement of a complete ship up and down in vertical plane about transverse axis 3. none of the above 4. rolling of a complete ship side-ways
A shaft carrying three rotors will have	1. no node 2. one node 3. two node 4. three 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. compound pendulum 2. torsional pendulum 3. simple pendulum 4. second's pendulum
The secondary unbalanced force is maximum _____ in one revolution of the crank	1. four times 2. two times 3. eight times 4. sixteen times
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. governor B is more sensitive than governor A 2. both governors A and B are equally sensitive 3. governor A is more sensitive than governor B 4. none of the above
A 1.5kW 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
It is an operation of production of cup shapes parts from flat sheet metal blanks by bending and plastic flow of the metal	1. Pluging 2. forming 3. Drawing operation 4. Curling
Which of the following is used to control the speed variations of the engine caused by the fluctuations of the engine turning moment?	1. none of these 2. Governor 3. connecting rod 4. flywheel

Questions	Choices
A system in dynamic balance implies that	1. there is no critical speed in the system 2. there will absolutely no wear of bearings 3. the system is critically damped 4. the system is also statically balanced
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. 2 times of first spring 2. as the same of first spring 3. 1/3 of first spring 4. 3 times of first spring
What is the minimum damping ratio for an underdamped system such that its overshoot is limited to 10 percent?	1. 1 2. 0.69 3. 0.59 4. 1.59
If magnification factor is high for constant damping factor	1. the excitation frequency may get resonance or nearby the resonance 2. none of these 3. the excitation frequency may be higher than resonance 4. the excitation frequency may be lower than resonance
It is an operation of forming the edges of a component in to a roll	1. Curling 2. Forming 3. Drawing 4. Coining
When the blanks of sheet metal are stretched to shape under pressure in a punch and die	1. Embossing 2. Streching 3. Squeezing 4. Spinning
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
Mobility of a statically indeterminate structure is	1. Less than equal to -1 2. 0 3. 1 4. Greater than or equal to 2
For a four bar linkage in toggle position, the value of mechanical advantage is?	1. 0 2. 0.5 3. 1 4. infinite
The cam follower generally used in automobile engines is	1. knife edge follower 2. knife edge follower 3. spherical faced follower 4. roller follower
A chain consisting of four links and four joints is called	1. kinematic chain 2. pair 3. structure 4. redundant chain
The inversion of a mechanism is	1. changing of a higher pair to a lower pair 2. turning its upside down 3. obtained by fixing different links in a kinematic chain 4. obtained by reversing the input and output motion
As the U.S. population ages, the structure of the demand for food products will change with	1. a. an increase in the demand for red meat products and a decrease in the demand for fish and poultry. 2. an increase in the demand for dairy products and a decrease in the demand for red meat 3. a. an increase in the demand for fruits, vegetables and fish and a decrease in demand for fried foods, dairy products and items that contain a lot of sugar. 4. a. an increase in the demand for beverages and drinks and a decrease in the demand for solid food.
Risks faced by multinational corporations include	1. a. changes in exchange rates. 2. a. restrictions on ownership. 3. a. repatriation of funds. 4. a. All of the above

Questions	Choices
Which of the following would be an example of FDI?	1. a. A Brazilian investor buys German government bond. 2. a. An American buys a new Swedish car. 3. a. An Italian firm builds a plant in Nebraska. 4. a. A Canadian investor buys a French equity.
The pricing of a product at each stage of production as the product moves through several stages is called	1. a. transfer pricing. 2. cost plus pricing 3. penetration pricing 4. a. monopolistic pricing
According to the Structure-Conduct-Performance Model of Corporate Strategy, what does the so-called "IO" model focus on?	1. Executives skills and knowledge, not products or functions 2. a. Networking competencies 3. a. Industry structure or attractiveness of the external environment rather than internal characteristics of the firm. 4. a. Industry structure or attractiveness of the internal environment rather than internal characteristics of the firm.
All of the following factors help define the structure of an industry except the _____.	1. a. competitive pressures among rival firms 2. a. bargaining power of suppliers and customers 3. threat of potential entry into the marketplace 4. a. opportunity of location advantages
Suppose people buy more of good 1 when the price of good 2 falls. These goods are	1. Substitutes 2. Normal 3. Complements 4. Inferior
In the Structure-Conduct-Performance (SCP) paradigm the conditions under "P" could include:	1.Quality & Service 2.Cost Structures 3.Price elasticity 4.All the above
Which of the following pairs of goods are most likely substitutes?	1. Compact discs and compact disc players 2. Cola and lemon lime soda 3. Lettuce and salad dressing 4. Peanut butter and gasoline
Being the first firm to market a product successfully in an emerging market often leads to what is called the _____.	1.Relative advantage 2.Pioneering advantage 3.Comparative advantage 4.Success advantage

Questions	Choices
Which of the following forecasting method is suitable for launching new products?	1.Exponential smoothing 2.Judgemental methods 3.Causal models 4.Moving average methods
Which of the following pairs of goods would be most likely to have a negative cross price elasticity of demand?	1.tea and coffee 2.fire extinguishers and blue jeans 3.camp stoves and tents 4.steak and hamburger
The market for automobiles is an example of	1. monopolistic competition 2. duopoly 3. differentiated oligopoly 4. pure oligopoly
If an industry is comprised of four firms and their market shares are 40%, 30%, 20%, and 10%, then the Herfindahl index for the industry is	1. 100 2. 200 3. 3,000 4. 10,000
One reason that most economists do not support government industrial and trade policies is that the outcomes of these policies cannot	1. have a positive effect on a country's industries 2. be accurately predicted 3. help a country to overcome a comparative disadvantage 4. prevent a country from losing a comparative advantage
Porter's strategic framework identifies forces that influence an industry's	1. intensity of competition and profitability 2. rate of growth 3. popularity among consumers 4. potential as an exporter within the global economy
Which of the following is NOT a force identified by Porter's strategic framework?	1. Threat of entry 2. Intensity of rivalry 3. Government tax policy 4. Bargaining power of buyers
Primary standards are kept at all leading industries across the globe	1. - 2. - 3. True 4. False

Questions	Choices
Suppose that you are using the simple mean to make a forecast. This period's forecast was equal to 100 units, and it was based on 6 periods of demand. This period's actual demand was 86 units. What is your forecast for next period?	1. close to 98 2. exacly 88 3. Exactly 100 4. exacly 80
A measurement system only includes operators and gauges	1. b) False 2. d) May be true or false 3. c) Always True 4. a) Can't predict
Precision is related to the accuracy of the measurements	1. Always False 2. May be true or false 3. True 4. can't predict
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
Slip gauges are _____standards	1. wave length 2. secondary 3. end 4. Line
Dial gauge is a _____	1. Angular measuring instrument 2. None of these 3. Surface measuring instrument 4. linear measuring instrument
The least measurement that can be detected by a measuring instrument is _____	1. calibration 2. Precision 3. accuracy 4. Sensitivity

Questions	Choices
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
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
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
In hot chamber die casting machine	1. melting unit is an integral part of machine 2. It is used for high melting (above 500°C) alloys 3. No pressure is used for forcing the metal inside the die 4. None of the above
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
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

Questions	Choices
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
Involute profile is preferred to cycloid because	1. the profile is easy to cut 2. only one curve is required to cut 3. the rack has straight line profile and hence can be cut accurately 4. smoother operation
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
What is a market situation whereby there is only one buyer of an item for which there is no goods substitute?	1. Oligopsony 2. Oligopoly, 3. Monopsony 4. Monopoly
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
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
Reference gauges are also known as _____	1. b) Master gauges 2. d) Work gauges 3. c) GO- gauges 4. a) limit gauges
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
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
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
Gauge blocks are a system for producing precision lengths	1. c) Partially true 2. b) False 3. a) True 4. d) Sometimes true
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
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
A screw thread measurement involves _____	1. a) major diameter 2. b) thread form 3. c) thread pitch 4. d) all the options are correct
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
. 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
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
Economics indicates that the world economy fluctuates over the long term. What type of data pattern would this be?	1. Level 2. Seasonal 3. Cycles 4. Linear
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
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
_____ 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
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 3. b) work tolerance zone 4. a) maximum tolerance zone
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
"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
Cylindricity measurement comes under the category of _____	1. a) Form measurement 2. b) linear measurement 3. c) surface measurement 4. d) alignment testing
_____ 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
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 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
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
What are the reasons behind false reading on Micrometer while taking measurements?	1. There is zero error in Micrometer 2. Unengaged Ratchet stop. 3. Temperature variation between the work piece and the Micro meter. 4. All the options are reasons
If the feasible region of a LPP is empty, the solution is ----------	1. Infeasible 2. Unbounded 3. Alternative 4. None of the above
The 'Wringing' is due to	1. c) both Atmospheric pressure and Molecular attraction 2. b) Molecular attraction 3. a) Atmospheric pressure 4. d) None of the options

Questions	Choices
.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
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
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
The tool maker's microscope is based on the principle of _____	1. c) TEMSEM 2. d) SEMTEM 3. b) OPTICS 4. a) SEMITEM
"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
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
The zero reading of a 25-30 mm micrometer is _____	1. 0 2. 25 3. 30 4. Average of 25 and 30

Questions	Choices
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
Backlash of a micrometer is _____	1. the lack of motion or lost motion of the spindle 2. the lack of pressure and lost motion of the spindle 3. the lack of pressure and under size of the spindle 4. None of the options are correct
Ball and socket forms a	1. cylindrical pair 2. rolling pair 3. sliding pair 4. Spherical Pair
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
In SHM motion, acceleration is proportional to	1. velocity 2. displacement 3. rate of change of velocity 4.
For a SHM motion of the follower, a cosine curve represents	1. displacement 2. velocity 3. acceleration 4. jerk
Which one of the following elements is an austenite stabilizer?	1. Chromium 2. Vanadium 3. Nickel 4. Tungsten
cam size depends on	1.base circle 2.pitch circle 3. prime circle 4. outer circle

Questions	Choices
In which of the following methods, an electrolyte is used?	1. Laser Beam Machining 2. Abrasive Jet Machining 3. Ultrasonic Machining 4. Electrochemical Machining
In electrochemical machining (ECM) removal of metal from the work piece takes place	1. thermal melting 2. anodic dissolution 3. abrasive action 4. electrochemical oxidation
Thermodynamically stable defects	1. Point defects 2. Surface defects 3. Line defects 4. Volume defects
Which of the following process is based on Faradays law of Electrolysis?	1. Electrochemical Machining 2. Electrical discharge Machining 3. Electron beam Machining 4. Laser Beam Machining
According to their use, which of the following is not a type of moulding sand?	1. green sand 2. dry sand 3. loam sand 4. wet sand
Which of the following pattern is used to produce a number of castings?	1. loose piece pattern 2. split pattern 3. gatted pattern 4. match plate pattern
The pattern used for mass production is	1. match plate pattern 2. split pattern 3. skeleton pattern 4. single plate pattern
In casting, the amount of draft (in mm per metre) on exterior surfaces is about	1. 10-20 2. 20-30 3. 30-40 4. 40-50

Questions	Choices
The amount of draft required does not depends upon	1. shape and size of casting 2. moulding method 3. material of pattern 4. method of production
Distortion allowance is not provided in the following shape of casting.	1. U 2. T 3. C 4. O
The distortion in casting can not be prevented by	1. modification of casting design 2. providing distortion allowance 3. providing sufficient machining allowance to cover the distortion effect 4. providing proper shrinkage allowance
The low permeability in sand can cause which of the following defects in casting	1. Rough surface 2. Blow holes 3. hot tears 4. Drop
Crucible furnace is used for melting of	1. Cast iron 2. Copper base alloys 3. Cast iron 4. Non ferrous metal
In permanent mould casting, the molten metal is poured	1. under external pressure 2. under gravity 3. partially under gravity and partially under external pressure 4. none of the above
In semi permanent mould casting	1. metallic core is used 2. sand core is used 3. wooden core is used 4. no core is used
To overcome the problems like blow holes in casting we use	1. Direct air pressure type die casting machine 2. Submerged plunger type casting machine 3. Hot chamber die casting machine 4. Vacuum die casting machine

Questions	Choices
Cast iron pipes and cylindrical barrels are produced in	1. true centrifugal casting 2. semi centrifugal casting 3. centrifuged casting 4. die casting
In a reversible heat engine operating between source and sink temperatures T1 and T2 respectively and surrounded by ambient temperature (T0), the maximum work done is obtained when T2 is equal to	1. T2 = T1 2. T2 = T1/2 3. T2 = T0 4. T2=2T0
Which of the following is NOT an objective of production planning on an aggregate basis?	1. Determine inventory sizes 2. Determine total work force 3. Determine total production 4. Determine long term capacity
The scheduling stage to specify various options for a product is called:	1.Final assembly scheduling 2. Input/output planning 3. Master production scheduling 4. Rough-cut planning
Which of the following is not a part of Five M's?	1.Material 2. Machine 3. Motion 4.Method
The correct sequence of operations in production planning and control is	1. Routing-Scheduling-Dispatching-Follow up 2. Scheduling-Routing- Dispatching-Follow up 3. Dispatching-Routing-Scheduling- Follow up 4.Routing-Scheduling-Follow up-Dispatching
Which of the following is true for 'Routing'?	1.It is flow of work in the plant 2. Route sheets include list of machine tools that are to be followed 3. It depends upon material handling facilities 4. All of the above

Questions	Choices
Loading may be defined as	1.Sending the raw material to the machine 2. Sending the finished material to the store 3. Assign the work to the facilities 4.Uploading a software in machine control panel
Dispatching authorizes the start of production operations by 1. Release of material and components from stores to first process 2. Release of material from process to process 3. Issue of drawings instruction sheets 4. Which of the following is (are) true?	1.Only 1 2. Only 2 3.Both 1 and 2 4. 1,2 and 3
The bill of material does not consists of	1. Part number 2. Specifications of part 3. Name of the part 4. Price of the part
Procurement cycle time is time consumed for	1. Receiving of raw material 2. Inspection of various raw materials 3. Inspection of purchased components parts 4. All of the above
The transit time consist of	1. Time taken by raw material from machine to machine 2. Time consumed in moving the work between various departments 3. Time taken by a worker to machine a component 4. None of the above
Master schedule is prepared for	1. Single product continuous production 2. Multi product batch production 3. Assembly product continuous production 4. Single product batch production
Which of the following chart is drawn Machine vs time?	1. Man machine chart 2. The load chart 3. The progress chart 4. Curve chart

Questions	Choices
Gantt chart is mostly used for	1. Routing 2. Scheduling 3. Follow up 4. Inspection and quality control
Key to chart is provided in	1. Key to chart is provided in 2. The load chart 3. The progress chart 4. Gantt chart
Centralized and decentralized are the types of	1. Routing 2. Dispatching 3. Scheduling 4. Follow up
The unit cost in case of batch production is _____as compared to jobbing production.	1. Same 2. Low 3. High 4. None of these
ABC analysis deals with	1. Analysis of process chart 2. Flow of material 3. Ordering schedule of job 4. Controlling inventory costs money
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
Which of the following is a mixed strategy for absorbing demand fluctuations?	1. Altering the production rate by changing the size of the labor force 2. Using subcontracting to meet peak fluctuations in demand 3. Using overtime, inventory, and subcontracting 4. Keeping the work force and production rate constant, and allowing fluctuations in the inventory level
Dual of the dual is ----------	1. Primal 2. Dual 3. Alternative 4. None of the above

Questions	Choices
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
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
If demand is lesser than supply then dummy demand node is added to make it a ----------	1. Simple problem 2. Balanced problem 3. Feasible problem 4. None of the above
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
A differential gear in an automobile is a	1. simple gear train 2. epicyclic 3. compound gear train 4.compound gear
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
In sequencing model , when you calculate total elapsed time and idle time of each machine which idle is considered ?	1. Job Idle time 2. Machine Idle time 3. Both Job and Machine 4. None of the above.

Questions	Choices
offset is provided to a cam follower mechanism to	1. minimise the side thrust 2. accelerate 3. avoid jerk 4. reduced the noise
In PERT calculation, an activity is ---------- if its start and finish times are fixed.	1. Douplicate 2.Non critical 3.Dummy 4.Critical
Carrying cost / Holding cost must be calculated for ----------.	1. Stock in Hand 2.Total Inventory 3. Average Inventory 4.None of the above
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
Queue discipline represents the order in which ---------- are selected from a queue.	1.Facilities 2. Sources 3. Customers 4. Servers
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
An ideal gas whose original temperature and volume are 27ºC and 0.283 m^3 undergoes an isobaric expansion. If the final temperature is 87ºC, then the final volume is approximately	1.0.0340 m^3 2.0.0552 m^3 3.0.170 m^3 4.0.340 m^3

Questions	Choices
Consider a two machine flow shop where jobs are first processed in Machine X and then in Machine Y, in the same sequence. The processing times of four jobs (1, 2, 3 and 4) on the machines are: Jobs Job Processing time (in min) Machine X Machine Y 1 6 5 2 3 4 3 7 6 4 5 4 The sequence of jobs on the machines that minimizes make span is	1. 2−3−1−4 2. 1−2−3−4 3. 3−1−4−2 4. 2−1−3−4
There are three machines say A,B, and C in a Work shop. If any one of the Johnson's condition is satisfied then the two (fictitious) machines say G and H are framed by using which computation procedure as given below.	1. G = A+C & H = C+B 2. G = A+C & H = A+B 3. G = A+B & H = B+C 4.All of the above
Tensile strength of a mild steel specimen can be roughly predicted from following hardness test	1. Brinell 2.Rockwell 3. Vicker 4.none of these options
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
The mechanism forms a structure, when the number of degree of freedom is equal to	1. 0 2. 1 3. 2 4. -1
The number of links and instantaneous centers in a reciprocating engine mechanism are	1. 5,4 2. 6,4 3. 4,6 4. 4,5

Questions	Choices
A project consists of nine activities, whose duration are as given in the network diagram below. The critical path of the project, based on the mean activity duration, is	1. 1-2-6-9 2. 1-3-6-9 3. 1-3-7-8-9 4. 1-2-5-9
To raise the temperature of a 2.0-kg piece of metal from 20º to 100ºC, 61.8 kJ of heat is added. What is the specific heat of this metal?	1. 0.39 kJ/kgK 2. 1.2 kJ/kgK 3. 0.31 kJ/kgK 4. 0.77 kJ/kgK
On a hot summer day, water collects on the outside of a glass of ice lemonade. The water comes from	1. inside the glass since glass is porous. 2. the condensation of the water vapor due the fact that the glass is much colder than the air. 3. the straw you use to drink your lemonade. 4. the mixture of water and lemonade.
The binding material used in cemented carbide tools is	1. Chromium 2. Cobalt 3. Tungsten 4. Silicon
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
A concentrated load is one which	1. spreads non-uniformly over the whole length of a beam 2. spreads uniformly over the whole length of a beam 3. acts at a point on a beam 4. varies uniformly over the whole length of a beam
In a time series forecasting model, the demand for five time periods was 10, 13, 15, 18 and 22. A linear regression fit resulted in an equation F = 6.9 + 2.9 t where F is the forecast for period t. The sum of absolute deviations for the five data is:	1. 2.2 2. 0.2 3. –1.2 4. 24.3

Questions	Choices
vessel of 4 m^3 contains oil which weighs 30 kN. The specific weight of the oil is	1. 4.5 kN/m^3 2. 10 kN/m^3 3. 7.5 kN/m^3 4. 6 kN/m^3
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
A moving average system is used for forecasting weekly demand. F1(t) and F2(t) are sequences of forecasts with parameters m1 and m2, respectively, where m1 and m2 (m1 > m2) denote the numbers of weeks over which the moving averages are taken. The actual demand shows a step increase from d1 to d2 at a certain time. Subsequently,	1. Neither F1(t) nor F2(t) will catch up with the value d2 2. Both sequences F1(t) and F2(t) will reach d2 in the same period 3. F1(t) will attain the value d2 before F2(t) 4. F2(t) will attain the value d2 before F1(t)
The pressure of a gas in an isobaric expansion remains constant. In such an expansion,	1. no work is done. 2. work is done by the gas. 3. work is done on the gas. 4. work is or is not done depending on whether the temperature of the gas changes.
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

Questions	Choices
The demand and forecast for February are 12000 and 10275, respectively. Using single exponential smoothening method (smoothening coefficient = 0.25), forecast for the month of March is:	1. 431 2. 9587 3. 10706 4.11000
An imaginary circle which by pure rolling action gives the same motion as the actual gear is called	1. addendum circle 2. dedundum circle 3. pitch circle 4. clearance circle
The change in the entropy of the universe due to an operating Carnot engine	1. is zero. 2. must be positive 3. must be negative 4. is meaningless to consider, because a Carnot engine has no connection to entropy
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. 900 MPa 2. 400 MPa 3. 500 MPa 4. 1400MPa
Which of the following statement is incorrect about duralumin?	1. It can be forged 2. It is prone to age hardening 3. It has good machining properties 4. It is lighter than pure aluminium
The section modulus of a circular section about an axis through its C.G., is	1. $\pi d^2/4$ 2. $\pi d^3/16$ 3. $\pi d^2/16$ 4. $\pi d^3/32$
A beam is loaded as cantilever. If the load at the end is increased, the failure will occur	1. Anywhere 2. At the tip below the load 3. At the support 4. In the middle

Questions	Choices
A cube subjected to three mutually perpendicular stress of equal intensity p expenses a volumetric strain	1. $3p/E \times (1 - 2/m)$ 2. $3p/E \times (2/m - 1)$ 3. $3p/E \times (2 - m)$ 4. $E/3p \times (2/m - 1)$
The thickness of a thin cylindrical shell with hemispherical ends is _____ that of spherical ends.	1. More than 2. Equal to 3. Less than 4. None of these
One mole of an ideal gas undergoes a reversible isothermal expansion from a volume of 1 L to a volume of 2 L. The change in entropy of the gas in terms of the universal gas constant R is	1. R/2 2. 2R 3. R ln(2) 4. R ln(½)
The mass of 2.5 m^3 of a certain liquid is 2 tonnes. Its mass density is	1. 800 kg/m^3 2. 600 kg/m^3 3. 400 kg/m^3 4. 200 kg/m^3
Mercury is often used in barometer because	1. The height of barometer will be less 2. Both (B) and (C) 3. It is the best liquid 4. Its vapour pressure is so low that it may be neglected

Questions	Choices
A manufacturer's master product schedule of a product is given below: Period Planned: Week-l Week-2 Week-3 Planned Production: 50 100 100 Week-4 Week-5 Week-6 100 150 50 Each product requires a purchased component A in its subassembly. Before the start of week-1, there are 400 components of type A in stock. The lead time to procure this component is 2 weeks and the order quantity is 400. Number of components A per product is only one. The manufacturer should place the order for	1. 400 components in week-l 2. 400 components in week-3 3. 200 components in week-l and 200 components in week-3 4. 400 components in week-5
The location of the centre of pressure over a surface immersed in a liquid is	1. will be below the centroid 2. always above the centroid 3. for higher densities it will be above the centroid and for lower densities it will be below the centroid 4. will be at the centroid
The fluid property, due to which, mercury does no t wet the glass is	1. viscosity 2. adhesion 3. cohesion 4. surface tension
A Piezometer is used to measure the pressure of a	1. **None** 2. **Gas as well as liquid** 3. **Gas** 4. **Liquid**
The stress induced in a body, when suddenly loaded, is _____ the stress induced when the same load is applied gradually.	1. equal to 2. four times 3. one-half 4. twice

Questions	Choices
The layer at the center of gravity of the beam as shown in the below figure, will be	1. In compression 2. Neither in tension nor in compression 3. In tension 4. None of these
The rectangular beam '*A*' has length *l*, width *b* and depth *d*. Another beam '*B*' has the same length and depth but width is double that of '*A*'. The elastic strength of beam '*B*' will be _____ as compared to beam *A*.	1. six times 2. four times 3. double 4. same
The pressure less than atmospheric pressure is known as	1. vacuum pressure 2. all of these 3. suction pressure 4. negative gauge pressure
The centre of gravity of the volume of the liquid displaced is called	1. centre of pressure 2. none of these 3. centre of buoyancy 4. metacentre
Differential manometer is used to measure	1. Pressure in pipes, channels etc. 2. Atmospheric pressure 3. Very low pressure 4. Difference of pressure between two points
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
Two closely coiled helical springs '*A*' and '*B*' are equal in all respects but the number of turns of spring '*A*' is half that of spring '*B*' The ratio of deflections in spring '*A*' to spring '*B*' is	1. 1/8 2. 1/2 3. 2 4. 1/4
The layer at the center of gravity of the beam as shown in the below figure, will be	1. In tension 2. None of these 3. In compression 4. Neither in tension nor in compression

Questions	Choices
Dimensions of surface tension are	1. ML^2T^2 2. $ML^\circ T^{-2}$ 3. $ML\ r^2$ 4. $ML^\circ T$
In the torsion equation the term J/R is called	1. section modulus 2. none of these 3. shear modulus 4. polar modulus
A manufacturing shop processes sheet metal jobs, wherein each job must pass through two machines (M1 and M2, in that order). processing time (in hours) for these jobs is given in the above table. The optimal make-span (in hours) of the shop is: Jobs Machine U P Q R S T M1 15 32 8 27 11 16 M2 6 19 13 20 14 7	1. 107 2. 120 3. 109 4. 115
A piece of metal of specific gravity 7 floats in mercury of specific gravity 13.6. What fraction of its volume is under mercury?	1. 0.5 2. 0.4 3. 0.5 4. 0.515
Which of the following statement is correct?	1. The maximum strain energy which can be stored in a body is termed as proof resilience. 2. The energy stored in a body, when strained within elastic limit is known as strain energy. 3. The proof resilience per unit volume of a material is known as modulus of resilience. 4. all of the above

Questions	Choices
Capillary action is due to the	1. Cohesion of the liquid 2. Adhesion of the liquid molecules and the molecules on the surface of a solid 3. All of the above 4. Surface tension
The following activities are to be performed in a particular sequence for routing a product . 1. Analysis of the product and breaking it down into components 2. Determination of the lot size 3. Determination of operations and processing time requirement 4. Taking makes or buys decisions The correct sequence of these activities is	1. 1, 2, 3, 4 2. 3, 1, 2, 4 3. 3, 1, 4, 2 4. 1, 4, 3, 2
Four jobs are to be processed on a machine as per data listed in the table. JOB PROCESSING TIME DUE DATE 1 4 6 2 7 9 3 2 19 4 8 17 If the Earliest Due-date (EDD) rule is used to sequence the jobs, the number of jobs delayed is:	1. 1 2. 2 3. 3 4. 4
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

Questions	Choices
A linear programming problem is shown below. Maximize 3x + 7y Subject to 3x + 7y ≤ 10 4x + 6y ≤ 8 x, y ≥ 0. It has	1. an unbounded objective function 2. exactly one optimal solution 3. exactly two optimal solutions 4. infinitely many optimal solutions.
The final step (matrix) of the assignment problem solved by Hungerian Assignment Model is given in the following table. Which of the following is optimum assignment. 1 2 3 4 5 A 2 0 5 2 4 B 1 4 0 2 0 C 3 0 0 0 2 D 4 0 4 5 0 E 0 2 4 0 5	1. A-2, B-3,C-4,D-5,E-1 2. A-1, B-3,C-4,D-5,E-2 3. A-4, B-3,C-2,D-5,E-1 4. A-3, B-2,C-4,D-5,E-1
A 100 W electric bulb was switched on in a 2.5 m x 3 m x 3 m size thermally insulated room having a temperature of 20°C. The room temperature at the end of 24 h will be	1. 321°C 2. 338°C 3. 450°C 4. 470°C
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
The contact ratio for gear is	1. 0 2. 1 3. less than 1 4. more than 1

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
A cam mechanism imparts following motion	1. ocsillating 2. reciprocating 3. rotating 4. all of these options
Which gear train is used for higher velocity ratios in a small space?	1. Compound gear train 2. Simple gear train 3. Epicyclic gear train 4. Reverted gear train
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. none of these options
The coriolis component of acceleration leads the sliding velocity by	1. 45° 2. 180° 3. 90° 4. 135°
In ideal machines, mechanical advantage is _____ velocity ratio.	1.none of these options 2.equal to 3.less than 4.greater than
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
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

Questions	Choices
The component of acceleration, parallel to the veloity of the particle, at the given instant is called	1. radial component 2. coriolis component 3. tangential componnent 4. resultant
The number of links and instantaneous centers in a reciprocating engine mechanism are	1. 5,4 2. 6,4 3. 4,6 4. 4,5
In a mechanism, the fixed instataneous centres are those centres which	1. fixed 2. moves as the mechanism moves 3. remain in same place for all configration of the mechanism 4. vary with the configuration of the mechansim
Which one of the following is an exact straight line mechanism using lower pairs?	1. Watt's mechanism 2. Grasshopper mechanism 3. Robert's mechanism 4. Paucellier's mechanism
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
which of the following are examples of force closed kinmatics pairs 1. cam and roller mechanism 2. Door closing mechanism 3. slider crank mechanism 4. Automotive clutch opearting mechansim	1. 1,2,3 and 4 2. 1 and 3 3. 2,3 and 4 4. 1,2 and 4
The most commonly used criteria for measuring forecast error is:	1. Mean absolute deviation 2. Mean absolute percentage error 3. Mean standard error 4. Mean square error
In PERT calculation, Total float is obtained by subtracting the ----------.	1. Early starting time from the latest start time 2. Latest start time from early starting time 3. Latest occurrence time from Early Occurrence time 4. Early Occurrence time from Latest occurrence time

Questions	Choices
Critical activities are those for which	1. float = 1 2.float < 1 3. float >1 4. float = 0
.---------- represents the fixed charge incurred when an order is placed.	1. Setup Cost 2. Holding Cost 3. Shortage Cost 4. Unit Cost
A manufacturer can produce 12000 bearings per day. The manufacturer received an order of 8000 bearings per day from a customer. The cost of holding a bearing in stock is Rs.0.20 per month. Setup cost per production run is Rs.500. Assuming 300 working days in a year, the frequency of production run should be	1. 4.5 days 2. 4.5 months 3. 6.8 days 4. 6.8 months
Customer may ---------- from a longer queue to a shorter one to reduce waiting time.	1.Quit 2. Balk 3. Renege 4. Jockey
An irreversible heat engine extracts heat from a high temperature source at a rate of 100 kW and rejects heat to a sink at a rate of 50 kW. The entire work output of the heat engine is used to drive a reversible heat pump operating between a set of independent isothermal heat reservoirs at 17°C and 75°C. The rate (in kW) at which the heat pump delivers heat to its high temperature sink is	1. 50 2. 250 3. 300 4. 360
A solar collector receiving solar radiation at the rate of 0.6 kW/m^2 transforms it to the internal energy of a fluid at an overall efficiency of 50%. The fluid heated to 350 K is used to run a heat engine which rejects heat at 313 K. If the heat engine is to deliver 2.5 kW power, the minimum area of the solar collector required would be	1. 8.33 m^2 2. 16.66 m^2 3. 39.68 m^2 4. 79.36 m^2

Questions	Choices
In a single channel queue, if mean waiting time in the system is 50 mins, the mean waiting time in the queue is 30 min, then mean rate of service will be	1. 3/hr 2. 3.5/hr 3. 4/hr 4.5/hr
Objective of Maintenance / replacement model is to	1. Minimize the idle time of the machine 2. Determine the year of changing a machine with a new one 3. Minimize the production loss due to break down 4.Improve the quality
Which of the following one is correct in relation to Sequencing Problems?	1. Minimization total transportation cost 2. Minimization of total elapsed time 3. Minimization of total idle time of machines 4. Both minimization of total elapsed time and minimization of total idle time of machines
The group replacement policy is suitable for identical low cost items which are likely to	1. Fail over a period of lime 2. Fail suddenly 3. Fail completely and suddenly 4. None of these
If the system undergoes contraction in volume then work done by the system is	1. Positive 2. Negative 3. neither positive nor negative 4. work done is zero
An electric fan in a closed room is switched on. The room will get	1. Cooler 2. warmer 3. stays the same 4. cool down or get warmer depending upon the atmospheric conditions
For the expression ∫pdv to represent the work, which of the following conditions should apply?	1. The system is closed one and process takes place in non-flow system 2. The process is non-quasi static 3. The boundary of the system should not move in order that work may be transferred 4.If the system is open one, it should be non-reversible

Questions	Choices
A thermally insulating container has a membrane separating the container into two equal parts. In one part is a vacuum. In the other part is an ideal gas of temperature T and internal energy U. The membrane is punctured and the gas rushes into the region which was a vacuum. After the system has returned to equilibrium, which of the following is NOT true for the gas?	1. The temperature of the gas is changed 2. No work is done by the gas on the surroundings 3. There is no heat exchanged by the gas with the surroundings 4. There is no entropy change of the system
In thermodynamics, it is very important to state any assumptions at the beginning of a problem. If you are asked to find the work of a cycle of a piston and cylinder, which of the following would you assume?	1. Work only occurs across the boundary 2. Changes in kinetic energy and potential energy are negligible 3. It is a closed system 4. all of the choices
With the increase in pressure ratio thermal efficiency of a simple gas turbine plant with fixed turbine inlet temperature	1. decreases 2. increases 3. first increases and then decreases 4. first decreases and then increases.
The allocated cells in the transportation table are called ----------	1. Occupied cells 2.Empty cells 3. Both A and B 4.Unoccupied cells
For same compression ratio	1. thermal efficiency of Otto cycle is greater than that of Diesel cycle 2. thermal efficiency of Otto cycle is less than that of Diesel cycle 3.thermal efficiency of Otto cycle is same as that for Diesel cycle 4.thermal efficiency of Otto cycle cannot be predicted
In Queuing model, elements of notations are devised by ---------- .	1.D.G.Kindall 2.A.M.Lee 3.Both D.G.Kindall and A.M.Lee 4.None of the above
The probabilistic time is given by (where t_o = Optimistic time, t_p = Pessimistic time, and t_n = Most likely time)	1. $(t_o + t_p + t_n)/3$ 2. $(t_o + 2t_p + t_n)/4$ 3. $(t_o + 4t_p + t_n)/5$ 4. $(t_o + t_p + 4t_n)/6$

Questions	Choices
In CPM, the cost slope is determined by	1. Crash cost/Normal Cost 2. (Crash Cost - Normal cost)/ (Normal time - Crash time) 3. Normal Cost/Crash cost 4. (Normal cost - Crash cost)/ (Normal time - Crash time)
Material Requirements Planning DOES NOT incude	1. Material price 2. Bill of material 3. Inventory level 4. Production Schedule
Two alternatives can produce a product. First have a fixed cost of Rs. 2000 and a variable cost of Rs. 20 per piece. The second method has a fixed cost of Rs. 1500 and a variable cost of Rs. 30. The break even quantity between the two alternatives is	1. 25 2. 50 3. 75 4. 95
Dummy activities are used to	1. Determine the critical path 2. Determine the project completion time 3. Maintain the required net work 4. None of the above
A line balancing problem is solved in the context of	1. Process layout 2. Product layout 3. Fixed position layout 4. Production scheduling
As per the principles of motion economy which one of the following is NOT a PIVOT for a classified movement of a human body	1. Knee 2. Wrist 3. Torso 4. Elbow
Which one of the following is NOT in the scope of Enterprise Resource Planning (ERP) system?	1. General ledger entries 2. Materials management system 3. Order management system 4. Employee promotion policy

Questions	Choices
In a time study experiment, the observed time is 15 minutes, operator rating is 90%, personal need allowance is 4%, fatigue allowance is 3%, contingency allowance for work is 3%, contingency allowance for delay is 2%. The total work content in minutes is	1. 15.34 2. 14.73 3. 13.99 4. 15.89
γ-Fe →α-Fe is termed as,	1. Eutectic reaction 2. Precipitation 3. Peritectic reaction 4. Eutectoid reaction
Annual demand of a product is 50000 units, and the ordering cost is Rs. 7000 per order. Considering the basic EOQ model, the economic order quantity is 10000 units. The annual inventory holding cost is	1. Rs.3.8/unit/year 2. Rs.3.6/unit/year 3. Rs.3.5/unit/year 4. Rs.7/unit/year
The annual demand for an item is 10000 units. The unit cost is Rs.100 and the carrying cost is 14.4% of the unit cost per annum. The cost of one procurement is Rs.2000. The time between two consecutive orders to meet the above demand is	1. 2 months 2. 1.41 months 3. 1.5 months 4. 1.7 months
A manufacturer has the following data regarding a product. Fixed cost Rs.50000; Variable cost Rs.200; Selling price per unit Rs.300; Production capacity 1500 units per month; If the production is carried out at 80% of the rated capacity, then the monthly profit is	1.65600 2.70000 3.77000 4.73000
Which of the following is a phase i) Ferrite ii) Bainite iii) Cementite iv) Pearlite	1.a) i&iii 2.all the above 3.b) i&iv 4.ii, iii & iv
Which one of the following is the correct ascending order of packing density for the given crystal structures of metals?	1. Simple cubic – Face centred cubic – Body centred cubic 2.Body centred cubic - Simple cubic - Face centred cubic 3. Simple cubic - Body centred cubic - Face centred cubic 4. Face centred cubic - Body centred cubic - Simple cubic

Questions	Choices
Quenched microstructure of high carbon steel is,	1. Ferrite 2. Bainite 3. Martensite 4. Pearlite
What kind of transformation occurs when a high 'C' steel is quenched in a severe medium like brine solution?	1. Isothermal 2. Athermal 3. Isobaric 4. None of these
Adding 'C' to pure Fe will,	1. Reduce the melting point 2. Increase the melting point 3. No change 4. Change volume drastically
The demand for two wheeler was 900 units and 1030 units in april 2015 and May 2015 respectively. The forecast for the month April was 850, considering smoothing constant of 0.6, forecast for the month of June 2015 is	1. 980 units 2. 990 units 3. 970 units 4. 960 units
The number of atoms present on (100) plane in the unit cell of face centered cubic (FCC) structure is:	1. 2 2. 3 3. 4 4. 6
In Ultrasonic machining, the tool	1. vibrates in transverse direction 2. vibrates in longitudinal direction 3. moves in transverse direction 4. moves in longitudinal direction
Decreasing grain size in a polycrystalline material	1. increases yield strength and corrosion resistance 2. decreases yield strength and corrosion resistance 3. decreases yield strength but increases corrosion resistance 4. increases yield strength but decreases corrosion resistance
Phase formed of diffusionless reaction	1. Coarse Pearlite 2. Fine Pearlite 3. Bainite 4. Martensite

Questions	Choices
The reaction that yields two solid phases on cooling a single solid phase is called	1. eutectic 2. peritectoid 3. peritectic 4. eutectoid
In which of the following processes, a nozzle is used? 1. Laser machining 2. Ultrasonic Machining 3. Abrasive jet machining	1. 1 & 2 2. 1, 2 and 3 3. 3 4. 2 & 3
In which of the following processes, the shape of tool is not same as that of cavity produced?	1. Plasma arc machining 2. Electrochemical Machining 3. Ultrasonic Machining 4. Electrical discharge Machining
The ascending order of evolution of materials used for making the cutting tools is	1. bronze – stone – steel – iron 2. stone – bronze – iron – steel 3. iron – steel – bronze – stone 4. bronze – stone – steel – iron
Which of the following is second hardest known material?	1. Diamond 2. Cubic boron nitride (CBN) 3. Cemented carbide 4. Ceramics
Corrundum is a/an	1. None of the above 2. Diamond 3. Abrasive 4. Metal
In cutting tools, crater wear develops at	1. the principal flank 2. the tool nose 3. the rake surface 4. the auxiliary flank

Questions	Choices
The cutting tool wears due to	1. Flank wear 2. Edge wear 3. Crater wear 4. All of the above
alpha-iron has BCC structure. In a unit cell of alpha-iron, the iron atoms occupy	1.74% of volume of unit cell 2.90% of volume of unit cell 3.80% of volume of unit cell 4.68% of volume of unit cell
Pearlite phase in steel is made up of	1. alternate layers of martensite and cementite 2. alternate layers of ferrite and cementite 3. alternate layers of ferrite and martensite 4. alternate layers of bainite and cementite
Nodular grey cast iron is obtained from the grey cast iron by adding a small amount of	1.Manganese 2.Phosphorus 3.Chromium 4.Magnesium
An iron-carbon binary alloy has 0.5% C by weight. What is this alloy called?	1. Hypereutectoid alloy 2. Hypo-eutectoid alloy 3. Eutectoid alloy 4. Eutectic alloy
Chemicals attack atoms within grain boundaries preferentially because they have	1. lower energy than those in the grains 2. higher energy than those in the grains 3. lower number of atoms than in the grains 4. higher number of atoms than in the grains
Eutectic reaction for iron-carbon system occurs at	1. 1150°C 2. 723°C 3. 600°C 4. 1493°C
Increase of ferrite phase in steel increases:	1. Strength 2. Brittleness 3. Ductility 4. Hardness

Questions	Choices
Which one of the following sets of constituents is expected in equilibrium cooling of a hypereutectoid steel from austenitic state?	1. Ferrite and pearlite 2. Cementite and pearlite 3. Ferrite and bainite 4. Cementite and martensite
Which one of the following sets of constituents is expected in equilibrium cooling of a hypoeutectoid steel from austenitic state?	1. Ferrite and pearlite 2. Cementite and pearlite 3. Ferrite and bainite 4. Cementite and martensite
The percentage of carbon in gray cast iron is in the range of	1.0.25 to 0.75 percent 2.3 to 4 percent 3.1.25 to 1.75 percent 4.8 to 10 percent
18/8 stainless steel contains	1. 18% tungsten, 8% nickel 2. 18% tungsten, 8% chromium 3. 18% chromium, 8% nickel 4. 18% stainless, 8% chromium
The ductility of a material with work hardening	1. remains unaffected 2. increases 3. decreases 4. unpredictable
Tempering is a process of annealing	1. martensite at low temperatures 2. martensite at higher temperatures 3. bainite at low temperatures 4. bainite at higher temperatures
Heating the hypo eutectoid steels to 30 degC above the upper critical temperature line, soaking at that temperature and then cooling slowly to room temperature to form a coarse pearlite and ferrite structure, is known as	1.Full Annealing 2.Spherodizing 3.Process Annealing 4.Normalizing
Globular form of cementite in the structure of steel is obtained through	1. Normalizing 2. Malleabilising 3. Spheroidizing 4. Carbonizing

Questions	Choices
Carburized machine components have high endurance limit because carburization	1. raises the yield point of the material 2. produces a better surface finish 3. introduces a compressive layer on the surface 4. suppresses any stress concentration produced in the component.
Yield stress is	1. not related with engineering 2. stress causing a specific permanent deformation usually 0.1% or 0.2% 3. stress corresponding to proportional limit 4. stress causing materials to break
Which one of the following is the correct definition of ultimate tensile strength, as derived from the results of a tensile test on a metal specimen:	1.the stress encountered when the stress strain curve transforms from elastic to plastic behavior 2.the maximum load divided by the final area of the specimen 3.the maximum load divided by the original area of the specimen 4.the stress observed when the specimen finally fails
With melting points given in brackets, tick the material which will creep significantly at 180 degC	1.Pb (327 degC) 2.Fe (1538 degC) 3.Cu (1084 degC) 4.W (3410 degC)
The treatment in which the brittleness of martensite is reduced is called which one of the following	1. normalizing 2. austenitizing 3. annealing 4. tempering
Plain carbon steels are designated in the AISI code system by which of the following:	1.01XX 2.10XX 3.11XX 4.12XX
Which one among the following is the most effective strengthening mechanism of non-ferrous metal?	1. Precipitation hardening 2. Grain size refinement 3. Strain hardening 4. Solid solution hardening
The Jominy end-quench test is designed to indicate which one of the following:	1. hardness 2. ductility 3. cooling rate 4. hardenability
The correct order of coordination number in BCC, FCC and HCP unit cells is	1. 6, 8, 12 2. 12, 8, 24 3. 8, 12, 12 4. 12, 8, 6

Questions	Choices
Magnesium crystallizes in HCP structure. If the lattice constant is 0.32 nm, the nearest neighbour distance in magnesium is	1. 0.64 nm 2. 0.16nm 3. 0.8 nm 4. 0.32 nm
In Hume Rothery rules for extensive solid solubility, the atomic diameter of the solute and the solvent atoms should not differ by more than	1. 0 % 2. 2 % 3. 15 % 4. 50 %
In a tensile test, necking starts at	1. Lower yield stress 2. Upper yield stress 3. None of these options 4. Ultimate tensile stress
Which phenomenon is not used in the measurment of hardness?	1. Scratch 2. Wear 3. Fracture 4. Indentation
Which hardness method can measure hardness of a grain?	1.Knoop 2.Brinel 3.Vicker 4.Rockwell
The fatigue strength of mild steel is	1. lower than its yield strength 2. lower than its tensile strength 3. equal to its yield strength 4. equal to its tensile strength
The reaction that on heating one solid phase yields another solid phase together with one liquid phase is termed	1. peritectoid 2. peritectic 3. eutectic 4. eutectoid
Yield point in mild steel occurs because	1. carbon atom occupy the vacancy line just below the dislocation and anchor dislocation by reducing its energy. 2. slip is promoted by carbon atoms to take place in several parallel plans simultaneously 3. carbon atoms form iron carbide with iron 4. none of these options
The metals which do not form adherent oxide film on surface are	1. Copper and Aluminium 2. Iron and Steel 3. Gold and Silver 4. Nickel and Titanium

Questions	Choices
Copper is ductile, because	1. it contains a very high density of dislocations. 2. it is a perfect crystal. 3. the stress to move a dislocation in it is low. 4. it has glassy structure.
If OT = the mean observed time, PRF = the performance rating factor, F = the frequency of occurrence, and PFD = the percentage allowance based on time worked, what is the formula to compute the standard time?	1. (OT)(PRF)(F) 2. (OT)(PRF)(F)(1 + PFD) 3. (OT)(PRF)(F) / (1 – PFD) 4. (OT)(PRF)(F) / (1 + PFD)
Which company is widely considered to be the leader of just-in-time production?	1. Ford 2. Timex 3. Infosys 4. Toyota
What are the two primary tools used to identify closeness measures during the layout design process?	1. REL chart and from-to matrix 2. MRP chart and from-to matrix 3. x-bar chart and from-to matrix 4. MRP chart and x-bar chart
There are eight departments in a proposed company. If you design layout using ALDEP algorithm, how many unique layout configurations are possible based on the initial department placement?	1. Five 2. Eight 3. Ten 4. Nine
How many pairs of departments you have to swap if the given layout has 5 departments	1. 10 2. 14 3. 12 4. 16
What is the effect of an increase in the desired confidence level on the number of observations necessary in a time study?	1. Decreases 2. Unchanged 3. Increases 4. May increase or decrease
Cross price elasticity of demand for substitutes	1. Positive 2. Negative 3. Exponential 4. Cannot be estimated

Questions	Choices
Cross price elasticity of demand for compliments	1. Positive 2. Negative 3. Unity 4. Zero
Which of the following will have positive price elasticity	1. Vanity bags 2. Budget cars 3. Movie ticket 4. Petrol
Veblen goods are	1. Very costly goods 2. Cheap goods 3. Moderately priced goods 4. Rare items
Giffin goods are	1. Very costly goods 2. Cheap goods 3. Moderately priced goods 4. Substitutes
Opening stock of raw material should be	1. Added to the factory cost 2. Added to the total cost 3. Added to the prime cost 4. Added to the administrative overhead
Opening stock of work in progress should be	1. Added to the prime cost 2. Added to the factory cost 3. Added to the total cost 4. added to the cost of production
The number of 1s outside the machine-part cells are called as	1. Voids 2. Exceptional elements 3. Unproductive activity 4. Non-critical activity
In the CORELAP algorithm for layout design, the department with maximum total closeness rating is placed in the	1. Top left corner 2. Top right corner 3. Center 4. Bottom left corner

Questions	Choices
Grouping efficacy of the machine-part cells is calculated using	1. Voids 2. Exceptional elements 3. Voids and exceptional elements 4. Total number of 1s in the matrix, exceptional elements and voids
Total number of 1s in the machine-part incidence matrix is 40. The number of exceptional elements and voids are 5 and 4 respectively. The grouping efficacy is	1. 0.6534 2. 0.7954 3. 0.7132 4. 0.8345
The Mean observed time of an activity is 90 seconds. If the rating factor is 110%, what is the normal time?	1. 109 seconds 2. 99 seconds 3. 103 seconds 4. 89 seconds
Relief angles on high speed steel tools usually vary from	1. 0° to 3° 2. 10° to 20° 3. 3° to 10° 4. 20° to 30°
The tool material, for faster machining, should have	1. Red hardness 2. Wear resistance 3. Toughness 4. All of these
Which of the following tool materials have cobalt as a constituent element? 1. **Tungsten carbide 2. CBN 3. Stellite 4. UCON** **Select the correct answer using the codes given below**	1. 1 & 2 2. 2 & 3 3. 1 & 3 4. 1 & 4
Surface grinding is done to produce	1. Internal cylindrical holes 2. Flat surface 3. Tapered surface 4. All of these

Questions	Choices
Tool life is measured by the	1. Number of pieces machined between tool sharpening 2. Time the tool is in contact with the job 3. Volume of material removed between tool sharpening 4. All of the above
In the Taylor's tool life equation, VT^n = C, the value of n=0.5. The tool life has a life of 180 minutes at a cutting speed of 18 m/min. If the tool life is reduced to 45 minutes, then the cutting speed will be	1. 9 m/min 2. 72 m/min 3. 36 m/min 4. 18 m/min
Corrundum is a/an	1. Diamond 2. Abrasive 3.Ceramic 4. None of the above
The cutting tool wears due to	1.Edge wear 2.Crater wear 3.Flank wear 4.All of the above
The approximately variation of the tool life exponent 'n' of cemented carbide tools is	1. 0.03 to 0.08 2. 0.08 to 0.20 3. 0.20 to 0.48 4. 0.48 to 0.70
Perfect competition is a market structure characterized by:	1. product quality differences among large and small firms 2. free entry and exit. Firms are not restricted from entering or leaving the industry. 3. product quality information that is not known by all buyers and all sellers. 4. ruthless price competition that keeps P < AR.
The following hammers are used for impression die forgings i. gravity drop hammer ii. Steam hammer iii. Air lift hammer	1. a. only i 2. a. i & ii 3. a. i & iii 4. a. i, ii & ii
Global investors who suffer the loss of favoured trade status experience	1. government policy risk. 2. derivative risk 3. cultural risk. 4. currency risk

Questions	Choices
If a firm charges a price of $9.99 for a product with a cost of $4, the markup on cost equals:	1. 40% 2. 60% 3. 67% 4. 150%
Price discrimination always exists when:	1. prices vary among customers. 2. markups vary among customers. 3. markups are constant among customers. 4. none of these.
In reciprocating engines primary forces	1. are completely balanced 2. are balanced by secondary forces 3. cannot be balanced 4. are partially balanced
What type of vibration is predominant in the beam structure?	1. Transverse 2. Longitudinal 3. none of these 4. torsional
It is an extremely valuable accessory in drawing operation	1. Pressure pads 2. Strippers 3. Knockout 4. Stopper
A movie theater that charges a lower price for matinees than for evening showings is engaging in	1. first-degree price discrimination 2. second-degree price discrimination 3. third-degree price discrimination 4. The answer cannot be determined without additional information
A firm that is engaging in price discrimination will	1. charge a higher price to consumers with a higher price elasticity of demand. 2. charge a higher price to consumers with a lower price elasticity of demand. 3. earn lower profits than a similar firm that does not engage in price discrimination 4. generally be a perfectly competitive firm

Questions	Choices
The closeness among the measured value is _____	1. Repeatability 2. Precision 3. Accuracy 4. Calibration
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
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
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
In cold chamber die casting machine	1. melting unit is an integral part of machine 2. melting chamber is an external part of machine 3. melting chamber can be placed anywhere 4. low pressure is required to force the molten metal into the die casting
Which of the following is an example of manipulating supply as opposed to manipulating demand?	1. Adding contracyclical products 2. Varying the level of customer service through order backlogs 3. Varying marketing through price cuts, increased promotion, and advertising 4. Varying the level of inventory
The module is reciprocal of	1. diametrical pitch 2. circular pitch 3. pitch diameter 4. pressure angle

Questions	Choices
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
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
In LPP, a minimization problem can be converted into a maximization problem by changing the sign of coefficients in the ----------	1. Constraints 2. Objective Function 3. Both A and B 4. None of the above
Time gap between ordering and arrival of inventory is called ----------.	1. Travel Time 2. Process Time 3. Setup Time 4. Lead Time
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
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
An ideal gas undergoes a cyclic process in which total (positive) work W is done by the gas. What total heat is added to the gas in one cycle?	1. W 2. -W 3. zero 4. 2W

Questions	Choices
The maximum stress produced in a bar of tapering section is at	1. middle 2. smaller end 3. larger end 4. anywhere
The kinematic viscosity is the	1. ratio of absolute viscosity to the density of the liquid 2. ratio of absolute viscosity to the density of the liquid 3. ratio of absolute viscosity to the density of the liquid 4. product of absolute viscosity and mass of the liquid
A pressure of 25 m of head of water is equal to	1. 245 kN/ m² 2. 25 kN/ m² 3. 2500 kN/m² 4. 2.5 kN/ m²
A bar of length *L* metres extends by *l* mm under a tensile force of *P*. The strain produced in the bar is	1.0.1 *l*/*L* 2. 0.01 *l*/*L* 3. 0.001 *l*/*L* 4. *l*/*L*
In game theory, the element at the saddle point is the ---------- of the game	1. solution 2. maximin 3. value 4. optimum
Ice kept in a well insulated thermo flask is an example of which system?	1. Closed system 2. Isolated systems 3. Open system 4. Equilibrium system
When saturation pressure of vapour increases which one of the following statements is correct?	1. Saturation temperature decreases 2. Enthalpy of evaporation increases 3. Enthalpy of evaporation decreases 4. specific volume remains constant
Number of atoms in an FCC & BCC unit cells?	1. 4,2 2. 2,4 3. 4,1 4. 1,4

Questions	Choices
Martensite is a super-saturated solution of carbon in	1.alpha iron 2.beta iron 3.gamma iron 4.delta iron
Which of the following cutting tool has highest hot hardness?	1. Moly based tools 2. Mild Steel 3. Ceramics 4. High Carbon steel
Pearlite consists of	1. 6.67% C and 93.33% ferrite 2. 13% Fe and 87% cementite 3. 13% C and 87% ferrite 4. 13% cementite and 87% ferrite
TTT diagram indicates time and temperature transformation of	1. Ferrite 2. Pearlite 3. Cementite 4. Austenite
Martempering is employed to obtain:	1.100% martensitic structure 2.100% bainitic structure 3.100% pearlitic structure 4.50% martensitic and 50% bainitic structure
During heat treatment of steel, the hardness of various structures in increasing order is	1. martensite, fine pearlite, coarse pearlite, spherodite 2. fine pearlite, coarse pearlite, spherodite, martensite 3. martensite, coarse pearlite, fine pearlite, spherodite 4. spherodite, coarse pearlite, fine pearlite, martensite
In case carburising Carbon is introduced to form a high carbon layer at the surface. The carbon is introduce in the form of	1. free carbon 2. graphite flakes 3. pearlite 4. cementite
Which one of the following metals is commonly alloyed with iron to improve its corrosion resistance?	1. Nb 2. Ti 3. Cr 4. Co

Questions	Choices
The number of slip systems in a metal with FCC crystal structureis	1. 6 2. 8 3. 12 4. 4
Tool life of the cutting tool is most affected by	1. Tool geometry 2. Microstructure of material being cut 3. Cutting feed and depth 4. Cutting speed
Which one of the following grinding wheels (with grade, grit and bond) is suitable for cutter grinding	1. T320 resinoid 2. k320 sellac 3. T60 resinoid 4. K60 vitrified
For reaming operation of blind hole, the type of reamer required is	1. right hand spiral fluted reamer 2. left hand spiral fluted reamer 3. straight flute reamer 4. none of the above
The type of wear that occurs due to the cutting action of the particles in the cutting fluid is referred to as	1. erosive wear 2. corrosive wear 3. diffusion wear 4. attritious wear
Which one of the following precesing sequences will give the best accuracy as well as surface finish.	1. Drilling, Boring, Grinding 2. Drilling, Reaming, Lapping 3. Drilling, Reaming, Grinding 4. Drilling, Reaming, Electroplating
The coating materials for coated carbide tools, include	1. TiC, TiN and NaCN 2. TiN and NaCN 3. TiC and NaCN 4. TiC and TiN
The cutting velocity in m/sec, for turning a work piece of diameter 100 mm at the spindle speed of 480 rpm is	1. 48 2. 151 3. 1.26 4. 2.51

Questions	Choices
The cutting speed of High speed steels is ___ times faster than Carbon steel	1. 8 2. 6 3. 2 4. 4
Find out the degree of freedom when BCC and FCC iron coexist in equilibrium.	1. 0 2. 1 3. 2 4. 3
Which one of the following is not the purpose of full annealing	1. removes strains and stresses 2. induces softness 3. produces hardest material 4. refines grains
Mechanical properties of fiber-reinforced composites depend on	1.Interface strength 2. Fiber length, orientation, and volume fraction 3. Properties of constituents 4.All of these options
Not a characteristic property of ceramic material	1. low elongation 2. high mechanical strength 3. high temperature stability 4. low hardness
The material property which depends only on the basic crystal structure is	1. Elastic constant 2. Fracture strength 3. Work hardening 4. Fatigue strength
Does a heat engine that has a thermal efficiency of 100 percent necessarily violate?	1. The first law 2. The second law 3. Both first law and second law 4. neither first nor second law
Specific internal energy of an ideal gas depends on _____ of the gas.	1. pressure 2. volume 3. mass 4. temperature

Questions	Choices
A control mass refers to a _____ system	1. open 2. closed 3. isolated 4. adiabatic
Which one of the following is the extensive property of a thermodynamic system?	1. Enthalpy 2. Pressure 3. Temperature 4. Density
The torque transmitted by a hollow shaft of outer diameter (d_1) and inner diameter (d_2) is (where, τ = Maximum allowable shear stress)	1. $\pi/32 \times \tau \times (d_1^4 - d^4_2)/ d_1$ 2. $\pi/64 \times \tau \times (d_1^4 - d^4_2)/ d_1$ 3. $\pi/4 \times \tau \times (d_1^4 - d^4_2)/ d_1$ 4. $\pi/16 \times \tau \times (d_1^4 - d^4_2)/ d_1$
The unit of modulus of elasticity is same as those of	1. stress, force and modulus of rigidity 2. stress, pressure and modulus of rigidity 3. strain, force and pressure 4. stress, strain and pressure
According to Darcy's formula, the loss of head due to friction in the pipe is (where f = Darcy's coefficient, l = Length of pipe, v = Velocity of liquid in pipe, and d = Diameter of pipe)	1. $3flv^2/2gd$ 2. $flv^2/2gd$ 3. $4flv^2/2gd$ 4. flv^2/gd
Bernoulli equation deals with the law of conservation of	1. Energy 2. Momentum 3. Work 4. Mass
When a body is subjected to a direct tensile stress (σ_x) in one plane accompanied by a simple shear stress (τ_{xy}), the minimum normal stress is	1. $(1/2) \times \sqrt{(\sigma x^2 + 4\tau^2_{xy})}$ 2. $(\sigma_x/2) + (1/2) \times \sqrt{(\sigma_x^2 - 4\tau^2_{xy})}$ 3. $(\sigma_x/2) - (1/2) \times \sqrt{(\sigma_x^2 + 4\tau^2_{xy})}$ 4. $(\sigma_x/2) + (1/2) \times \sqrt{(\sigma_x^2 + 4\tau^2_{xy})}$
In one dimensional flow, the flow	1. takes place in curve 2. is steady and uniform 3. takes place in one direction 4. takes place in straight line