AP PGECET QUESTION PAPER

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Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Mechanical Engineering 29th May 2023 Shift 2
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
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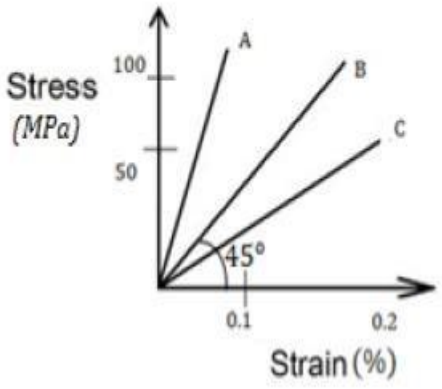
Mechanical Engineering

Section Id :	78773223
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	120
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 7877322641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The graph shown below between stress and strain of three different materials A, B, C.

Which of these three is more stiffer?



Options :

1. ✖ Both ‘B’ and ‘C’ are stiffer than ‘A’

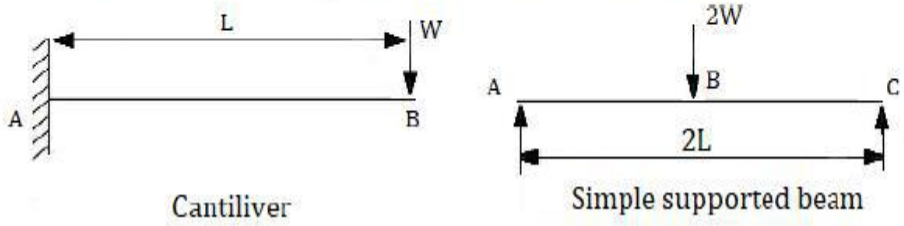
2. ✖ ‘B’ is more stiffer

3. ✖ ‘C’ is more stiffer

4. ✔ ‘A’ is more stiffer

Question Number : 2 Question Id : 7877322642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The following are the free-body diagrams for cantilever beam and simple supported beam. Identify the correct option pertaining to moment and deflection.



Options :

1. ✔ both moments and deflections are the same

2. ✖ moments of both cases are same

3. ✖ deflections for both cases are same

moments and deflections for both cases are different

4. ✖

Question Number : 3 Question Id : 7877322643 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the type of stress strain curve in order.

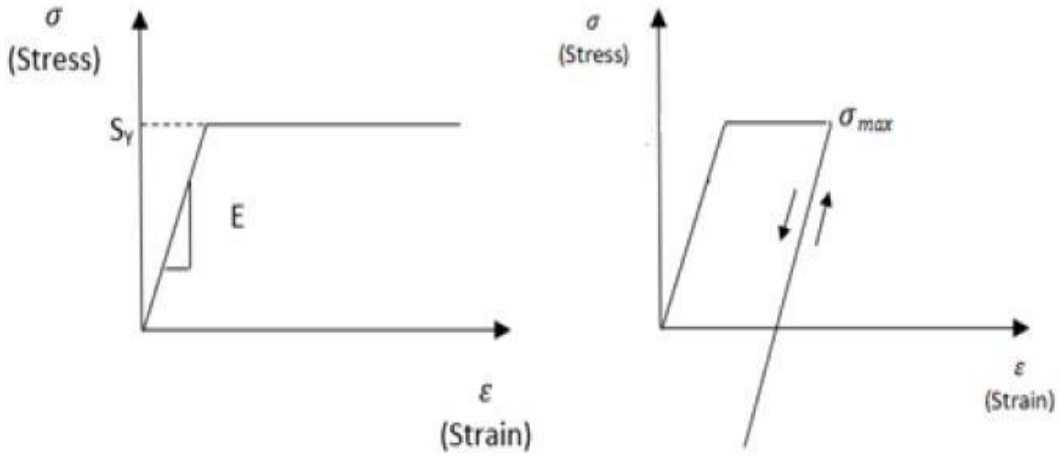


Fig (a) Fig (b)

Options :

Fig (a) – Elastic-Perfectly plastic material
Fig (b) – Pure elastic material

1. ✖

Fig (a) – Pure Plastic material
Fig (b) – No yielding

2. ✖

Fig (a) - Elastic-Perfectly plastic material
Fig (b) - Yielding on first cycle

3. ✔

4. ✖

Fig (a) – Pure elastic material

Fig (b) - Yielding on first cycle

Question Number : 4 Question Id : 7877322644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which heat treatment process steel can achieve highest strength with extremely hard state

Options :

1. ✔ quenched steel

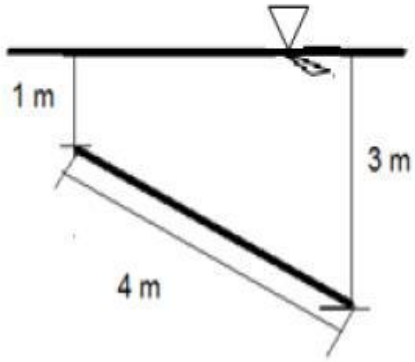
2. ✖ tempered steel

3. ✖ annealed steel

4. ✖ normalized steel

Question Number : 5 Question Id : 7877322645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The greatest and the least depth of a circular plate of 4 m diameter from the free surface of water are 3 m and 1 m respectively as shown in the figure below. What will be the total pressure in (kN) on the plate?



Options :

1. ✖ 123

2. ✖ 185

3. ✔ 246

4. ✖ 308

Question Number : 6 Question Id : 7877322646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a rolling process, if the velocity of roll surface (V_r) is 25 m/sec, 20 m/sec is the velocity of the material at the entrance (V_0) and 50 m/sec is the exit velocity of the roll (V_1) then the forward slip is _____.

Options :

1. ✖ 0.5 %

2. ✖ 0.2 %

3. ✖ 0.7 %

4. ✔ 1.0 %

Question Number : 7 Question Id : 7877322647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a Brayton cycle band power plant, the air at the inlet is at 27°C 0.1 MPa. The pressure ratio is 6.25 and the maximum temperature is 800°C. Find the compressor work per kg of air. [Take $\gamma = 1.4$ and $C_p = 1.005\ kJ/kgK$]

Options :

1. ✔ 207.7 kJ/kg

2. ✖ 439.89 kJ/kg

3. ✖ 569.14 kJ/kg

4. ✖ 800 kJ/kg

Question Number : 8 Question Id : 7877322648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A PERT network has 9 activities on its critical path. If the standard deviation of each activity on the critical path is 3, the standard deviation of the critical path is

Options :

1. ✖ 3

2. ✔ 9

3. ✖ 81

4. ✖ 27

Question Number : 9 Question Id : 7877322649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximize $z = 4x + 6y$ subject to

$3x + 2y \leq 12$

$x + y \geq 2$

$x, y \geq 0$

Options :

1. ✖ 24 at (6,0)

2. ✔

36 at (0,6)

3. ✖ 24 at (0,4)

4. ✖ 16 at (4,0)

Question Number : 10 Question Id : 7877322650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When two shafts are neither parallel nor intersecting, power can be transmitted by using

Options :

1. ✖ a pair of spur gears

2. ✖ a pair of helical gears

3. ✖ an Oldham's coupling

4. ✔ a pair of spiral gears

Question Number : 11 Question Id : 7877322651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{\omega}{\omega_n} = \sqrt{2}$, where ω is the frequency of excitation and ω_n is natural frequency of vibrations then the transmissibility of vibrations will be

Options :

1. ✖ 0.5

2. ✔ 1.0

3. ✖ 1.5

4. ✖ 2.0

Question Number : 12 Question Id : 7877322652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The critical speed of a rotating shaft depends upon

Options :

1. ✖ mass

2. ✖ stiffness

3. ✔ mass and stiffness

4. ✖ mass, stiffness and eccentricity

Question Number : 13 Question Id : 7877322653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In order to draw the acceleration diagram, it is necessary to determine the Coriolis component of acceleration in the case of

Options :

1. ✔ crank and slotted lever quick return mechanism

2. ✖ slider-crank mechanism

3. ✖ four bar mechanism

4. ✖ pantograph

Question Number : 14 Question Id : 7877322654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The total number of instantaneous centres for a mechanism consisting of 'n' links is

Options :

1. ✖ $\frac{n}{2}$

2. ✖ n

3. ✖ $\frac{n-1}{2}$

4. ✔ $\frac{n\,(n-1)}{2}$

Question Number : 15 Question Id : 7877322655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a single slider four-bar linkage when the slider is fixed, it forms a mechanism of

Options :

1. ✔ hand pump

2. ✖ reciprocating engine

3. ✖ quick return

4. ✖ oscillating cylinder

Question Number : 16 Question Id : 7877322656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of motion for a damped viscous vibration is $3\ddot{x} + 9\dot{x} + 27x = 0$

The damping factor is

Options :

1. ✖ 0.25

2. ✔ 0.50

3. ✖ 0.75

4. ✖ 1.00

Question Number : 17 Question Id : 7877322657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the annular wheel of an epicyclic gear train has 100 teeth and the planet wheel has 20 teeth, the number of teeth on the sun wheel is

Options :

1. ✖ 80

2. ✔ 60

3. ✖ 40

4. ✖ 20

Question Number : 18 Question Id : 7877322658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In case of free vibrations with viscous damping, the damping force is proportional to

Options :

1. ✖ the displacement

2. ✔ the velocity

3. ✖ the acceleration

4. ✖ the natural frequency

Question Number : 19 Question Id : 7877322659 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A rectangular section beam subjected to a bending moment M varying along its length is required to develop same maximum bending stress at any cross-section. If the depth of the section is constant, then its width will vary as

Options :

1. ✔ M

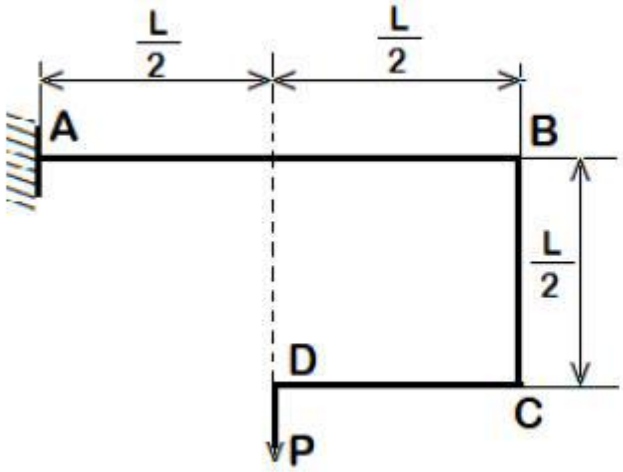
2. ✖ $\sqrt{M}$

3. ✖ M^2

4. ✖ $1/M$

Question Number : 20 Question Id : 7877322660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A beam subjected to a load 'P' is shown in the figure below:



The bending moment at the support 'A' of the beam will be

Options :

1. ✖ PL

2. ✔ $PL/2$

3. ✖ $2\,PL$

4. ✖ *Zero*

Question Number : 21 Question Id : 7877322661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of independent elastic constants required to express the stress – strain relationship for a linearly elastic isotropic material is

Options :

1. ✖ one

2. ✔ two

3. ✖ three

4. ✖ four

Question Number : 22 Question Id : 7877322662 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A hollow shaft of the same cross – section area and material as that of a solid shaft, transmits

Options :

1. ✖ same torque

2. ✖ lesser torque

3. ✔ more torque

4. ✖ cannot be predicted

Question Number : 23 Question Id : 7877322663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A double fillet welded joint with parallel fillet weld of length 'L' and leg 'B' is subjected to a tensile force 'P'. Assuming uniform shear stress distribution, the shear stress in the weld is given by

Options :

1. ✖ $\frac{\sqrt{2}P}{BL}$

2. ✖ $\frac{P}{2BL}$

3. ✔ $\frac{P}{\sqrt{2}BL}$

4. ✖ $\frac{2P}{BL}$

Question Number : 24 Question Id : 7877322664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the assembly of shaft, pulley and key, the weakest number is

Options :

1. ✖ pulley

2. ✔ key

3. ✖ shaft

4. ✖ pulley and key

Question Number : 25 Question Id : 7877322665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a multiple disc clutch, if there are 6 discs on the driving shaft and 5 discs on driven shaft, the number of pairs of contact surfaces will be equal to

Options :

1. ✖ 11

2. ✖ 12

3. ✔ 10

4. ✖ 22

Question Number : 26 Question Id : 7877322666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rivet head used for boiler plate sinding is usually

Options :

1. ✔ snap head

2. ✖ pan head

3. ✖ counter sink head

4. ✖ conical head

Question Number : 27 Question Id : 7877322667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the main advantage of hydrodynamic bearing over roller bearing?

Options :

1. ✖ Easy to assemble

2. ✖ Relatively low price

3. ✔ Superior load carrying capacity at higher speeds

4. ✖ Less frictional resistance

Question Number : 28 Question Id : 7877322668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In low carbon sheets, presence of small quantities sulphur improves

Options :

1. ✖ weldability

2. ✖ formability

3. ✔ machinability

4. ✖ hardenability

Question Number : 29 Question Id : 7877322669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Martensite is a supersaturated solution of carbon in

Options :

1. ✔ alpha iron

2. ✖ beta iron

3. ✖ gamma iron

4. ✖ delta iron

Question Number : 30 Question Id : 7877322670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The correct sequence of elements of 18-4-1 HSS tool is

Options :

1. ✔ W, Cr, V

2. ✖ Mo, Cr, V

3. ✖ Cr, Ni, C

4. ✖ Cu, Zn, Sn

Question Number : 31 Question Id : 7877322671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Single point thread cutting tool should ideally have

Options :

1. ✖ zero rake

2. ✔ positive rake

3. ✖ negative rake

4. ✖ normal rake

Question Number : 32 Question Id : 7877322672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Directional solidification in casting can be improved by using

Options :

1. ✖ chills and chaplets

2. ✔ chills and padding

3. ✖ chaplets and padding

4. ✖ chills, chaplets and padding

Question Number : 33 Question Id : 7877322673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the following ingredients used in moulding.

(a) dry silica sand (b) clay (c) phenol formaldehyde (d) sodium silicate

Those used for shell moulding casting include

Options :

1. ✖ (a), (b), and (d)

2. ✖ (b), (c) and (d)

3. ✔ (a) and (c)

4. ✖ (a), (b), (c) and (d)

Question Number : 34 Question Id : 7877322674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In orthogonal cutting, the depth of cut is 0.5 mm at a cutting speed of 2 m/s. If the chip thickness is 0.75 mm, the chip velocity is

Options :

1. ✔ 1.33 m/s

2. ✖ 2 m/s

3. ✖ 2/5 m/s

4. ✖ 3 m/s

Question Number : 35 Question Id : 7877322675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most influential element on tool life is

Options :

1. ✔ nose radius

2. ✖ cutting speed

3. ✖ depth of cut

4. ✖ feed

Question Number : 36 Question Id : 7877322676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cup of 10 cm height and 5 cm diameter is to be made from a sheet metal of 2mm thickness. The number of deductions necessary will be

Options :

1. ✖ one

2. ✖ two

3. ✔ three

4. ✖ four

Question Number : 37 Question Id : 7877322677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following process does not cause tool wear.

Options :

1. ✖ USM

2. ✔ ECM

3. ✖ EDM

4. ✖ AMM

Question Number : 38 Question Id : 7877322678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In metal cutting operation, the approximate ratio of heat distributed among chip, tool and work, in that order is

Options :

1. ✔ 80 : 10 : 10

2. ✖ 33 : 33 : 33

3. ✖ 20 : 60 : 10

4. ✖ 10 : 10 : 80

Question Number : 39 Question Id : 7877322679 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The bending force required for V-bending, U-bending and Edge bending will be in the ratio of

Options :

1. ✔ 1 : 2 : 0.5

2. ✖ 2 : 1 : 0.5

3. ✖ 1 : 2 : 1

4. ✖ 1 : 1 : 1

Question Number : 40 Question Id : 7877322680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following processes results in the best accuracy of the hole made?

Options :

1. ✖ drilling

2. ✔ reaming

3. ✖ broaching

4. ✖ boring

Question Number : 41 Question Id : 7877322681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In solidification of metal during casting compensation for solid contraction is

Options :

1. ✔ provided by the oversize pattern

2. ✖ achieved by properly placed risers

3. ✖ obtained by promoting direction solidification

4. ✖ made by providing chills

Question Number : 42 Question Id : 7877322682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Diamond pin location is used in a fixture because

Options :

1. ✖ It does not wear out

2. ✔ It takes care of any variation in centre distance between two holes

3. ✖ It is easy to clamp the part on diamond pins

4. ✖ It is easy to manufacture

Question Number : 43 Question Id : 7877322683 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a tool life test doubling the cutting speed reduces the tool life is $\frac{1}{8}$ of the original.

The Taylor's tool life index is

Options :

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{1}{3}$

3. ✖ $\frac{1}{4}$

4. ✖ $\frac{1}{8}$

Question Number : 44 Question Id : 7877322684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In rolling process, roll separating force can be decreased by

Options :

1. ✔ reducing the roll diameter

2. ✖ increasing the roll diameter

3. ✖ providing back-up rolls

4. ✖ increasing the friction between rolls and the metal

Question Number : 45 Question Id : 7877322685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dry and compressed air is used as cutting fluid for machining

Options :

1. ✖ steel

2. ✖ aluminium

3. ✔ cast iron

4. ✖ brass

Question Number : 46 Question Id : 7877322686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Scab is a

Options :

1. ✔ sand casting defect

2. ✖ machining defect

3. ✖ welding defect

4. ✖ forging defect

Question Number : 47 Question Id : 7877322687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following sets of elements are quick – acting clamping elements for fixtures?

Options :

1. ✖ wedge and cam

2. ✔ cam and toggle

3. ✖ toggle and wedge

4. ✖ wedge, cam and toggle

Question Number : 48 Question Id : 7877322688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is the correct expression for the Merchant's machinability constant? (where $\emptyset$ = shear angle, γ = friction angle, and α = rake angle)

Options :

1. ✔ $2\emptyset + \gamma - \alpha$

2. ✖ $2\emptyset - \gamma + \alpha$

3. ✖ $2\emptyset - \gamma - \alpha$

4. ✖ $\emptyset + \gamma + \alpha$

Question Number : 49 Question Id : 7877322689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is an interference fit?

Options :

1. ✖ push fit

2. ✖ running fit

3. ✖ sliding fit

4. ✔ shrink fit

Question Number : 50 Question Id : 7877322690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The M and E – system in metrology are related to measurement of

Options :

1. ✖ screw threads

2. ✖ flatness

3. ✖ angularity

4. ✔ surface finish

Question Number : 51 Question Id : 7877322691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to the principle of location in jigs and fixtures, how many degrees of freedom are to be eliminated to have a body fixed in space

Options :

1. ✖ 3

2. ✖ 4

3. ✔ 5

4. ✖ 6

Question Number : 52 Question Id : 7877322692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is clearance fit ?

Options :

1. ✔ $\emptyset\ H50\ ^{+0.015}_{+0.005}$ $h\ 50\ ^{-0.010}_{+0.000}$

2. ✖ $\emptyset\ H50\ ^{+0.010}_{+0.000}$ $h\ 50\ ^{+0.025}_{+0.015}$

3. ✖ $\emptyset\ H50\ ^{-0.015}_{+0.000}$ $h\ 50\ ^{+0.025}_{+0.005}$

4. ✖ $\emptyset\ H50\ ^{-0.010}_{-0.000}$ $h\ 50\ ^{+0.030}_{+0.005}$

Question Number : 53 Question Id : 7877322693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following methods is used for the manufacture of collapsible toothpaste tubes?

Options :

1. ✔ Impact extrusion

2. ✖ Direct extrusion

3. ✖ Deep drawing

4. ✖ Piercing

Question Number : 54 Question Id : 7877322694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A fit on a hole – shaft system is specified as H7 –S6. The type of fit is

Options :

1. ✖ Clearance fit

2. ✖ Running fit (sliding)

3. ✖ Transition fit

4. ✔ Interference fit

Question Number : 55 Question Id : 7877322695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following methods can be used for forecasting the sales potential of a new product ?

Options :

1. ✖ Time series analysis

2. ✖ Jury of executive opinion method

3. ✖ Sales Force composite method

4. ✔ Direct survey method

Question Number : 56 Question Id : 7877322696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Classifying items A, B and C categories for selective control in inventory management is done by arranging items in the decreasing order of

Options :

1. ✖ total inventory costs

2. ✖ item value

3. ✔ annual usage value

4. ✖ item demand

Question Number : 57 Question Id : 7877322697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In inventory control theory, the Economic Order Quantity (EOQ) is

Options :

1. ✖ average level of inventory

2. ✔ optimum lot size

3. ✖ lot size corresponding to break – even analysis

4. ✖ capacity of warehouse

Question Number : 58 Question Id : 7877322698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The routing function in a production system design is concerned with

Options :

1. ✖ Manpower utilization

2. ✖ Machine utilization

3. ✖ Quality assurance of the product

4. ✔ Optimizing material flow through the plan

Question Number : 59 Question Id : 7877322699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the following Linear programming problem:

Max. $Z = 2A + 3B$

subject to $A + B \leq 10$,

$4A + 6B \leq 30$,

$2A + B \leq 17$,

$A, B \geq 0$

What can one say about the solution

Options :

1. ✔ It may contain alternative optima

2. ✖ The solution will be unbounded

3. ✖ The solution will be degenerate

4. ✖ It cannot solve by simplex method

Question Number : 60 Question Id : 7877322700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a M/M/1 : ∞ / FCFS Queue, the mean arrival rate is equal to 10 per hour and the mean service rate is 15 per hour. The expected queue length is

Options :

1. ✔ 1.33

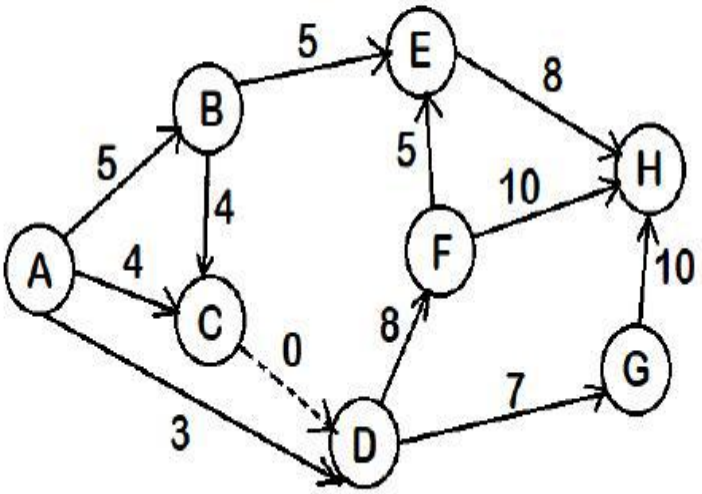
2. ✖ 1.53

3. ✖ 2.75

4. ✖ 3.20

Question Number : 61 Question Id : 7877322701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the network shown in the given figure, the earliest expected completion time of the project is



Options :

1. ✖ 26 days

2. ✖ 27 days

3. ✔ 30 days

4. ✖ indeterminable

Question Number : 62 Question Id : 7877322702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In PERT analysis critical activity has

Options :

1. ✖ maximum float

2. ✔ zero float

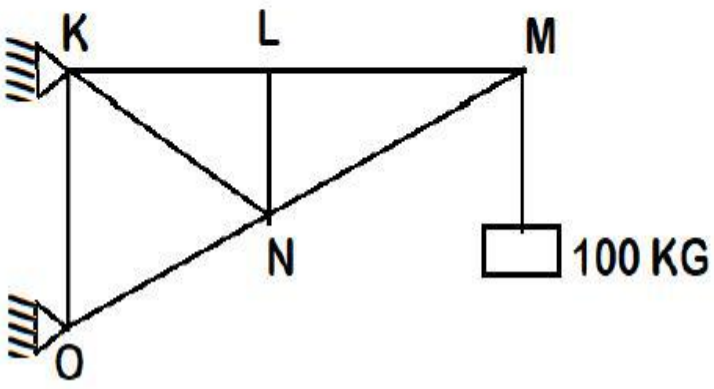
3. ✖ maximum cost

4. ✖ minimum cost

Question Number : 63 Question Id : 7877322703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A figure shows a pin – joined plane truss loaded at the point 'M' by hanging a mass of 100 kg. The member LN of the truss is subjected to a load of



Options :

1. ✔ zero

2. ✖ 490 N in compression

3. ✖ 981 N in compression

4. ✖ 981 N tension

Question Number : 64 Question Id : 7877322704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A stream-line and an equipotential line in a flow field

Options :

1. ✖ are parallel to each other

2. ✔ are perpendicular to each other

3. ✖ intersect at an acute angle

4. ✖ are identical

Question Number : 65 Question Id : 7877322705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider steady laminar incompressible anti-symmetric fully developed viscous flow through a straight circular pipe of constant cross – sectional area at a Reynolds number of 5. The ratio of inertia force to viscous force on a fluid particle is

Options :

1. ✔ 5

2. ✖ 1/5

3. ✖ zero

4. ✖ infinite

Question Number : 66 Question Id : 7877322706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A fluid flow is represented by the velocity field $\vec{V} = ax\,\vec{i} + ay\,\vec{j}$, where 'a' is a constant. The equation of streamline passing through a point (1, 2) is

Options :

1. ✖ $x - 2y = 0$

2. ✖ $2x + y = 0$

3. ✔ $2x - y = 0$

4. ✖ $x + 2y = 0$

Question Number : 67 Question Id : 7877322707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The SI unit of Kinematic Viscosity(ϑ) is

Options :

1. ✔ $\frac{m^2}{s}$

2. ✖ $\frac{kg}{m-s}$

3. ✖ $\frac{m}{s^2}$

4. ✖ $\frac{m^3}{s^2}$

Question Number : 68 Question Id : 7877322708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As the temperature increases, the thermal conductivity of a gas

Options :

1. ✔ increases

2. ✖ decreases

3. ✖ remains constant

4. ✖ increases up to a certain temperature and then decreases

Question Number : 69 Question Id : 7877322709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A reversed cannot cycle refrigerator maintains a temperature of $-5°C$. The ambient air temperature is $35°C$. The heat gained by the refrigerator at a continuous rate is 2.5 KJ/s. The power (in Watt) required to pump this heat out continuously is

Options :

1. ✔

373.13 kW

2. ✖ 370.13 kW

3. ✖ 371.13 kW

4. ✖ 369.13 kW

Question Number : 70 Question Id : 7877322710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum theoretical work obtainable, when a system interacts to equilibrium with a reference environment, is called

Options :

1. ✖ entropy

2. ✖ enthalphy

3. ✔ exergy

4. ✖ rothalphy

Question Number : 71 Question Id : 7877322711 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is a CFC refrigerant?

Options :

1. ✖ R744

2. ✖ R290

3. ✔ R502

4. ✖ R718

Question Number : 72 Question Id : 7877322712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In order to have maximum power from a Pelton turbine, the bucket speed must be

Options :

1. ✖ equal to the jet speed

2. ✔ equal to half of the jet speed

3. ✖ equal to twice the jet speed

4. ✖ independent of the jet speed

Question Number : 73 Question Id : 7877322713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A long thin walled cylindrical shell, closed at both ends, is subjected to an internal pressure. The ratio of the hoop stress to longitudinal stress developed in the shell is

Options :

1. ✖ 0.5

2. ✖ 1.0

3. ✔ 2.0

4. ✖ 4.0

Question Number : 74 Question Id : 7877322714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an opaque surface, the absorptivity (α), transmission (τ) and reflectivity (ρ) are related by the equation

Options :

1. ✖ $\alpha + \rho = \tau$

2. ✖ $\rho + \alpha + \tau = 0$

3. ✔ $\alpha + \rho = 1$

4. ✖ $\alpha + \rho = 0$

Question Number : 75 Question Id : 7877322715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following configurations has the highest fin effectiveness?

Options :

1. ✔ Thin, closely spaced fins

2. ✖ Thin, Widley spaced fins

3. ✖ Thick, Widley spaced fins

4. ✖ Thick, closely spaced fins

Question Number : 76 Question Id : 7877322716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal gas of mass 'm' and temperature T_1 undergoes a reversible isothermal process from an initial pressure P_1 to final pressure P_2. The heat loss during the process is Q. The entropy changes ΔS of the gas is

Options :

1. ✖ $mRln\left(\frac{P_2}{P_1}\right)$

2. ✔ $mRln\left(\frac{P_1}{P_2}\right)$

3. ✖ $mRln\left(\frac{P_2}{P_1}\right) - \frac{Q}{T_1}$

4. ✖ Zero

Question Number : 77 Question Id : 7877322717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Heat and work is

Options :

1. ✖ intensive properties

2. ✖ extensive properties

3. ✖ point functions

4. ✔ path functions

Question Number : 78 Question Id : 7877322718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A turbo-charged four stroke injection diesel engine has a displacement volume of $0.0259\ m^3\ (25.9L)$. The engine has an output of 950 kW at 2200 rpm. The mean effective pressure in MPa is closest to

Options :

1. ✔ 2

2. ✖ 1

3. ✖ 0.2

4. ✖ 0.1

Question Number : 79 Question Id : 7877322719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One kilogram of water at room temperature is brought into contact with a high temperature reservoir. The entropy change of the universe is

Options :

1. ✖ equal to entropy change of reservoir

2. ✖ equal to entropy change of water

3. ✖ equal to zero

4. ✔ always positive

Question Number : 80 Question Id : 7877322720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a closed system is undergoing an irreversible process, the entropy of the system

Options :

1. ✔ must increase

2. ✖ always remains constant

3. ✖ must decrease

4. ✖ can increase, decrease or remain constant

Question Number : 81 Question Id : 7877322721 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a mass of moist air in an airtight vessel is heated to a higher temperature

Options :

1. ✖ specific humidity of the air increases

2. ✖ specific humidity of the air decreases

3. ✖ relative humidity of the air increases

4. ✔ relative humidity of the air decreases

Question Number : 82 Question Id : 7877322722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dew point temperature is the temperature at which condensation begins when the air is cooled at constant

Options :

1. ✖ volume

2. ✖ entropy

3. ✔ pressure

4. ✖ enthalpy

Question Number : 83 Question Id : 7877322723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the window air conditioner, the expansion device used is

Options :

1. ✔ capillary tube

2. ✖ thermostatic expansion valve

3. ✖ automatic expansion valve

4. ✖ float valve

Question Number : 84 Question Id : 7877322724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A hydraulic turbine develops 1000 kW power for a head of 40 m. If the head is reduced to 20 m, the power developed in (kW) is

Options :

1. ✖ 177

2. ✖ 354

3. ✔ 500

4. ✖ 707

Question Number : 85 Question Id : 7877322725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Rateau turbine belongs to the category of

Options :

1. ✔ pressure compound turbine

2. ✖ reaction turbine

3. ✖ velocity compound turbine

4. ✖ radial flow turbine

Question Number : 86 Question Id : 7877322726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Green sand mould indicates that

Options :

1. ✖ polymeric mould has been cured

2. ✔ mould has been totally dried

3. ✖ hexagonal closed packed

4. ✖ body centred tetragonal

Question Number : 87 Question Id : 7877322727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is a solid state joining process?

Options :

1. ✖ Gas tungsten arc welding

2. ✖ Resistance spot welding

3. ✔ Friction welding

4. ✖ Submerged arc welding

Question Number : 88 Question Id : 7877322728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Disposable patterns are made of

Options :

1. ✖ wood

2. ✖ rubber

3. ✖ metal

4. ✔ polystyrene

Question Number : 89 Question Id : 7877322729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A built-up-edge is formed while machining

Options :

1. ✖ ductile materials at high speed

2. ✔ ductile materials at low speed

3. ✖ brittle materials at high speed

4. ✖

brittle materials at low speed

Question Number : 90 Question Id : 7877322730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximum efficiency in reaction turbine is given by

Options :

1. ✔ $\frac{2\cos^2\alpha}{1+\cos^2\alpha}$

2. ✖ $\frac{1+\cos^2\alpha}{2\cos^2\alpha}$

3. ✖ $\frac{1+\cos\alpha}{2\cos\alpha}$

4. ✖ $\frac{2\cos\alpha}{1+\cos\alpha}$

Question Number : 91 Question Id : 7877322731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tool signature are 10, 10, 8, 6, 8, 8, 3 then the side cutting edge angle and nose radius are

Options :

1. ✖ 6, 3

2. ✔ 8, 3

3. ✖ 8, 6

4. ✖ 10, 6

Question Number : 92 Question Id : 7877322732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In laminar flow through a pipe, the Darch-Weisbach friction factor 'f' is given by

Options :

1. ✔ $\frac{64}{R_e}$

2. ✖ $\frac{24}{R_e}$

3. ✖ $\frac{16}{R_e}$

4. ✖ $\frac{3}{16}R_e$

Question Number : 93 Question Id : 7877322733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Annual demand for a product is 25000 unit. The ordering cost per order is Rs.400 and inventory carrying cost (holding cost) is Rs.20 per unit per year. Find the EOQ.

Options :

1. ✖ 2000

2. ✔ 1000

3. ✖ 800

4. ✖ 1200

Question Number : 94 Question Id : 7877322734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Normal rake and orthogonal rake of a turning tool will be same when its

Options :

1. ✖ $\emptyset = 0$

2. ✖ $\emptyset_1 = 0$

3. ✔ $\lambda = 0$

4. ✖ $\emptyset_1 = 90°$

Question Number : 95 Question Id : 7877322735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the number of links in a mechanism is 6, the number of pairs would be

Options :

1. ✔ 5

2. ✖ 2

3. ✖ 1

4. ✖ 4

Question Number : 96 Question Id : 7877322736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Interchangeability is possible only in

Options :

1.

bevel gear ✖

2. helical gear ✖

3. spur gear ✔

4. mitre gear ✖

Question Number : 97 Question Id : 7877322737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A circular shaft subjected to twisting moment results in maximum shear stress of 60 MPa.

Then the maximum compressive stress in the material is

Options :

1. 30 MPa ✖

2. 60 MPa ✔

3. 90 MPa ✖

4. 120 MPa ✖

Question Number : 98 Question Id : 7877322738 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simply supported beam of span 'l' is subjected to a uniformly varying load having zero intensity at the left support and 'w' N/m at the right support. The reaction at the right support is

Options :

1. ✖ $\frac{wl}{2}$

2. ✖ $\frac{wl}{5}$

3. ✖ $\frac{wl}{4}$

4. ✔ $\frac{wl}{3}$

Question Number : 99 Question Id : 7877322739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ single shear only

2. ✖ double shear only

3. ✖ single shear and crushing

4. ✔ double shear crushing

Question Number : 100 Question Id : 7877322740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a nut is tightened by placing a washer below it then the bolt will be subjected to

Options :

1. ✔ tensile stress

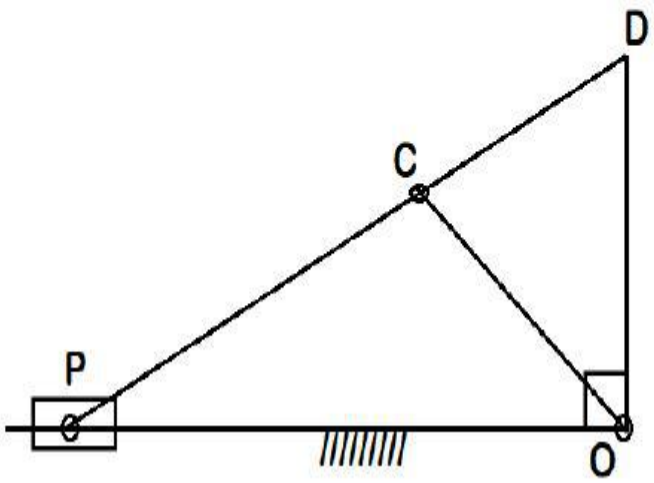
2. ✖ compressive stress

3. ✖ shear stress

4. ✖ both tensile and shear

Question Number : 101 Question Id : 7877322741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Figure shows Klein's construction for slider – crank mechanism OCP drawn to full scale. What velocity does 'CD' represent ?



Options :

1. ✖ Velocity of the crank pin

2. ✖ Velocity of the piston

3. ✔ Velocity of the piston with respect to crank pin

4. ✖ Angular velocity to the connecting rod

Question Number : 102 Question Id : 7877322742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a multi-rotor system of torsional vibrations, maximum number of nodes that can occur is

Options :

1. ✖ two

2. ✖ equal to the number of rotors plus one

3. ✖ equal to the number of rotors

4. ✔ equal to the number of rotors minus one

Question Number : 103 Question Id : 7877322743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is not a ceramic ?

Options :

1. ✖ Iron

2. ✔ Brass

3. ✖ Aluminium

4. ✖ Steel

Question Number : 104 Question Id : 7877322744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Windows of aeroplane are made of

Options :

1. ✖ PVC

2. ✖ PTFE

3. ✔ PMMA

4. ✖ PEEK

Question Number : 105 Question Id : 7877322745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an assembly line, what is the balance delay?

Options :

1. ✖ line efficiency x 100

2. ✔ 100 – line efficiency (in percentage)

3. ✖ $\frac{\text{Line efficiency}}{100}$

4. ✖ 100 – line efficiency

Question Number : 106 Question Id : 7877322746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is not a technique of Long-Range Forecasting?

Options :

1. ✖ Market Research and Market Survey

2. ✖ Delphi

3. ✖ Collective opinion

4. ✔ Correlation and Regression

Question Number : 107 Question Id : 7877322747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In assignment problem for variable X_{ij}

(a) $X_{ij} = 1$ or 0 (b) $\sum_{j=1}^{n} X_{ij} = 1$ (c) $\sum_{i=1}^{n} X_{ij} = 1$ (d) $\sum_{i=1}^{j} X_{ij} = 0$

Which of these statements are correct

Options :

1. ✔ (a), (b) and (c)

2. ✖ (b) and (c) only

3. ✖ (a), (b), (c) and (d)

4. ✖ (a) and (b) only

Question Number : 108 Question Id : 7877322748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A planar mechanism has 8 links and 10 rotary joints. The number of degrees of freedom of the mechanism is

Options :

1. ✖ Zero

2. ✔ One

3. ✖ Two

4. ✖ Three

Question Number : 109 Question Id : 7877322749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a mass 1.3kg is attached to a spring and disturbed, the system is observed to exhibit oscillations of frequency 7.9 rad/s. What is the stiffness of the spring?

Options :

1.

38 N/m

2. 41 N/m

3. 76 N/m

4. 81 N/m

Question Number : 110 Question Id : 7877322750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'GO' and 'NO GO' gauge is a type of

Options :

1. Plug gauge

2. Slip gauge

3. Ring gauge

4. Limit gauge

Question Number : 111 Question Id : 7877322751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following infinite series is convergent

Options :

1. ✖ $\sum_{n=1}^{\infty} \frac{1}{n}$

2. ✖ $\sum_{n=1}^{\infty} \left(\frac{4}{3}\right)^n$

3. ✔ $\sum_{n=1}^{\infty} (-1)^n \frac{n^3}{3^n}$

4. ✖ $\sum_{n=1}^{\infty} \frac{n^n}{n!}$

Question Number : 112 Question Id : 7877322752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\iint_S F.ds$, where $F(x,y,z) = xye^z\,\boldsymbol{i} + xy^2z^3\,\boldsymbol{j} - ye^z\,\boldsymbol{k}$ and S is the surface of the box bounded by the coordinate planes and the planes $x = 3, y = 2$, and $z = 1$ is

Options :

1. ✖ 16

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{9}{2}$

4. ✖ $\frac{15}{2}$

Question Number : 113 Question Id : 7877322753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let $f(x,y) = \begin{cases} \frac{x^3y - xy^3}{x^2+y^2} & if\ (x,y) \neq (0,0) \\ 0 & if\ (x,y) = (0,0) \end{cases}$. The value of $f_y(0,0)$ is

Options :

1. ✔ 0

2. ✖ -1

3. ✖ 1

4. ✖ Does not exists

Question Number : 114 Question Id : 7877322754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Solution of $\frac{dy}{dx} + 4y = 20, y(0) = 2$ at $x = 1$ is

Options :

1. ✖

$\frac{5e^4-1}{e^4}$

2. ✔ $\frac{5e^4-3}{e^4}$

3. ✖ $\frac{5e^4-5}{e^4}$

4. ✖ $\frac{e^4-1}{e^4}$

Question Number : 115 Question Id : 7877322755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inverse Laplace transform of $\frac{-s-10}{s^2-s-2}$ is

Options :

1. ✖ $3e^{-t}+4e^{-2t}$

2. ✔ $3e^{-t}-4e^{2t}$

3. ✖ $3e^{-t}+1$

4. ✖ $-3e^{2t}+4e^{-t}$

Question Number : 116 Question Id : 7877322756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A fair coin is tossed n times, if the probability that heads occurs 6 times is equal to the probability that heads occurs 8 times, then n is

Options :

1. ✖ 10

2. ✖ 12

3. ✖ 9

4. ✔ 14

Question Number : 117 Question Id : 7877322757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let X be a normal random variable with mean zero and variance 9. If $a = P(X \geq 3)$, then $P(|X| \leq 3)$ is

Options :

1. ✖ $2a$

2. ✔ $1 - 2a$

3. ✖ $2a + 1$

4. ✖ $2a - 2$

Question Number : 118 Question Id : 7877322758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the system $2x - y + 3z = 2, x + y + 2z = 2, 5x - y + az = b$ has infinitely many solutions, then the values of a and b are respectively

Options :

1. ✖ -8 and 6

2. ✔ 8 and 6

3. ✖ -8 and -6

4. ✖ 8 and -6

Question Number : 119 Question Id : 7877322759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eigenvectors of the matrix $\begin{bmatrix} 1 & 2 \\ 0 & 2 \end{bmatrix}$ are written in the form $\begin{bmatrix} 1 \\ a \end{bmatrix}$ and $\begin{bmatrix} 1 \\ b \end{bmatrix}$. Then $a + b$ is

Options :

1. ✖ 0

2. ✔ $\frac{1}{2}$

3. ✖ 1

4. ✖ 2

Question Number : 120 Question Id : 7877322760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider $\frac{dy}{dx} = 1 + \frac{y}{x},\ 1 \le x \le 2,\ y(1) = 2.$ The approximate solution of y using the Euler's method with $h = 0.25$ at $x = 1.5$ is

Options :

1. ✖ 3.625

2. ✖ 3.75

3. ✔ 3.55

4. ✖ 3.125