National Testing Agency

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Mechanical Engineering

Group Number :	1
Group Id :	68019195
Group Maximum Duration :	0
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Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
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Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mechanical Engineering

Section Id :	680191128
Section Number :	1

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	680191169
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 6801917281 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The vacuum in a closed container is 50 mm of Hg. The absolute pressure in the container is

1. 0.92 bar
2. 0.90 bar
3. 0.95 bar
4. 0.82 bar

Options :

68019128601. 1

68019128602. 2

68019128603. 3

68019128604. 4

Question Number : 2 Question Id : 6801917282 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements :
The assumptions made in deriving Euler's equation are
(I) Fluid is non-viscous fluid.
(II) The flow is along a streak line.

1. Both statement (I) and statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

Options :

68019128605. 1

68019128606. 2

68019128607. 3

68019128608. 4

Question Number : 3 Question Id : 6801917283 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Non dimensional number)		**LIST II (It is the ratio of)**	
A.	Reynold's Number	I.	Inertia force to elastic force
B.	Mach Number	II.	Inertia force to gravity force
C.	Froude's Number	III.	Inertia force to viscous force
D.	Weber's Number	IV.	Inertia force to surface tension force

Choose the correct answer from the options given below:

1. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
4. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)

Options :

68019128609. 1

68019128610. 2

68019128611. 3

68019128612. 4

Question Number : 4 Question Id : 6801917284 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : The flow in a pipe is turbulent when the Reynold's Number is more than 4000.
Reason (R) : The flow in a pipe is turbulent at entry and slowly changes to laminar along the length of the pipe.

In light of the above statements, choose the correct answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128613. 1

68019128614. 2

68019128615. 3

68019128616. 4

Question Number : 5 Question Id : 6801917285 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements about the flow in a convergent divergent nozzle operating under design conditions:

(A). In the divergent section pressure is higher than the pressure in convergent section
(B). The pressure at the throat is equal to critical pressure.
(C). The pressure in convergent section reduces.
(D). The flow is subsonic in convergent section and supersonic in divergent section.

Choose the correct answer from the options given below:

1. (A), (B) and (C) only.
2. (B), (C) and (D) only.
3. (A), (B), (C) and (D).
4. (A), (C) and (D) only.

Options :

68019128617. 1

68019128618. 2

68019128619. 3

68019128620. 4

Question Number : 6 Question Id : 6801917286 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Lumped Heat capacity analysis can be applied to a system when:

1. Convective resistance is very small and conductive resistance is very large.
2. Both convective and conductive resistances are very large.
3. Both convective and conductive resistances are very small.
4. Convective resistance is very large and conductive resistance is very small.

Options :

68019128621. 1

68019128622. 2

68019128623. 3

68019128624. 4

Question Number : 7 Question Id : 6801917287 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Non Dimensional Number)		**LIST II (Formula)**	
A.	Nusselt Number	I.	μ Cp / k_f (where k_f is thermal conductivity of fluid)
B.	Biot Number	II.	h L / k_s (where k_s is thermal conductivity of solid)
C.	Prandtl Number	III.	h / ρUC_p
D.	Stanton Number	IV.	h L / k_f (where k_f is thermal conductivity of fluid)

Choose the correct answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

68019128625. 1

68019128626. 2

68019128627. 3

68019128628. 4

Question Number : 8 Question Id : 6801917288 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : The Effectiveness-NTU method of heat exchanger design is used only when inlet temperatures of both fluids are known.
Reason (R) : LMTD method can only be used when both inlet as well as outlet temperatures of both fluids are given.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128629. 1

68019128630. 2

68019128631. 3

68019128632. 4

Question Number : 9 Question Id : 6801917289 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The shape factor of a hemispherical body placed on a flat surface with respect to itself is

1. 1.00
2. 0.25
3. 0.50
4. 0

Options :

68019128633. 1

68019128634. 2

68019128635. 3

68019128636. 4

Question Number : 10 Question Id : 6801917290 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements:

Statement (I): The heat transfer coefficient for air in free convection varies between 5 to 30 W /m^2 K.
Statement (II): The heat transfer coefficient of steam during condensation lies between 5000 to 110000 W /m^2 K

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

Options :

68019128637. 1

68019128638. 2

68019128639. 3

68019128640. 4

Question Number : 11 Question Id : 6801917291 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A thermo flask is

1. Closed system
2. Open system
3. Isolated system
4. Adiabatic closed system

Options :

68019128641. 1

68019128642. 2

68019128643. 3

68019128644. 4

Question Number : 12 Question Id : 6801917292 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

2 kg of air is contained in a closed system at a pressure of 2 bar and 0.5 m^3. It undergoes an isobaric expansion till the final volume becomes 0.6 m^3. The work transfer (in kJ) during the process is

1. –20
2. –10
3. +20
4. +10

Options :

68019128645. 1

68019128646. 2

68019128647. 3

68019128648. 4

Question Number : 13 Question Id : 6801917293 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Charateristics of water)		**LIST II (State properties)**	
A.	Subcooled water	I.	1 bar and 134 °C
B.	Superheated steam	II.	dryness fraction =1 and 100°C
C.	Steam at critical state	III.	20°C and 1.01325 bar
D.	Saturated steam	IV.	374.15 °C and 220.8 bar

Choose the correct answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (II), (B) - (III), (C) - (I), (D) - (IV)
3. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
4. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)

Options :

68019128649. 1

68019128650. 2

68019128651. 3

68019128652. 4

Question Number : 14 Question Id : 6801917294 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).
Assertion (A) : The Clausius statement of second law of thermodynamics states that it is impossible to transfer heat from a body at low temperature to a body at high temperature without the aid of external work.
Reason (R) : Heat always flows from low temperature to high temperature.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128653. 1

68019128654. 2

68019128655. 3

68019128656. 4

Question Number : 15 Question Id : 6801917295 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A system at 500 K receives 7200 kJ/min of heat from a source at 1000 K. The ambient temperature is 300 K. The system and source temperaure remain constant during heat transfer. The decrease in avaialble energy due to heat transfer through finite temperature difference is

1. 5040 kJ/min
2. 2880 kJ/min
3. 2060 kJ/min
4. 2160 kJ/min

Options :

68019128657. 1

68019128658. 2

68019128659. 3

68019128660. 4

Question Number : 16 Question Id : 6801917296 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

With increase in pressure ratio in Brayton cycle, the net work output

1. increases
2. decreases
3. initially increases, reaches to a maximum and then decreases
4. initially decreases and then increases

Options :

68019128661. 1

68019128662. 2

68019128663. 3

68019128664. 4

Question Number : 17 Question Id : 6801917297 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For the same compression ratio and and same heat supplied in Otto, Diesel and Dual cycles

(A). Otto cycle has maximum efficiency.

(B). Diesel cycle has minimum heat rejected

(C). Dual cycle has maximum heat rejected

(D). Diesel cycle has maximum heat rejected

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A) and (D) only.
3. (A), (B) and (C) only.
4. (B) and (C) only

Options :

68019128665. 1

68019128666. 2

68019128667. 3

68019128668. 4

Question Number : 18 Question Id : 6801917298 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a simple saturated Vapour compression refrigeration cycle, the enthalpy at various state points are, 10 kJ/kg, 45 kJ/kg and 25 kJ/kg. The mass flow rate of refrigerant is 2 kg/s.

(A). The power consumption of compressor is 40 kJ/kg
(B). The refrigeration capacity is 70 kW
(C). The COP is 1.75
(D). Heat rejected in condenser is 110 kW

Choose the *correct* answer from the options given below:

1. (A) and (D) only.
2. (A), (B) and (C) only
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128669. 1

68019128670. 2

68019128671. 3

68019128672. 4

Question Number : 19 Question Id : 6801917299 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : In heating and dehumidification of air, relative humidity of air decreases.
Reason (R) : Sensible heating causes enthalpy to decrease.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128673. 1

68019128674. 2

68019128675. 3

68019128676. 4

Question Number : 20 Question Id : 6801917300 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Component)		LIST II (Equiment used in)	
A.	Draft Tube	I.	Thermal Power plant
B.	Thermostatic Expansion Valve	II.	Cold storage
C.	Feed water heater	III.	Francis Turbine
D.	Automatic Expansion Valve	IV.	Central AC Plant

Choose the *correct* answer from the options given below:

1. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)
2. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
3. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
4. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)

Options :

68019128677. 1

68019128678. 2

68019128679. 3

68019128680. 4

Question Number : 21 Question Id : 6801917301 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The instantenous centre of a sliding body moving on a stationary curved surface lies at the

1. infinity
2. centre of curvature of curved surface
3. at tangent to the curved surface
4. at point of contact

Options :

68019128681. 1

68019128682. 2

68019128683. 3

68019128684. 4

Question Number : 22 Question Id : 6801917302 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Machine component)		LIST II (Related terms)	
A.	Involute Gear	I.	Variable Pressure Angle
B.	Cycloidal Gear	II.	Constant Pressure Angle
C.	Gyroscope	III.	Sensitivity
D.	Governor	IV.	Stability

Choose the correct answer from the options given below:

1. A - I, B-II, C-III, D-IV
2. A - II, B-I, C-III, D-IV
3. A - I, B-II, C-IV, D-III
4. A - II, B-I, C-IV, D-III

Options :

68019128685. 1

68019128686. 2

68019128687. 3

68019128688. 4

Question Number : 23 Question Id : 6801917303 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements:

Statement (I): Flywheels are used to control the fluctuations in speed of machines arising from external sources.
Statement (II): Governors are used to control the fluctuations in speed of machines arising from internal sources.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

Options :

68019128689. 1

68019128690. 2

68019128691. 3

68019128692. 4

Question Number : 24 Question Id : 6801917304 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

An aeroplane is making a left turn as viewed by an observer from the rear of the plane. The engine/rotor of the plane are running in clockwise sense when viwed from rear side. The gyroscopic effects tends to

1. lift the nose of aeroplane
2. dip the nose of aeroplane
3. lift the tail of aeroplane
4. have no effect on aeroplane

Options :

68019128693. 1

68019128694. 2

68019128695. 3

68019128696. 4

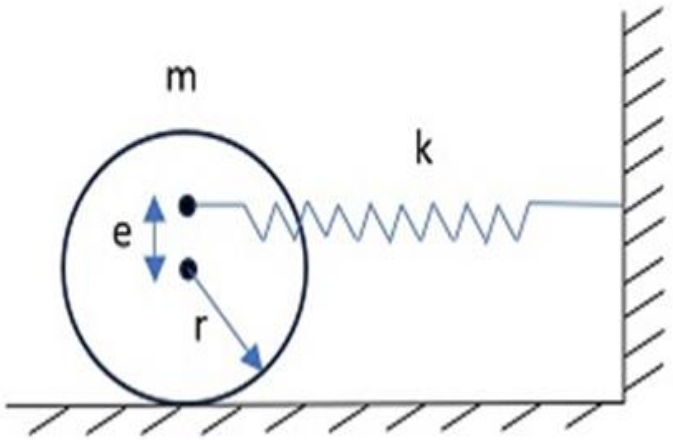
Question Number : 25 Question Id : 6801917305 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A solid disc of mass 'm', radius 'r' is resting on a horizontal smooth surface. A spring of stiffness 'k' is connected to the disc at distance 'e' directly above the centre of the disc. Another end of the spring is connected to the vertical wall. For small angular dispacemnt of the disc, the natural frequency of the system in rad/s will be



1. $\sqrt{\frac{2k(r+e)}{3mr}}$
2. $\sqrt{\frac{2k(r+e)}{mr}}$
3. $\sqrt{\frac{2k(r+e)^2}{mr^2}}$
4. $\sqrt{\frac{2k(r+e)^2}{3mr^2}}$

Options :

68019128697. 1

68019128698. 2

68019128699. 3

68019128700. 4

Question Number : 26 Question Id : 6801917306 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The undamped natural frequency of system is 80 rad/sec. A damper is provided in the system having damping factor 0.7. The damped natural frequency of the system in rad/sec will be

1. 67.13
2. 77.13
3. 57.13
4. 47.13

Options :

68019128701. 1

68019128702. 2

68019128703. 3

68019128704. 4

Question Number : 27 Question Id : 6801917307 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The type of brake in which frictional force assists in applying the brakes is termed as

1. Partially self-energising
2. Self-locking
3. Self-backing
4. Self-acting

Options :

68019128705. 1

68019128706. 2

68019128707. 3

68019128708. 4

Question Number : 28 Question Id : 6801917308 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A shaft is subjected to Bending Moment (M) and Torsional Moment (T), the equivalent torsional moment in the shaft is

1. $\sqrt{M^2+T^2}$
2. $\frac{1}{2}\sqrt{M^2+T^2}$
3. $M+\frac{1}{2}\sqrt{M^2+T^2}$
4. $T+\frac{1}{2}\sqrt{M^2+T^2}$

Options :

68019128709. 1

68019128710. 2

68019128711. 3

68019128712. 4

Question Number : 29 Question Id : 6801917309 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A speciemen is subjected to a stress which follows sinusoidal variation with respect to the time from minimum zero value to a maximum value +σ.
(A). Mean value of Stress = 0
(B). Amplitude of Stress = σ/2
(C). Nature of Stress = Repeated Stress
(D). Nature of Stress = Fluctuating Stress
Choose the correct answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (B) and (C) only
4. (B) and (D) only.

Options :

68019128713. 1

68019128714. 2

68019128715. 3

68019128716. 4

Question Number : 30 Question Id : 6801917310 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Three identical gears A, B and C are used in power transmission. Gear A and C are input and ouput gears. Gear B is an idler gear, connecting A and C. The gear which is subjected to reversed nature of stress is

1. A
2. B
3. C
4. A and C

Options :

68019128717. 1

68019128718. 2

68019128719. 3

68019128720. 4

Question Number : 31 Question Id : 6801917311 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The coefficient of restitution of a perfectly plastic impact is equal to

1. Infinity
2. 2
3. 1
4. 0

Options :

68019128721. 1

68019128722. 2

68019128723. 3

68019128724. 4

Question Number : 32 Question Id : 6801917312 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A ball is thrown vertically upward with velocity 5 m/sec. It takes 10 sec for its upward journey. The time taken by the ball for its downward journey is

1. 10 sec
2. 50 sec
3. 2 sec
4. 20 sec

Options :

68019128725. 1

68019128726. 2

68019128727. 3

68019128728. 4

Question Number : 33 Question Id : 6801917313 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements about shear stresses in beams

(A) The shear stress at neutral axis of a rectangular section is the maximum stress.
(B) The shear stress variation across a rectangular section is parabolic.
(C) The shear deformations are small as compared to bending deformation.
(D) The shear centre is also known as centre of moment.

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128729. 1

68019128730. 2

68019128731. 3

68019128732. 4

Question Number : 34 Question Id : 6801917314 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Forces whose line of action passes through a common point are known as

1. resultant forces
2. resolution of forces
3. parallel forces
4. concurrent forces

Options :

68019128733. 1

68019128734. 2

68019128735. 3

68019128736. 4

Question Number : 35 Question Id : 6801917315 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements

(A). Frictional force is dependent of area of contact.
(B). Frictional force acts in tangential direction to the surface in contact.
(C). Maximum value of static friction is known as limiting friction.
(D). Dynamic friction is also known as kinetic friction.

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128737. 1

68019128738. 2

68019128739. 3

68019128740. 4

Question Number : 36 Question Id : 6801917316 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements

(A). For the two shafts connected in parallel, the angle of twist of each shaft is same.
(B). For the two shafts connected in series, the shear stress in each shaft is same.
(C). The shear stress in a circular shaft under torsion varies linearly.
(D). The shear stress at the centre of a circular shaft under torsion is zero.

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (C) and (D) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128741. 1

68019128742. 2

68019128743. 3

68019128744. 4

Question Number : 37 Question Id : 6801917317 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Hardness Test)		LIST II (Type of indenter used)	
A.	Rockwell hardness test	I.	square based diamond-pyramid
B.	Vickers hardness test	II.	hard steel ball
C.	Brinell hardness test	III.	rhombic based diamond-pyramid
D.	Knoop hardness test	IV.	diamond cone

Choose the correct answer from the options given below:

1. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

68019128745. 1

68019128746. 2

68019128747. 3

68019128748. 4

Question Number : 38 Question Id : 6801917318 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a plane stress system, two principal stresses are 785 N/mm^2 and 115 N/mm^2. If the system just causes yielding, what is the uni-axial yield stress of the material according to the Vom Mises criterion:

1. 887 N/mm^2
2. 734 N/mm^2
3. 635 N/mm^2
4. 903 N/mm^2

Options :

68019128749. 1

68019128750. 2

68019128751. 3

68019128752. 4

Question Number : 39 Question Id : 6801917319 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Under an ideal conditions in drawing operation, maximum possible reduction of area in one pass is:

1. 28 %
2. 47 %
3. 63 %
4. 71 %

Options :

68019128753. 1

68019128754. 2

68019128755. 3

68019128756. 4

Question Number : 40 Question Id : 6801917320 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Material)		**LIST II (Form of microstrcutre)**	
A.	Gray Cast Iron	I.	Presence of large amount of iron carbide
B.	White Cast Iron	II.	Graphite in the form of spheroid
C.	Ductile Cast Iron	III.	Graphite exists as rosettes in ferrite or pearlite matrix
D.	Malleable Cast Iron	IV.	Graphite in the form of flakes

Choose the correct answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

Options :

68019128757. 1

68019128758. 2

68019128759. 3

68019128760. 4

Question Number : 41 Question Id : 6801917321 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Tempering is a heat treatment process by which:

1. Hardness is Reduced and Toughness is Improved.
2. Hardness is Improved and Toughness is Reduced.
3. Toughness is Reduced and Hardness is Improved
4. Toughness is Improved and Hardness is Improved

Options :

68019128761. 1

68019128762. 2

68019128763. 3

68019128764. 4

Question Number : 42 Question Id : 6801917322 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Centre-line feeding resistance (CFR) indicates the difficulty of feeding a given alloy in a mould.
Normally, feeding is considered to be difficult if:

1. CFR > 70%
2. CFR = 68%
3. CFR = 48%
4. 48% < CFR < 68%

Options :

68019128765. 1

68019128766. 2

68019128767. 3

68019128768. 4

Question Number : 43 Question Id : 6801917323 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Consider the following statements

(A). Surface grinding is used for grinding flat surfaces.
(B). Cylindrical grinding is used for grinding external and internal surfaces.
(C). Lapping is a finishing process for a high degree of surface finish.
(D). Honing process is most frequently used for finishing cylindrical holes.

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128769. 1

68019128770. 2

68019128771. 3

68019128772. 4

Question Number : 44 Question Id : 6801917324 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Encoder is used in a CNC machine tool to sense and control

1. spindle speed
2. coolant flow
3. table position
4. table velocity

Options :

68019128773. 1

68019128774. 2

68019128775. 3

68019128776. 4

Question Number : 45 Question Id : 6801917325 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

If order quantity is equal to economic order quantity, then ordering cost will be equal to

1. holding cost
2. zero
3. total cost
4. unity

Options :

68019128777. 1

68019128778. 2

68019128779. 3

68019128780. 4

Question Number : 46 Question Id : 6801917326 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Production scheduling is simple and high volume of output and high labour efficiency are achieved in the following case of

1. fixed position layout
2. product layout
3. process layout
4. combination of line and process layout

Options :

68019128781. 1

68019128782. 2

68019128783. 3

68019128784. 4

Question Number : 47 Question Id : 6801917327 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

For clearance fit, upper limit of the shaft should be:

1. greater than the upper limit of the hole
2. lesser than the upper limit of the hole
3. greater than the lower limit of the hole
4. lesser than the lower limit of the hole

Options :

68019128785. 1

68019128786. 2

68019128787. 3

68019128788. 4

Question Number : 48 Question Id : 6801917328 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A ratchet screw in micrometer is provided to

1. allow zero adjustment
2. prevent wearing of screw thread
3. lock the required measurement
4. maintain constant pressure on the job specimen

Options :

68019128789. 1

68019128790. 2

68019128791. 3

68019128792. 4

Question Number : 49 Question Id : 6801917329 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In a multispindle CNC machine tool 3 operations are performed with times 50, 70, 80 seconds at each of its work centres. The cycle time (time required to manufacture one workpiece) in seconds will be:

1. 200
2. 66.66
3. 70
4. 80

Options :

68019128793. 1

68019128794. 2

68019128795. 3

68019128796. 4

Question Number : 50 Question Id : 6801917330 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

'G-code' is a

1. low level language
2. middle level language
3. high level language
4. APT - Automatically Programmed Tool

Options :

68019128797. 1

68019128798. 2

68019128799. 3

68019128800. 4

Question Number : 51 Question Id : 6801917331 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A variable which does not appear in the basic variable column of a simplex table for a solution is assigned

1. zero value
2. a positive value
3. infinite value
4. a negative value

Options :

68019128801. 1

68019128802. 2

68019128803. 3

68019128804. 4

Question Number : 52 Question Id : 6801917332 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The unoccupied cells in the transportation are analogous to

1. current solution variables
2. non-basic variables
3. next after opportunity cost cells.
4. optimal values of the objective function

Options :

68019128805. 1

68019128806. 2

68019128807. 3

68019128808. 4

Question Number : 53 Question Id : 6801917333 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

PERT technique deals with the project of

1. probabilistic nature
2. deterministic nature
3. non-repetitive nature
4. repetitive nature

Options :

68019128809. 1

68019128810. 2

68019128811. 3

68019128812. 4

Question Number : 54 Question Id : 6801917334 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The eigen values of the matrix $\begin{bmatrix} 1 & -2 & 3 \\ -2 & 2 & -4 \\ 3 & -4 & 7 \end{bmatrix}$ are

1. $0, 1, 5 + \sqrt{31}$
2. $0, 1, 5 - \sqrt{31}$
3. $5 + \sqrt{31}, 5 - \sqrt{31}, 1$
4. $5 + \sqrt{31}, 5 - \sqrt{31}, 0$

Options :

68019128813. 1

68019128814. 2

68019128815. 3

68019128816. 4

Question Number : 55 Question Id : 6801917335 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The solution of the following system of linear equations

$$4x_1 - 8x_2 - 2x_3 = 0$$

$$3x_1 - 5x_2 - 2x_3 = 0$$

$$2x_1 - 8x_2 + x_3 = 0$$

1. $x_1 = 1, x_2 = 1, x_3 = 1$
2. $x_1 = \frac{3}{2}, x_2 = \frac{1}{2}, x_3 = 0$
3. The system has no solution
4. The system has infinitely many solutions

Options :

68019128817. 1

68019128818. 2

68019128819. 3

68019128820. 4

Question Number : 56 Question Id : 6801917336 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The value of the integral $\oint_C (y^3\hat{i} - x^3\hat{j}).(\hat{i}dx + \hat{j}dy)$ where C is the closed curve ,

1. $\frac{3}{2}\pi a^3$
2. $\frac{3}{2}\pi a^4$
3. $-\frac{3}{2}\pi a^4$
4. $-\frac{3}{2}\pi a^3$

Options :

68019128821. 1

68019128822. 2

68019128823. 3

68019128824. 4

Question Number : 57 Question Id : 6801917337 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The value of the integral $\int_{0.2}^{1.4} (\sin x - \log_e x + e^x)dx$ using Simpson's three-eighth rule, by taking interval size $h = 0.2$, where the value of the integrand $y = \sin x - \log_e x + e^x$ is as follows: $y(0.2) = 3.0296, y(0.4) = 2.7975. y(0.6) = 2.8975, y(0.8) = 3.1661, y(1.0) = 3.5598, y(1.2) = 4.0698, y(1.4) = 4.7042$ is:

1. 4.05
2. 4.059285
3. 4.502985
4. 4.052985

Options :

68019128825. 1

68019128826. 2

68019128827. 3

68019128828. 4

Question Number : 58 Question Id : 6801917338 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following is not a non-linear partial differential equation, where $p = \frac{\partial z}{\partial x}$ and $q = \frac{\partial z}{\partial y}$

1. $p + q = pq$
2. $x^2p^2 + y^2q^2 = z^2$
3. $(x+y)\left(\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y}\right)^2 + (x-y)\left(\frac{\partial z}{\partial x} - \frac{\partial z}{\partial y}\right)^2 = 1$
4. $\frac{\partial^2 z}{\partial x^2} + \frac{\partial^2 z}{\partial x \partial y} - 6\frac{\partial^2 z}{\partial y^2} = x^2 \sin(x+y)$

Options :

68019128829. 1

68019128830. 2

68019128831. 3

68019128832. 4

Question Number : 59 Question Id : 6801917339 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).
Assertion (A) : Smart materials can be used as microsensors and microactuators, both.
Reason (R) : Smart materials belongs to intelligent mechanisms.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128833. 1

68019128834. 2

68019128835. 3

68019128836. 4

Question Number : 60 Question Id : 6801917340 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following does not belong to the static characteristics of transducers?

1. Accuracy
2. Dead band
3. Response time
4. Resolution

Options :

68019128837. 1

68019128838. 2

68019128839. 3

68019128840. 4

Question Number : 61 Question Id : 6801917341 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following sensors can be used to monitor linear and angular velocities and to detect motion?

(A). Incremental encoder
(B). Tachogenerator
(C). Piezoelectric sensors
(D). Pyroelectric sensors

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128841. 1

68019128842. 2

68019128843. 3

68019128844. 4

Question Number : 62 Question Id : 6801917342 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I Mechanical Drive		LIST II Function	
A.	Cams	I.	Lock a mechanism when it is holding a load.
B.	Gears	II.	Movement of one part relative to another with minimum friction and maximum accuracy.
C.	Ratchets	III.	Imparts a reciprocating or oscillatory motion to anothor body in contact.
D.	Bearings	IV.	Transmission of rotary motion between parallel and inclined shafts.

Choose the correct answer from the options given below:

1. (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
2. (A) - (II), (B) - (III), (C) - (I), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

68019128845. 1

68019128846. 2

68019128847. 3

68019128848. 4

Question Number : 63 Question Id : 6801917343 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Which of the following pressure control valves is used to sense the hydraulic pressure of an external line and give a signal when it reaches some preset value?

1. Pressure regulating valve
2. Pressure setting valve
3. Pressure sequence valve
4. Pressure limiting valve

Options :

68019128849. 1

68019128850. 2

68019128851. 3

68019128852. 4

Question Number : 64 Question Id : 6801917344 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In an electrical actuation system, solid-state switches includes:

(A). Bipolar transistors
(B). Thyristors and triacs
(C). Relays
(D). Diodes

Choose the correct answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128853. 1

68019128854. 2

68019128855. 3

68019128856. 4

Question Number : 65 Question Id : 6801917345 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The sequence for flow of signal in working principle of microsensors includes:

(A). Input signal
(B). Transducer element
(C). Sensor element
(D). Output signal

Choose the *correct* answer from the options given below:

1. (A), (B), (C), (D) only
2. (A), (C), (B), (D) only
3. (B), (A), (D), (C) only
4. (C), (B), (D), (A) only

Options :

68019128857. 1

68019128858. 2

68019128859. 3

68019128860. 4

Question Number : 66 Question Id : 6801917346 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A

Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Some of the examples of non-contact sensors includes _____.

(A). Proximity sensors
(B). Temperature sensors
(C). Torque sensors
(D). Acoustic sensors

Choose the *correct* answer from the options given below:

1. (A), (B) and (D) only.
2. (A), (B) and (C) only.
3. (A), (B), (C) and (D).
4. (B), (C) and (D) only.

Options :

68019128861. 1

68019128862. 2

68019128863. 3

68019128864. 4

Question Number : 67 Question Id : 6801917347 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

What is the minimum number of degree of freedom for assembling round peg in round hole?

1. 2
2. 3
3. 4
4. 5

Options :

68019128865. 1

68019128866. 2

68019128867. 3

68019128868. 4

Question Number : 68 Question Id : 6801917348 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : The end-effector do not contribute to manipulability.
Reason (R) : The end-effector is external to the manipulator.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

Options :

68019128869. 1

68019128870. 2

68019128871. 3

68019128872. 4

Question Number : 69 Question Id : 6801917349 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Match List I with List II

LIST I (Robot Configuration)		LIST II (Joints)	
A.	Cylindrical	I.	RRR
B.	Cartesian	II.	RPP
C.	Spherical	III.	PPP
D.	Articulated	IV.	RRP

Where, R- Revolute joint, P- Prismatic joint
Choose the correct answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
4. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)

Options :

68019128873. 1

68019128874. 2

68019128875. 3

68019128876. 4

Question Number : 70 Question Id : 6801917350 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are the two statements:

Statement (I): The scale factor in homogenous transformation matrix can be any real value.

Statement (II): For robotics study, the scale factor in homogenous transformation matrix is one.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

Options :

68019128877. 1

68019128878. 2

68019128879. 3

68019128880. 4

Question Number : 71 Question Id : 6801917351 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The human eye perception is limited to approximately

1. 16 gray levels
2. 32 gray levels
3. 64 gray levels
4. 128 gray levels

Options :

68019128881. 1

68019128882. 2

68019128883. 3

68019128884. 4

Question Number : 72 Question Id : 6801917352 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

One single robot for continuous arc welding is unable to resolve the following issue:

1. The edges of parts to be welded are irregular.
2. The quality of weld depends on the speed of electrode movement.
3. Loading and unloading of the parts.
4. The arc welding process is usually in low quantity and changes often.

Options :

68019128885. 1

68019128886. 2

68019128887. 3

68019128888. 4

Question Number : 73 Question Id : 6801917353 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The link parameters are:

1. constant for a given link
2. variables for a given link
3. constant for a manipulator
4. variable for a manipulator

Options :

68019128889. 1

68019128890. 2

68019128891. 3

68019128892. 4

Question Number : 74 Question Id : 6801917354 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

What is the function of Joints in a Robot Manipulator?

1. ensures mobility and reachability
2. confers orientation
3. performs required task
4. means of articulations

Options :

68019128893. 1

68019128894. 2

68019128895. 3

68019128896. 4

Question Number : 75 Question Id : 6801917355 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : Scientific Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

What is the order of basic transformation of frame {i-1} to frame {i}

(A). Translation along z_{i-1} axis by distance d_i
(B). Rotation by an angle α_i about x_i-axis
(C). Translation along x_i-axis by distance a_i
(D). Rotation by an angle θ_i about z_{i-1} -axis

Choose the correct answer from the options given below:

1. (A), (B), (C), (D)
2. (A), (C), (D), (B)
3. (D), (B), (C), (A).
4. (D), (A), (C), (B).

Options :

68019128897. 1

68019128898. 2

68019128899. 3

68019128900. 4