Andhra Pradesh State Council of Higher Education

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 30th May 2024 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
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mechanical Engineering

Section Id :	33300852
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 : 3330086121 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

"The moment of resultant of all the forces in a plane about any point is equal to the algebraic sum of moment of all the forces about the same point". This statement is known as

Options :

1. ✖ Parallelogram law

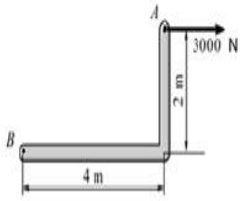
2. ✖ Triangle law

3. ✖ Lami's theorem

4. ✔ Varignon's theorem

Question Number : 2 Question Id : 3330086122 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The force acting at a point A is shown in Figure. The equivalent force system acting at point B is



Options :

1. ✔ Force 3000 N in same direction and 6000 Nm clock wise moment

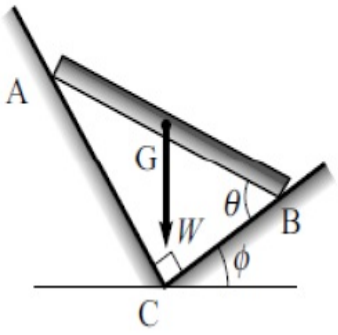
2. ✖ Force 3000 N in opposite direction and 6000 Nm clock wise moment

3. ✖ Force 3000 N in Opposite direction and 6000 Nm counter clock wise moment

4. ✖ Force 3000 N in same direction and 12000 Nm counter clock wise moment

Question Number : 3 Question Id : 3330086123 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A uniform rod AB is in equilibrium when resting on a smooth groove, the walls of which are at right angles to each other as shown in Figure. What is the relation between θ and Ø in degrees?



Options :

1. ✖ $\theta = 45^0 + Ø$

2. ✖ $\theta = 45^0 - Ø$

3. ✔ $\theta = 90^0 - Ø$

4. ✖ $\theta = 90^0 + Ø$

Question Number : 4 Question Id : 3330086124 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A plane truss has four members and four joints. The truss is

Options :

1. ✖ Perfect

2. ✔ Deficient

3. ✖ Redundant

4. ✖ Rigid

Question Number : 5 Question Id : 3330086125 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 forces are considered in the equations of virtual work?

Options :

1. ✔ External forces

2. ✖ Internal forces

3. ✖ Reaction forces

4. ✖ Tensions in strings

Question Number : 6 Question Id : 3330086126 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If acceleration-time diagram is represented by a horizontal straight line then displacement is

Options :

1. ✖ Zero

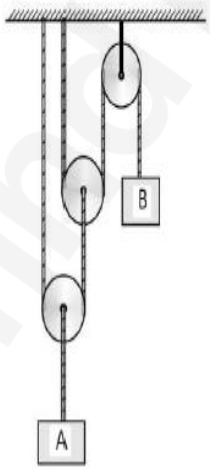
2. ✖ Straight line

3. ✔ Parabolic curve

4. ✖ Cubic curve

Question Number : 7 Question Id : 3330086127 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the system of pulleys, shown in Figure, the pulleys are mass less and the strings are inextensible.
What is the relation between the accelerations of blocks A and B



Options :

1. ✖ $a_B = 2\ a_A$

2. ✔ $a_B = 4\ a_A$

3. ✖ $2\ a_B = a_A$

4. ✖ $4\ a_B = a_A$

Question Number : 8 Question Id : 3330086128 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 160 g cricket ball is moving with a speed of 20 m/s. What force is required to stop the ball in 0.2 seconds?

Options :

1. ✖ - 4 N

2. ✖ - 8 N

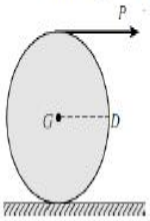
3. ✖ - 12 N

4. ✔ - 16 N

Question Number : 9 Question Id : 3330086129 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A solid cylinder of weight W = 100 N and radius r = 0.5 m is pulled along a horizontal plane by a horizontal force P = 90 N applied to the end of the string wound round the cylinder, as shown in Figure.

What is the angular acceleration of the disc? Assume g =10 m/s^2.



Options :

1. ✖ $9\ rad/s^2$

2. ✖ $12\ rad/s^2$

3. ✖ $18\ rad/s^2$

4. ✔ $24\ rad/s^2$

Question Number : 10 Question Id : 3330086130 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 the strain mainly represents the change of shape?

Options :

1. ✖ Lateral strain

2. ✖ Longitudinal strain

3. ✔ Shear strain

4. ✖ Volumetric strain

Question Number : 11 Question Id : 3330086131 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A steel rod of diameter 10 mm and 1 m long is heated from 20°C to 120°C, it's coefficient of thermal expansion $\alpha = 12 \times 10^{-6}/K$ and Young's Modulus E= 200 GPa. If the rod is free to expand, thermal stress developed in it is

Options :

1. ✔ Zero

2. ✖ 24 MPa

3. ✖ 240 MPa

4. ✖ 2400 MPa

Question Number : 12 Question Id : 3330086132 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

State of stress at a point of a loaded component is given by normal stresses $\sigma_x = 30$ MPa, $\sigma_y = 18$ MPa, and shear stress $\tau_{xy} = 8$ MPa. What are the principal stresses?

Options :

1. ✖ 38 MPa and 26 MPa

2. ✔ 34 MPa and 14 MPa

3. ✖ 24 MPa and 8 MPa

4. ✖ 19 Mpa and 13 MPa

Question Number : 13 Question Id : 3330086133 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the Shear Force diagram for a beam is a triangle with length of the beam as its base, the beam is

Options :

1. ✖ A cantilever beam with a concentrated load at its free end

2. ✔ A cantilever beam with uniformly distributed load over its whole span

3. ✖ A Simply supported beam with a concentrated load at its mid point

4. ✖ A Simply supported beam with uniformly distributed load over its whole span

Question Number : 14 Question Id : 3330086134 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A beam has rectangular section with width and depth as 100 mm x 200 mm. If it is subjected to a maximum bending moment of 40 MN-mm, then the maximum bending stress developed would be

Options :

1. ✔ 60 MPa

2. ✖ 120 MPa

3. ✖ 240 MPa

4. ✖ 24 MPa

Question Number : 15 Question Id : 3330086135 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of area under the bending moment diagram to the flexural rigidity between two points along a beam gives the change in

Options :

1. ✖ Shear Force

2. ✖ Bending Moment

3. ✔ Slope

4. ✖ Deflection

Question Number : 16 Question Id : 3330086136 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximum shear stress developed on the surface of a solid circular shaft under torsion is 240 MPa. If the shaft diameter is doubled, then the maximum shear stress developed corresponding to the same torque will be

Options :

1. ✖ 240 MPa

2. ✖ 120 MPa

3. ✖ 60 MPa

4. ✔ 30 MPa

Question Number : 17 Question Id : 3330086137 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A column fixed at one end and free at the other end buckles at a load P. Now, both the ends of the column are fixed. What is the buckling load for these end conditions?

Options :

1. ✖ $2P$

2. ✖ $4P$

3. ✖ $8P$

4. ✔ $16P$

Question Number : 18 Question Id : 3330086138 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bar of length L, area of cross-section A, subjected to a tensile force P. If E is the Young's modulus of the bar, The strain energy stored in a body is,

Options :

1. ✖ $U = \frac{PL}{AE}$

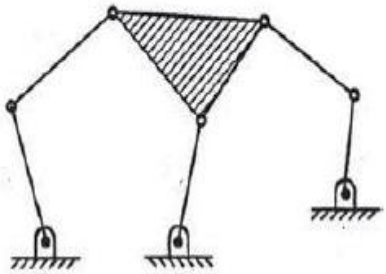
2. ✖ $U = \frac{PL}{2AE}$

3. ✔ $U = \frac{P^2L}{2AE}$

4. ✖ $U = \frac{P^2L}{AE}$

Question Number : 19 Question Id : 3330086139 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 degrees of freedom of the mechanism shown in Figure is



Options :

1. ✔ 2

2. ✖ 1

3. ✖ 0

4. ✖ -1

Question Number : 20 Question Id : 3330086140 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a four bar mechanism ABCD, the link lengths are given by AB = 800 mm, BC = 100 mm, CD = 400 mm, DA = 700 mm. If the mechanism is double crank mechanism then the fixed link should be

Options :

1. ✖ AB

2. ✔ BC

3. ✖ CD

4. ✖ DA

Question Number : 21 Question Id : 3330086141 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 of n links are

Options :

1. ✔ nC_2

2. ✖ nP_2

3. ✖ $nC_2 + nP_2$

4. ✖ $nC_2 - nP_2$

Question Number : 22 Question Id : 3330086142 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A slider sliding at 100 mm/s on a link which is rotating at 60 rpm is subjected to coriolis acceleration of magnitude

Options :

1. ✖ $200\ \pi\ mm/s^2$

2. ✖ $200\ \pi^2\ mm/s^2$

3. ✔ $400\ \pi\ mm/s^2$

4. ✖ $400\ \pi^2\ mm/s^2$

Question Number : 23 Question Id : 3330086143 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The direction of the linear velocity of any point on the kinematic link relative to any other point on the same kinematic link is

Options :

1. ✖ Parallel to the line joining the points

2. ✔ Perpendicular to the line joining the points

3. ✖ At 45° to the line joining the points

4. ✖ Dependent on the angular speed of rotation of the link

Question Number : 24 Question Id : 3330086144 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area under the turning moment diagram represents

Options :

1. ✖ Mean turning moment

2. ✖ Maximum torque to which the crankshaft is subjected to

3. ✖ Power developed by the engine

4. ✔ Work done per cycle

Question Number : 25 Question Id : 3330086145 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a simple gear train, if the number of idler gears is odd, then the direction of motion of driven gear will be

Options :

1. ✔ Be same as that of the driving gear

2. ✖ Be opposite to that of the driving gear

3. ✖ Depend upon the number of teeth on the driving gear

4. ✖ Depends on type of gears

Question Number : 26 Question Id : 3330086146 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10 kg mass is supported on a spring of stiffness 4 kN/m and has a dash pot which produces a resistance of 20 N at velocity of 0.25 m/s. The damping ratio of the system is

Options :

1. ✖ 1

2. ✖ 0.8

3. ✖ 0.4

4. ✔ 0.2

Question Number : 27 Question Id : 3330086147 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Whirling speed of a shaft coincides with the natural frequency of its

Options :

1. ✖ Longitudinal Vibrations

2. ✔ Transverse Vibrations

3. ✖ Torsional Vibration

4. ✖ Combined torsional and longitudinal vibrations

Question Number : 28 Question Id : 3330086148 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The natural frequency of a spring-mass system is 2 Hz. When an additional mass of 1 kg is added to the original mass m, the natural frequency is reduced to 1 Hz. The original mass m is

Options :

1. ✖ 1 kg

2. ✖ $\frac{1}{2}$ kg

3. ✔ $\frac{1}{3}$ kg

4. ✖ $\frac{1}{4}$ kg

Question Number : 29 Question Id : 3330086149 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An element is subjected to a tensile stress of 60 MPa and a shear stress of 40 MPa. If the material has the yield strength obtained in a simple tensile test is 320 MPa, the factor of safety based on maximum principal stress theory is

Options :

1. ✔ 4

2. ✖ 3

3. ✖ 2.5

4. ✖ 2

Question Number : 30 Question Id : 3330086150 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The design stress for a component subjected to a completely reversible load, is found by applying the factor of safety to

Options :

1. ✖ Yield Strength

2. ✖ Ultimate Strength

3. ✖ Buckling Strength

4. ✔ Endurance Strength

Question Number : 31 Question Id : 3330086151 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In eccentric loading of welds, the stress which vary from point to point as proportional to its distance from the centre of gravity, is known as

Options :

1. ✖ Primary Shear Stress

2. ✔ Secondary Shear Stress

3. ✖ Tertiary Shear Stress

4. ✖ Distributed Load

Question Number : 32 Question Id : 3330086152 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A solid uniform shaft of circular cross section is subjected to a maximum bending moment of 3 kNm and a twisting moment of 4 kNm. The equivalent torsional moment is

Options :

1. ✖ 1 kNm

2. ✖ 4 kNm

3. ✔ 5 kNm

4. ✖ 7 kNm

Question Number : 33 Question Id : 3330086153 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two mating spur gears have 36 and 108 teeth, respectively. The pinion rotates at 1200 rpm and transmits a torque of 20 Nm. The torque transmitted by the gear is

Options :

1. ✖ 10 Nm

2. ✖ 20 Nm

3. ✖ 40 Nm

4. ✔ 60 Nm

Question Number : 34 Question Id : 3330086154 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the multiple disc clutch, if there are six discs on the driving shaft and five discs on the driven shaft, then the number of pairs of contact surfaces will be

Options :

1. ✖ 12

2. ✖ 11

3. ✔ 10

4. ✖ 9

Question Number : 35 Question Id : 3330086155 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sommerfeld number consists of parameters

Options :

1. ✖ Viscosity, speed, load, bearing length and clearance

2. ✔ Viscosity, speed, journal radius, pressure, and clearance

3. ✖ Viscosity, speed, bearing length, clearance and oil temperature

4. ✖ Journal radius, bearing length, pressure, surface roughness, and clearance

Question Number : 36 Question Id : 3330086156 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 not an extensive property?

Options :

1. ✔ Pressure

2. ✖ Volume

3. ✖ Energy

4. ✖ Entropy

Question Number : 37 Question Id : 3330086157 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Heat Engine cycle represents the devices Boiler (B), Condenser (C),Pump(P) and Turbine(T) arranged in the sequence of

Options :

1. ✖ B – C – T – P

2. ✖ B – P – T – C

3. ✔ B – T – C – P

4. ✖ T – B – C – P

Question Number : 38 Question Id : 3330086158 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 at 27°C is heated at constant pressure till the volume becomes three times. The temperature of the gas will be

Options :

1. ✖ 81°C

2. ✔

627°C

3. ✖ 900°C

4. ✖ 1173°C

Question Number : 39 Question Id : 3330086159 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Joule's experiment states that for a cycle process

Options :

1. ✖ Change of pressure is proportional to temperature change

2. ✖ Change of volume is proportional to temperature change

3. ✖ Change of internal energy is proportional to temperature change

4. ✔ Sum of all heat transfer is proportional to sum of all work transfer

Question Number : 40 Question Id : 3330086160 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During one cycle the working fluid in an engine engages in two work interactions: 15 kJ to the fluid and 45 kJ from the fluid, and three heat interactions, two of which are known: 75 kJ to the fluid and 40 kJ from the fluid. The magnitude and direction of the third heat transfer is

Options :

1. ✖ 5 kJ from the system

2. ✖ 55 kJ into the system

3. ✖ 5 kJ into the system

4. ✔ - 5 kJ from the system

Question Number : 41 Question Id : 3330086161 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A heat engine is supplied with 250 kJ/s of heat at a constant temperature of 227°C; the heat is rejected at 27°C, the cycle is reversible, then the amount of heat rejected is

Options :

1. ✖ 50 kJ/s

2. ✔ 150 kJ/s

200 kJ/s

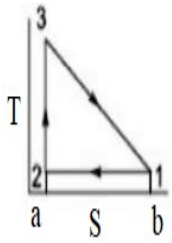
3. ✖

250 kJ/s

4. ✖

Question Number : 42 Question Id : 3330086162 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The cycle shown in Figure is composed of internally reversible processes on a T-S diagram. Which of the following is the expression for the thermal efficiency in terms of the temperatures?



Options :

$$\frac{T_3 - T_1}{T_3 + T_1}$$

1. ✔

$$\frac{T_3 + T_1}{T_3 - T_1}$$

2. ✖

$$\frac{1}{2}\left(\frac{T_3 - T_1}{T_3 + T_1}\right)$$

3. ✖

$$\frac{1}{2}\left(\frac{T_3+T_1}{T_3-T_1}\right)$$

4. ✖

Question Number : 43 Question Id : 3330086163 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 equation is the basis for the construction of Mollier diagram?
(P- Pressure, V – Volume, T-Temperature, U – Internal Energy, h – Enthalpy, s – Entropy)

Options :

$$\left(\frac{\partial h}{\partial s}\right)_p = P$$

1. ✖

$$\left(\frac{\partial h}{\partial s}\right)_p = V$$

2. ✖

$$\left(\frac{\partial h}{\partial s}\right)_p = T$$

3. ✔

$$\left(\frac{\partial h}{\partial s}\right)_p = U$$

4. ✖

Question Number : 44 Question Id : 3330086164 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A pure substance is a substance of constant composition throughout its mass and follows

Options :

1. ✖ One component, one phase

2. ✔ One component, one or more phases

3. ✖ More than one component, one phase

4. ✖ More than one component, one or more phases

Question Number : 45 Question Id : 3330086165 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A thermodynamic cycle is impossible if

Options :

1. ✖ $\oint \frac{dQ}{T} = 0$

2. ✖ $\oint \frac{dQ}{T} < 0$

3. ✔

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

4. ✖ $$\oint ds > 0$$

Question Number : 46 Question Id : 3330086166 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Carnot cycle is different from Rankine cycle in steam power plant during the following process.

Options :

1. ✔ Heat Addition

2. ✖ Expansion Work

3. ✖ Heat Rejection

4. ✖ Pump Work

Question Number : 47 Question Id : 3330086167 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 effect of involving Reheat and Regenerative cycle individually on cycle efficiency in the same sequence?

Options :

1. ✖ High, High

2. ✖ Low, Low

3. ✖ High, Low

4. ✔ Low, High

Question Number : 48 Question Id : 3330086168 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The cycle efficiency of Brayton cycle corresponding to maximum net work obtained for $T_{max} = 900$ K and $T_{min} = 400$ K is given by

Options :

1. ✔ 33.3%

2. ✖ 44.4%

3. ✖ 55.5%

4. ✖ 66.6%

Question Number : 49 Question Id : 3330086169 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The air standard cycle involving constant pressure heat addition and constant volume heat rejection corresponds to

Options :

1. ✖ Otto Cycle

2. ✔ Diesel Cycle

3. ✖ Brayton Cycle

4. ✖ Atkinson Cycle

Question Number : 50 Question Id : 3330086170 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a Psychrometric chart, horizontal lines and vertical lines in the same sequence represent constant values of

Options :

1. ✖ Humidity ratio and vapour pressure.

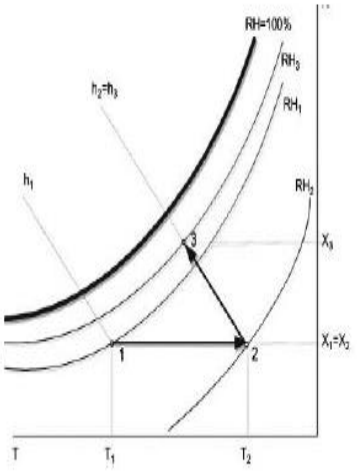
2. ✖ Humidity ratio and wet bulb temperature

3. ✔ Humidity ratio and dry bulb temperature

4. ✖ Dry bulb temperature and wet bulb temperature

Question Number : 51 Question Id : 3330086171 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A process is described by 1-2-3 on a Psychrometric chart. Name the process in the same sequence.



Options :

1. ✖ Sensible Cooling followed by Dehumidification

2. ✖ Sensible Heating followed by Dehumidification

3. ✖

Sensible Heating followed by Humidification

4. ✔ Sensible Heating followed by Evaporative Cooling

Question Number : 52 Question Id : 3330086172 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the heat flow equation, $Q = -kA\frac{\Delta T}{L}$, the expression for thermal resistance is given by

(k - thermal conductivity, A – Area of cross section, L- thickness of the wall)

Options :

1. ✖ $\frac{L}{\Delta T}$

2. ✖ $\frac{A}{kL}$

3. ✖ $\frac{k}{LA}$

4. ✔ $\frac{L}{kA}$

Question Number : 53 Question Id : 3330086173 Display Question Number : Yes Is Question

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

If the radius of a current carrying wire is less than the critical radius, then the addition of electrical insulation will enable the wire to carry a higher current because

Options :

1. ✖ The thermal resistance of the insulation is reduced.

2. ✖ The thermal resistance of the insulation is increased

3. ✔ The heat loss from the wire would increase

4. ✖ The heat loss from the wire would decrease

Question Number : 54 Question Id : 3330086174 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A fin of length L is applied by the boundary conditions associated with a very long fin, the adiabatic tip fin, and the finite convective tip fin, which of the following observation about the fin-tip temperature (T) for these three cases is correct.

Options :

1. ✖ $T_{very\ long} > T_{convective\ tip} > T_{adiabatic\ tip}$

$T_{very\ long} < T_{convective\ tip} < T_{adiabatic\ tip}$

2. ✔

$T_{very\ long} < T_{adiabatic\ tip} < T_{convective\ tip}$

3. ✖

$T_{convective\ tip} > T_{adiabatic\ tip} > T_{very\ long}$

4. ✖

Question Number : 55 Question Id : 3330086175 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In transient heat conduction, the two significant dimensionless numbers are

Options :

Biot number and Fourier number

1. ✔

Fourier number and Reynolds number

2. ✖

Reynolds number and Prandtl number

3. ✖

Prandtl number and Biot number

4. ✖

Question Number : 56 Question Id : 3330086176 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of the energy transferred by convection to that by conduction is represented by

Options :

1. ✔ Nusselt Number

2. ✖ Prandtl Number

3. ✖ Froude Number

4. ✖ Reynolds Number

Question Number : 57 Question Id : 3330086177 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an enclosure there are 8 surfaces. How many individual radiation view factors are involved?

Options :

1. ✖ 8

2. ✖ 16

3. ✖

32

64

4. ✔

Question Number : 58 Question Id : 3330086178 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The effectiveness of a heat exchanger is defined as the ratio of the actual heat transfer rate to

Options :

1. ✔ The maximum possible heat-transfer rate

2. ✖ The minimum possible heat-transfer rate

3. ✖ The overall heat-transfer coefficient

4. ✖ The area of the heat exchanger

Question Number : 59 Question Id : 3330086179 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a heat exchanger, the hot gases enter with a temperature of 150 °C and leave at 75 °C. The cold fluid enters at 25 °C and leaves at 125 °C. The capacity ratio of the exchanger is

Options :

1. ✖ 0.5

2. ✖ 0.65

3. ✔ 0.75

4. ✖ 1

Question Number : 60 Question Id : 3330086180 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 pressure within a 1 mm diameter spherical droplet of water relative to the atmospheric pressure outside? The surface tension of water is 0.07 N/m.

Options :

1. ✖ 140 MPa

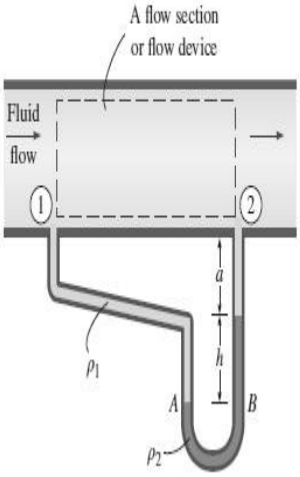
2. ✔ 280 MPa

3. ✖ 420 MPa

4. ✖ 560 MPa

Question Number : 61 Question Id : 3330086181 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 relation for the pressure difference $P_1 - P_2$ for the flow device shown in Figure ?
(ρ is density of the fluid; a, h are column heights)



Options :

1. ✖ $P_1 - P_2 = (\rho_1 - \rho_2)gh$

2. ✔ $P_1 - P_2 = (\rho_2 - \rho_1)gh$

3. ✖ $P_1 - P_2 = (\rho_1 - \rho_2)ga$

4. ✖ $P_1 - P_2 = (\rho_2 - \rho_1)ga$

Question Number : 62 Question Id : 3330086182 Display Question Number : Yes Is Question

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

For stable equilibrium of floating bodies, the centre of gravity has to

Options :

1. ✖ Coincide with metacentre

2. ✖ Be always above the metacentre

3. ✔ Be always below the metacentre

4. ✖ Be always below the centre of buoyancy

Question Number : 63 Question Id : 3330086183 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 represents the equation of continuity for a steady compressible fluid?

$\vec{V}$ represents the velocity vector; ρ represents density

Options :

1. ✖ $\nabla.(\vec{V}) = 0$

2. ✖ $\nabla X(\vec{V}) = 0$

3. ✖ $\nabla X(\rho\vec{V}) = 0$

4. ✔ $\nabla . (\rho\vec{V}) = 0$

Question Number : 64 Question Id : 3330086184 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Pitot-tube is used for measuring

Options :

1. ✔ Flow velocity

2. ✖ Flow pressure

3. ✖ Flow rate

4. ✖ Total energy of flow

Question Number : 65 Question Id : 3330086185 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A fluid, with viscosity 1.5 Pa.s and density 1260 kg/m^3, flows at a velocity of 5 m/s in a 150 mm diameter pipe. The Reynolds number is

Options :

1. ✖ 63

2. ✔ 630

3. ✖ 6300

4. ✖ 63000

Question Number : 66 Question Id : 3330086186 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 Darcy—Weisbach equation, the loss of head for flow through a circular pipe is
(L- length of the pipe, D - Diameter of the pipe, V- Velocity of flow, f – friction factor)

Options :

1. ✖ $h_f = \frac{fL\sqrt{V}}{2gD}$

2. ✖ $h_f = \frac{fLV}{2gD}$

3. ✔

$$h_f = \frac{fLV^2}{2gD}$$

$$h_f = \frac{fLV^3}{2gD}$$

4. ✖

Question Number : 67 Question Id : 3330086187 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct combination of turbines classification based on the head of the water.

A. Pelton Wheel	P. High Head
B. Francis Turbine	Q. Low Head
C. Kaplan Turbine	R. Medium Head

Options :

1. ✔ A-P, B-R, C-Q

2. ✖ A-R, B-P, C-Q

3. ✖ A-P, B-Q, C-R

4. ✖ A-Q, B-R, C-P

Question Number : 68 Question Id : 3330086188 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 direction of flow through the runner, Kaplan turbine is a

Options :

1. ✖ Tangential flow turbine

2. ✖ Inward radial flow turbine

3. ✖ Outward radial flow turbine

4. ✔ Axial flow turbine

Question Number : 69 Question Id : 3330086189 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If H is the available head for a hydraulic turbine, the speed (N), the discharge (Q), and the power (P), respectively are proportional to

Options :

1. ✔ $N \alpha \sqrt{H}; Q \alpha \sqrt{H}; P \alpha \sqrt{H^3}$

2. ✖ $N \alpha \sqrt{H}; Q \alpha H; P \alpha \sqrt{H^3}$

3.

$N \alpha \sqrt{H}; Q \alpha \sqrt{H^3}; P\alpha \sqrt{H^5}$

$N \alpha H; Q \alpha \sqrt{H^3}; P\alpha \sqrt{H^5}$

Question Number : 70 Question Id : 3330086190 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coordination number for a Body-Centred Cubic (BCC) structure is

Options :

1. 4 atoms

2. 8 atoms

3. 9 atoms

4. 14 atoms

Question Number : 71 Question Id : 3330086191 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a ductile material, toughness is a measure of

Options :

1. ✖ Resistance to indentation

2. ✖ Ability to absorb energy till elastic limit

3. ✔ Ability to absorb energy up to fracture

4. ✖ Resistance to scratching

Question Number : 72 Question Id : 3330086192 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Primary object of full annealing is to

Options :

1. ✖ Improve surface finish and hardness

2. ✖ Reduce ductility and resilience

3. ✖ Increase toughness and yield point

4. ✔ Increase ductility and machinability

Question Number : 73 Question Id : 3330086193 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A spherical drop of molten metal of radius 5 mm was found to solidify in 12 s. In how much time will a similar drop of radius 10 mm would solidify?

Options :

1. ✖ 12 s

2. ✖ 24 s

3. ✔ 48 s

4. ✖ 96 s

Question Number : 74 Question Id : 3330086194 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Select the correct statement for the riser design

Options :

1. ✖ The size of riser should be designed for maximum possible volume but should maintain a solidification time less than that of casting

2. ✔ The size of riser should be designed for minimum possible volume but should maintain a solidification time longer than that of casting

3. ✖ The size of riser should be designed for maximum possible volume but should maintain a solidification time longer than that of casting

4. ✖ The size of riser should be designed for minimum possible volume but should maintain a solidification time less than that of casting

Question Number : 75 Question Id : 3330086195 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a gating system, the ratio of 1:2:4 represents

Options :

1. ✔ Sprue Base Area: Runner Area: Ingate Area

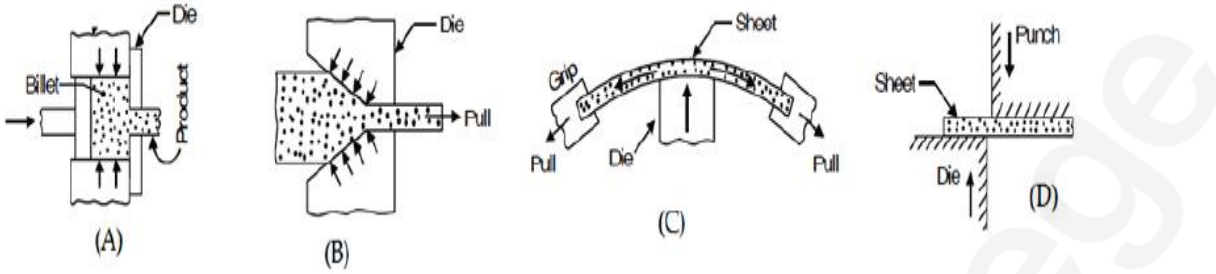
2. ✖ Pouring Basin Area: Ingate Area: Runner Area

3. ✖ Sprue Base Area: Ingate Area: Casting Area

4. ✖ Runner Area: Ingate Area: Casting Area

Question Number : 76 Question Id : 3330086196 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Name the four processes A, B, C, and D, shown in Figure, in the same sequence.



Options :

1. ✖ A – Drawing, B- Extrusion, C-Stretch Forming, D - Shearing

2. ✖ A – Drawing, B- Extrusion, C- Shearing, D - Stretch Forming

3. ✖ A – Extrusion, B-Drawing, C- Shearing, D - Stretch Forming

4. ✔ A – Extrusion, B-Drawing, C-Stretch Forming, D - Shearing

Question Number : 77 Question Id : 3330086197 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A stock of thickness 30 mm is to be rolled to 10 mm in a single stage. What is the minimum diameter of the rolls, if the maximum angle of bite is 60° ?

Options :

1. ✖ 20 mm

2. ✔ 40 mm

3. ✖ 60 mm

4. ✖ 70 mm

Question Number : 78 Question Id : 3330086198 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In cold working of metals, the working temperature is

Options :

1. ✖ Less than the room temperature

2. ✖ Room temperature

3. ✔ Below the recrystallisation temperature

4. ✖ Above the recrystallisation temperature

Question Number : 79 Question Id : 3330086199 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The shear strength of a sheet metal is 300 MPa. The blanking force required to produce a blank of 100 mm diameter from a 2 mm thick sheet is close to

Options :

1. ✔ 190 kN

2. ✖ 150 kN

3. ✖ 120 kN

4. ✖ 60 kN

Question Number : 80 Question Id : 3330086200 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following process, the state of stress of the material undergoing deformation is only shear

Options :

1. ✖ Drawing

2. ✖ Spinning

3. ✖ Hobbing

4. ✔ Blanking

Question Number : 81 Question Id : 3330086201 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 Stir welding

4. ✖ Submerged arc welding

Question Number : 82 Question Id : 3330086202 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Straight polarity in arc welding is obtained with

Options :

1. ✔ Direct current with electrode being negative

2. ✖ Direct current with electrode being positive

3. ✖ Alternating current with electrode being positive

4. ✖ Alternating current with electrode being negative

Question Number : 83 Question Id : 3330086203 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Select the correct statement from the following.

Options :

1. ✖ The strength of brazed joint is lower than soldered joint and welded joint.

2. ✖ The strength of brazed joint is higher than soldered joint and welded joint.

3. ✖ The strength of brazed joint is lower than soldered joint but higher than welded joint.

The strength of brazed joint is higher than soldered joint but lower than welded joint.

4. ✔

Question Number : 84 Question Id : 3330086204 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The cutting tool moves in a vertical reciprocating motion in which of the following machine tool?

Options :

Lathe Machine

1. ✖

Slotting Machine

2. ✔

Shaper Machine

3. ✖

Planer Machine

4. ✖

Question Number : 85 Question Id : 3330086205 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an orthogonal cutting, rake angle (α) of the tool is 25° and friction angle (λ) is 27°. Using Merchant's shear angle relationship, the value of shear angle (φ) is

Options :

1. ✔

44°

2. ✖ 61°

3. ✖ 88°

4. ✖ 90°

Question Number : 86 Question Id : 3330086206 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 point turning operation of steel with a tool, Taylor's tool life exponent is 0.2. What is the increase in the tool life if the cutting speed is halved?

Options :

1. ✖ 8 times

2. ✖ 16 times

3. ✔ 32 times

4. ✖ 64 times

Question Number : 87 Question Id : 3330086207 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Continuous chips without built-up-edge (BUE) are formed with

Options :

1. ✖ Ductile work material, small uncut thickness, low cutting speed, larger rake angle

2. ✔ Ductile work material, small uncut thickness, high cutting speed, larger rake angle

3. ✖ Brittle work material, small uncut thickness, low cutting speed, smaller rake angle

4. ✖ Brittle work material, small uncut thickness, high cutting speed, larger rake angle

Question Number : 88 Question Id : 3330086208 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A positive rake angle is generally preferred for

Options :

1. ✖ Cutting tool materials that are hard and brittle

2. ✖ Cutting tool materials that have poor thermal conductivity

3. ✖ Brittle work piece materials to reduce cutting forces

4. ✔ Ductile work piece materials to reduce cutting forces

Question Number : 89 Question Id : 3330086209 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following milling operations, the finished surface is at right angle to the cutter axis

Options :

1. ✔ Face Milling

2. ✖ Down Milling

3. ✖ Up Milling

4. ✖ Peripheral Milling

Question Number : 90 Question Id : 3330086210 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A steel workpiece is to be milled. Metal removal rate is 30 cm^3/min. Depth of cut is 5 mm and width of cut is 100 mm. The rate of feed in mm/min is

Options :

1.

1. ✖ 30 mm/min

2. ✔ 60 mm/min

3. ✖ 75 mm/min

4. ✖ 150 mm/min

Question Number : 91 Question Id : 3330086211 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A grinding wheel is specified by "C24K7V" for finish grinding of a tool. The first letter "C" is represented by

Options :

1. ✖ Type of bond, Vitrified

2. ✖ Type of bond, Silicate

3. ✖ Type of abrasive, Cubic Boron Nitride

4. ✔ Type of abrasive, Silicon Carbide

Question Number : 92 Question Id : 3330086212 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The machining operation used to enlarge an existing hole is termed as

Options :

1. ✖ Drilling

2. ✖ Reaming

3. ✔ Boring

4. ✖ Counter sinking

Question Number : 93 Question Id : 3330086213 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The non-traditional process that utilizes thermoelectric energy for removing material is

Options :

1. ✔ Electron Beam Machining

2. ✖ Ultrasonic Machining

3. ✖ Water Jet Machining

4. ✖ Electrochemical Machining

Question Number : 94 Question Id : 3330086214 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The mechanism of material removal in electric discharge machining process is

Options :

1. ✖ Micro-Chipping and Erosion

2. ✖ Erosion and Cavitation

3. ✔ Melting and Evaporation

4. ✖ Ionic Dissolution

Question Number : 95 Question Id : 3330086215 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Linear Variable Differential Transformer works on the principle of

Options :

1. ✖ Mutual Resistance

2. ✔ Mutual Induction

3. ✖ Mutual Capacitance

4. ✖ Magnetic Induction

Question Number : 96 Question Id : 3330086216 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 interference fit, it is essential that the minimum permissible diameter of the shaft should be

Options :

1. ✖ Larger than the lower limit of the hole

2. ✖ Smaller than the lower limit of the hole

3. ✖ Smaller than the upper limit of the hole

4. ✔ Larger than the upper limit of the hole

Question Number : 97 Question Id : 3330086217 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 cannot be used for angular measurements?

Options :

1. ✔ Angle plate

2. ✖ Sine bar

3. ✖ Bevel protractor

4. ✖ Clinometers

Question Number : 98 Question Id : 3330086218 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A feasible solution to a linear programming problem

Options :

1. ✖ Must optimize the value of the objective function

2. ✖ Need not satisfy all of the constraints, only some of them

3. ✖ Must be a corner point of the feasible region

4. ✔ Must satisfy all of the problem's constraints simultaneously

Question Number : 99 Question Id : 3330086219 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution to a transportation problem with m-rows (supplies) and n-columns (destination) is feasible if number of positive allocations are

Options :

1. ✖ $m + n$

2. ✖ $m \times n$

3. ✔ $m + n - 1$

4. ✖ $m + n + 1$

Question Number : 100 Question Id : 3330086220 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fixed investments for manufacturing a product in a particular year is Rs. 80,000. The estimated sales for this period is 2, 00,000. The variable cost per unit for this product is Rs. 4. If each unit sold is at Rs. 20, then the break-even point would be

Options :

1. ✖ 4000

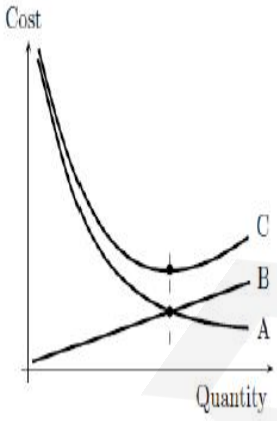
2. ✔ 5000

3. ✖ 10000

4. ✖ 20000

Question Number : 101 Question Id : 3330086221 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The quantity versus costs plot is shown in the Figure below. The cost marked as A, B and C, respectively, are



Options :

1. ✔ Ordering cost, holding cost, total cost

2. ✖ Holding cost, ordering cost, total cost

3. ✖ Total cost, ordering cost, holding cost

4. ✖ Total cost, holding cost, ordering cost

Question Number : 102 Question Id : 3330086222 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bill of materials is

Options :

1. ✖ An invoice for the cost of materials.

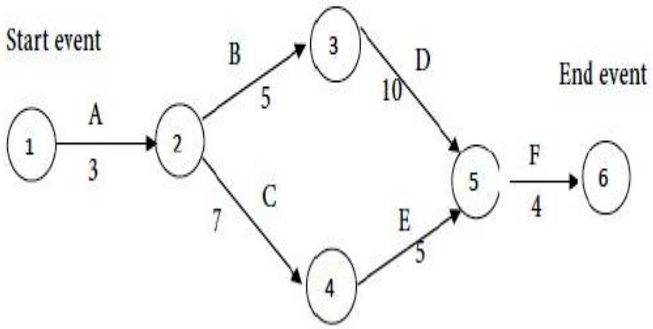
2. ✖ An invoice given to the customer for his purchases

3. ✔ A hierarchical product structure tree

4. ✖ An estimate of the materials required for production

Question Number : 103 Question Id : 3330086223 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the network diagram shown in Figure. The time estimates in days along the arrows represents the activities. The project completion time in days based on critical path is



Options :

1. ✖ 19 days

2. ✔ 22 days

3. ✖ 24 days

4. ✖ 34 days

Question Number : 104 Question Id : 3330086224 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a CNC program block, N130 G02 X65.0 Y60.0 R40.0 F250, GO2 refer to

Options :

1. ✖ Point-to-point positioning

2. ✖ Line interpolation

3. ✔ Circular interpolation

4. ✖ Parabolic interpolation

Question Number : 105 Question Id : 3330086225 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Computer Aided Quality Control (CAQC), the coordinate measuring machine

Options :

1. ✖ Uses radiation techniques

2. ✖ Is a scanning laser beam device

3. ✖ Is a noncontact inspection method

4. ✔ Is a contact inspection method

Question Number : 106 Question Id : 3330086226 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 compression ratio of the otto cycle for a petrol engine with a cylinder bore of 50 mm, a stroke of 75 mm, and clearance volume of 21.3 cm^3 ?

Options :

1. ✔ 7.9

2. ✖ 6.9

3. ✖ 5.9

4. ✖ 4.9

Question Number : 107 Question Id : 3330086227 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Non-Destructive Inspection (NDI) technique employed during inspection for castings of tubes and pipes to check the overall strength of a casting in resistance to bursting under hydraulic pressure is

Options :

1. ✖ Radiographic inspection

2. ✖ Magnetic particle inspection

3. ✖

Fluorescent penetrant

4. ✔ Pressure testing

Question Number : 108 Question Id : 3330086228 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 excess of variable time over the activity time when all jobs start as early as possible?

Options :

1. ✖ Dependent float

2. ✖ Total float

3. ✔ Independent float

4. ✖ Interfering float

Question Number : 109 Question Id : 3330086229 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$, then eigen value and its corresponding eigenvector

Options :

1. ✖ $\lambda = 1 \; and \; X = (1, 0, -21)^T$

2. ✖ $\lambda = 2 \; and \; X = (1, 1, 1)^T$

3. ✖ $\lambda = -1 \; and \; X = (-1, 0, 2)^T$

4. ✔ $\lambda = 8 \; and \; X = (2, -1, 1)^T$

Question Number : 110 Question Id : 3330086230 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eigen vectors of the matrix $\begin{bmatrix} 1 & 2 \\ 0 & 4 \end{bmatrix}$ are in the form $\begin{bmatrix} 1 \\ a \end{bmatrix}$ and $\begin{bmatrix} 1 \\ b \end{bmatrix}$ then a + b =

Options :

1. ✖ 0

2. ✖ 1

3. ✔ $\frac{3}{2}$

4. ✖ $\frac{2}{3}$

Question Number : 111 Question Id : 3330086231 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system of equations $AX = B$, has a unique solution if----------

Options :

1. ✔ $Rank\ of\ A = Rank\ of\ [A:B] = n$

2. ✖ $Rank\ of\ A = Rank\ of\ [A:B] < n$

3. ✖ Rank of A$\neq$ $Rank\ of\ [A:B]$

4. ✖ Rank of A $<$ $Rank\ of\ [A:B]$

Question Number : 112 Question Id : 3330086232 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\lim_{x \to \infty} \frac{\sin x}{x} =$

Options :

1. ✖ 1

2. ✖ -1

3. ✖ ∞

4. ✔ zero

Question Number : 113 Question Id : 3330086233 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The line integral of the vector field $\vec{F} = (zx, xy, yz)$ along the boundary of the triangle with vertices (1,0,0), (0,1,0), (0,0,1) oriented anticlockwise, when viewed from the point (2,2,2) is___

Options :

1. ✖ $-1/2$

2. ✖ -2

3. ✔ $1/2$

4. ✖ 2

Question Number : 114 Question Id : 3330086234 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of $y'' - y' - 2y = 0$ is

Options :

1. ✖ $e^{2x} + e^{-2x}$

2. ✖ $c_1 e^{2x} + c_2 e^{-2x}$

3. ✔ $c_1 e^{2x} + c_2 e^{-x}$

4. ✖ $e^{2x} - c_2 e^{-2x}$

Question Number : 115 Question Id : 3330086235 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Particular integral of $(D^3 - 6D^2 + 11D - 6)y = e^{-2x}$ is

Options :

1. ✖ $\frac{e^{2x}}{30}$

2. ✖ $\frac{e^{-2x}}{60}$

3. ✔ $-\frac{e^{-2x}}{60}$

4. ✖ $\frac{e^{3x}}{50}$

Question Number : 116 Question Id : 3330086236 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\emptyset$ is a differentiable scalar function, then div grad $\emptyset$ is

Options :

1. ✖ 1

2. ✖ $\nabla \emptyset$

3. ✖ 0

4. ✔ $\nabla^2 \emptyset$

Question Number : 117 Question Id : 3330086237 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If A and B are two events such that $P(A \cap B) = \frac{1}{3}$, $P(A \cup B) = \frac{5}{6}$, and $P(B) = \frac{1}{2}$ then the events are

Options :

1. ✔ Independent

2. ✖ Dependent

3. ✖ Mutually exclusive

4. ✖ Exclusive

Question Number : 118 Question Id : 3330086238 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$p(A) = \frac{1}{3}$, $P(B) = \frac{3}{4}$, $P(A \cap B) = \frac{1}{6}$ then Probability of A alone is ----------

Options :

1. ✖ 1/3

2. ✖ 1/2

3. ✔ 1/6

4. ✖ 1/8

Question Number : 119 Question Id : 3330086239 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 4 times. The probability that at least one head occurs is

Options :

1. ✖ $\frac{1}{4}$

2. ✖ $\frac{7}{8}$

3. ✖ $\frac{6}{8}$

4. ✔ $\frac{15}{16}$

Question Number : 120 Question Id : 3330086240 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the trapezoidal rule with single interval [0, 1] is exact for approximate value of $\int_0^1 (x^3 - cx^2)\,dx$.

Then the value of c.

Options :

1. ✖ 2/3

2. ✔ 3/2

3. ✖ 1

4. ✖ 0