

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 07th June 2025 Shift 2
Subject Name :	Mechanical Engineering
Creation Date :	2025-06-07 16:51:20
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Share Answer Key With Delivery Engine :	Yes
Change Font Color :	No
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Mechanical Engineering

Group Number :	1
Group Id :	83189661
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No

Break time : 0
Group Marks : 120

Mechanical Engineering

Section Id : 83189661
Section Number : 1
Section type : Online
Mandatory or Optional : Mandatory
Number of Questions : 120
Number of Questions to be attempted : 120
Section Marks : 120
Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 83189661
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 8318967201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A particle moving in a circular path with constant speed has:

Options :

1. ✖ No acceleration
2. ✔ Centripetal acceleration

3. ✖ Zero net force

4. ✖ Constant angular momentum

Question Number : 2 Question Id : 8318967202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For plane stress, mohr's circle has:

Options :

1. ✖ Radius equal to maximum normal stress

2. ✔ Radius equal to maximum shear stress

3. ✖ Centre at origin

4. ✖ No radius

Question Number : 3 Question Id : 8318967203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A purchasing assistant has calculated the carrying cost in Rupees Per unit annum, and the $EOQ = 500$ units for an item. He must have taken that the annual ordering cost for this item:

Options :

1. ✓ Rs. 500
2. ✗ Rs. 100
3. ✗ Rs. 31.62
4. ✗ Rs. 22.36

Question Number : 4 Question Id : 8318967204 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Euler's theory applies to:

Options :

1. ✗ Long columns with lateral loads

2. ✖ Short columns

3. ✔ Long, slender columns under axial compression

4. ✖ Beams under bending

Question Number : 5 Question Id : 8318967205 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Critical damping is a function of

Options :

1. ✔ Mass and stiffness

2. ✖ Mass and damping co-efficient

3. ✖ Stiffness and natural frequency

Natural frequency and damping co-efficient

4. ✖

Question Number : 6 Question Id : 8318967206 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a simple gear train, the velocity ratio depends on:

Options :

1. ✖ Shaft distance

2. ✔ Number of teeth on gears

3. ✖ Module

4. ✖ Pressure angle

Question Number : 7 Question Id : 8318967207 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A stone of mass 'm' at the end of a string of length 'l' is whirled in a vertical position at a constant speed. The tension in the string will be minimum when the stone is at the

Options :

1. ✖ Bottom of the circle
2. ✖ Half-down from the top
3. ✖ Quarter way down from the top
4. ✔ Top of the circle

Question Number : 8 Question Id : 8318967208 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Critical speed of shaft corresponds to:

Options :

1. ✖ Zero angular velocity

2. ✓ Natural frequency of lateral vibration
3. ✗ Highest rpm
4. ✗ No damping

Question Number : 9 Question Id : 8318967209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Whirling speed of a shaft coincide with the natural frequency of the:

Options :

1. ✗ Longitudinal vibration
2. ✓ Transverse vibration
3. ✗ Torsional vibration
4. ✗ Coupled between torsional vibration

Question Number : 10 Question Id : 8318967210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The range of projectile is maximum when the angle of projection is:

Options :

1. ✓ 45°
2. ✗ 30°
3. ✗ 60°
4. ✗ 90°

Question Number : 11 Question Id : 8318967211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Pressure in a static fluid:

Options :

1. ✗ Varies with horizontal distance

2. ✓ Varies with depth

3. ✗ Is constant

4. ✗ Is maximum at the surface

Question Number : 12 Question Id : 8318967212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

What is the nature of distribution of shear stress in a rectangular beam?

Options :

1. ✗ Linear

2. ✓ Parabolic

3. ✗ Hyperbolic

4. ✖ Elliptical

Question Number : 13 Question Id : 8318967213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In laminar pipe flow, head loss varies with:

Options :

1. ✖ Velocity

2. ✔ Velocity squared

3. ✖ Pressure

4. ✖ Temperature

Question Number : 14 Question Id : 8318967214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In gears, interference takes place when:

Options :

Tip of a tooth of a mating gear digs into the portion between base and root circles

1. ✓

Gears do not move smoothly in the absence of lubrication

2. ✗

Pitch of the gear is not same

3. ✗

Gear teeth are undercut

4. ✗

Question Number : 15 Question Id : 8318967215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In hot working:

Options :

Annealing operation is not necessary

1. ✗

Power requirements are low

2. ✗

3. ✖ Surface finish is good
4. ✔ Grain refinement is possible

Question Number : 16 Question Id : 8318967216 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Nusselt number is the ratio of:

Options :

1. ✖ Inertial to viscous forces
2. ✔ Convective to conductive heat transfer
3. ✖ Convective to radiative heat transfer
4. ✖ Viscous to inertial forces

Question Number : 17 Question Id : 8318967217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Rankine's theory of failure is applicable for which of the following type of materials?

Options :

1. ✓ Brittle

2. ✗ Ductile

3. ✗ Elastic

4. ✗ Plastic

Question Number : 18 Question Id : 8318967218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The elastic region in a stress-strain diagram corresponds to:

Options :

1. ✗ Plastic deformation

Reversible deformation

2. ✓

Necking

3. ✗

Fracture

4. ✗

Question Number : 19 Question Id : 8318967219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Is specifies which of the following total number of grades of tolerances?

Options :

- 1. ✓ 18
- 2. ✗ 16
- 3. ✗ 20
- 4. ✗ 22

Question Number : 20 Question Id : 8318967220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Second law introduces the concept of:

Options :

- 1. ✗ Heat

Energy

2. ✖

Entropy

3. ✔

Volume

4. ✖

Question Number : 21 Question Id : 8318967221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

From a metallic wall at 100°C , a metallic rod protrudes to the ambient air. The temperature at the tip will be minimum when the rod is made of:

Options :

Aluminium

1. ✖

Steel

2. ✔

Copper

3. ✖

Silver

4. ✖

Question Number : 22 Question Id : 8318967222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The elastic constants, modulus of rigidity ' K ' and modulus of elasticity ' E ' are related through poisson's ratio ' μ ' as:

Options :

1. ✔ $\frac{E}{3(1-2\mu)}$

2. ✖ $E(1-2\mu)$

3. ✖ $3E(1-2\mu)$

4. ✖ $\frac{E}{3}(1+2\mu)$

Question Number : 23 Question Id : 8318967223 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Availability is:

Options :

Work lost due to friction

1. ✖

maximum useful work

2. ✔

heat available from system

3. ✖

energy in environment

4. ✖

Question Number : 24 Question Id : 8318967224 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If two bodies one light and other heavy have equal kinetic energies,
which one has a greater momentum?

Options :

Heavy body

1. ✖

Light body

2. ✓

Both have equal momentum

3. ✗

It depends on the actual velocities.

4. ✗

**Question Number : 25 Question Id : 8318967225 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0**

Which dimensionless number represents the ratio of inertial to viscous forces in forced convection?

Options :

Nusselt number

1. ✗

Reynolds number

2. ✓

Grashof number

3. ✗

Rayleigh number

4. ✖

Question Number : 26 Question Id : 8318967226 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A flexible manufacturing system may be:

Options :

1. ✔ An automated assembly line

2. ✖ Expensive to alter

3. ✖ Very difficult to change when new products are introduced

4. ✖ Flexibility in design of product

Question Number : 27 Question Id : 8318967227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Control volume refers to a:

Options :

Specified mass

1. ✖

Fixed region in the space

2. ✔

Closed system

3. ✖

Specific Volume

4. ✖

Question Number : 28 Question Id : 8318967228 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Rankine cycle is used in:

Options :

Gas turbines

1. ✖

2. ✓ Steam power plants

3. ✗ Refrigerators

4. ✗ Automobiles

Question Number : 29 Question Id : 8318967229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Highest thermal conductivity is of

Options :

1. ✓ Solid ice

2. ✗ Melting ice

3. ✗ Water

4. ✗ Steam

Question Number : 30 Question Id : 8318967230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The ratio of applied load to instantaneous cross section area is called

Options :

1.  Engineering stress

2.  True stress

3.  Engineering strain

4.  True strain

Question Number : 31 Question Id : 8318967231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Brayton cycle is used in:

Options :

1.  Steam engines

2. ✖ Diesel engines

3. ✔ Gas turbines

4. ✖ Heat pumps

Question Number : 32 Question Id : 8318967232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The condition for maximum power transmission by an open belt drive considering centrifugal tension is:
($T = \text{max. Tension}$, $T_C = \text{centrifugal tension}$)

Options :

1. ✖ $T = 2T_C$

2. ✖ $T = 4T_C$

3. ✔ $T = 3T_C$

4. ✖ $T = 3T^2_c$

Question Number : 33 Question Id : 8318967233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Investment casting uses pattern made of:

Options :

1. ✔ Wax

2. ✖ Clay

3. ✖ Metal

4. ✖ Wood

Question Number : 34 Question Id : 8318967234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which property of mercury is the main reason for its use in barometers?

Options :

High density

1. ✖

Capillary effect is negligible

2. ✖

Very low vapour pressure

3. ✔

Low compressibility

4. ✖

Question Number : 35 Question Id : 8318967235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Compression ratio of diesel cycle is:

Options :

Lower than Otto

1. ✖

Equal to Otto

2. ✖

3. ✓ Higher than Otto

4. ✗ Depends on fuel

Question Number : 36 Question Id : 8318967236 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Kelvin-plank's law deals with:

Options :

1. ✗ Conversion of work into heat

2. ✓ Conversion of heat into work

3. ✗ Conservation of work

4. ✗ Conservation of heat

Question Number : 37 Question Id : 8318967237 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which one of the following is an open pair?

Options :

1. ✖ Ball and socket joint
2. ✖ Journal bearing
3. ✖ Lead screw and nut
4. ✔ Cam and follower

Question Number : 38 Question Id : 8318967238 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Shaft is subjected to which of the following stresses?

Options :

1. ✖ Bending

2. ✖ Torsional
3. ✔ Both Bending and Torsional
4. ✖ Tensile

Question Number : 39 Question Id : 8318967239 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Humidification increases:

Options :

1. ✖ Dry bulb temp
2. ✔ Moisture content of air
3. ✖ Air velocity

Pressure

4. ✖

Question Number : 40 Question Id : 8318967240 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The elastic strain energy stored in a rectangular cantilever beam of length L, subjected to a B.M., M applied at the end of it is:

Options :

1. ✔ $M^2L / 2 EI$

2. ✖ $ML^2/2AE$

3. ✖ $ML^2/3EI$

4. ✖ $ML^2/16 EI$

Question Number : 41 Question Id : 8318967241 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A process in which no heat is transferred is called:

Options :

1. ✖ Isobaric
2. ✔ Adiabatic
3. ✖ Isothermal
4. ✖ Isochoric

Question Number : 42 Question Id : 8318967242 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The main component in soldering is:

Options :

1. ✖ Copper
2. ✔ Tin-lead alloy
3. ✖ Aluminium

Nickel

4. ✖

Question Number : 43 Question Id : 8318967243 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A refrigerator unit weighing 300 N is to be supported by three springs of stiffness of 10.26 kN/mm each. If the unit operates at 580 r.p.m., what should be the value of the spring constant k if only 10% of the shaking force of the unit is to be transmitted to the supporting structure?

Options :

1. ✖ 2.4 N/mm

2. ✖ 3.0 N/mm

3. ✔ 3.4 N/mm

4. ✖ 4 N/mm

Question Number : 44 Question Id : 8318967244 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The required diameter of the blank for the deep drawing of a cup of diameter 'd' and height 'h' is given by:

Options :

1. ✖ $\sqrt{d^2 - 2dh}$

2. ✖ $\sqrt{d^2 + 2dh}$

3. ✖ $\sqrt{d^2 - 4dh}$

4. ✔ $\sqrt{d^2 + 4dh}$

Question Number : 45 Question Id : 8318967245 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the ratio of the diameter of rivet hole to the pitch of rivets is 0.30, then the tearing efficiency of the joint is:

Options :

1. ✓ 70%

2. ✗ 60%

3. ✗ 50%

4. ✗ 30%

Question Number : 46 Question Id : 8318967246 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In thin cylindrical pressure vessels, hoop stress is:

Options :

1. ✗ Equal to axial stress

2. ✗ Half of axial stress

3. ✓ Twice the axial stress

One-fourth axial stress

4. ✖

Question Number : 47 Question Id : 8318967247 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Cores are used to:

Options :

1. ✔ Make desired recess in castings

2. ✖ Strengthen moulding sand

3. ✖ Support loose pieces

4. ✖ Remove pattern easily

Question Number : 48 Question Id : 8318967248 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Austempering is the heat treatment process used to obtain:

Options :

1. ✖ Low hardness
2. ✖ High toughness
3. ✔ High hardness
4. ✖ High ductility

Question Number : 49 Question Id : 8318967249 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Natural frequency of undamped SDOF system is:

Options :

1. ✖ $\sqrt{(m/k)}$
2. ✔ $\sqrt{(k/m)}$
3. ✖ k/m

4. ✖ m/k

Question Number : 50 Question Id : 8318967250 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following casting process used an expendable pattern?

Options :

1. ✖ CO₂ casting

2. ✖ Die casting

3. ✖ Centrifugal casting

4. ✔ Investment casting

Question Number : 51 Question Id : 8318967251 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In drawing operation, the metal flows due to:

Options :

1. ✘ Ductility
2. ✘ Work hardening
3. ✔ Plasticity
4. ✘ Shearing

Question Number : 52 Question Id : 8318967252 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The rake angle is a property of:

Options :

1. ✘ Tool wear
2. ✔ Tool geometry
3. ✘ Workpiece shape

4. ✖ Cutting fluid

Question Number : 53 Question Id : 8318967253 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A Mohr's circle reduces to a point when the body is subjected to:

Options :

1. ✖ Pure shear

2. ✖ Uniaxial stress only

3. ✖ Equal and opposite axial stresses on two mutually perpendicular planes, the planes being free of shear

4. ✔ Equal axial stresses on two mutually perpendicular planes, the planes being free of shear.

Question Number : 54 Question Id : 8318967254 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a throttling process, which one of the parameters remains constant?

Options :

- 1. ✖ Temperature
- 2. ✖ Pressure
- 3. ✔ Enthalpy
- 4. ✖ Entropy

Question Number : 55 Question Id : 8318967255 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Resonance occurs when:

Options :

- 1. ✖ Damping is high

2. ✖ Mass equals stiffness
3. ✔ Forcing frequency equals natural frequency
4. ✖ Displacement is zero

Question Number : 56 Question Id : 8318967256 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Brazing differs from soldering primarily in the following

Options :

1. ✖ Type of base metal used
2. ✔ Temperature of the filler metal
3. ✖ Use of electricity

Type of shielding gas used

4. ✖

Question Number : 57 Question Id : 8318967257 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The addition of coal dust to the green moulding sand is to improve:

Options :

Permeability

1. ✖

Surface finish

2. ✔

Mouldability

3. ✖

Green strength

4. ✖

Question Number : 58 Question Id : 8318967258 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Seam welding used for metal sheets having thickness in the range:

Options :

1. ✓ 0.025 to 3 mm
2. ✗ 3 to 6 mm
3. ✗ 6 to 10 mm
4. ✗ More than 10 m

Question Number : 59 Question Id : 8318967259 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following is a Taylor's tool life equation, where

V-cutting speed (m/min), T-tool life (min), n-exponent and C-constant?

Options :

1. ✗ $TV^n = C$

2. ✓ $VT^n = C$

3. ✗ $VC^n = T$

4. ✗ $CV^n = T$

Question Number : 60 Question Id : 8318967260 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

CAD/CAM is hardware oriented, but gives it life.

Options :

1. ✗ Numerical control

2. ✗ Documentation

3. ✓ Software

Communications

4. ✖

Question Number : 61 Question Id : 8318967261 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

EDM (Electric Discharge Machining) is suitable for:

Options :

Plastic parts

1. ✖

Hard conductive materials

2. ✔

Wooden molds

3. ✖

Composites

4. ✖

Question Number : 62 Question Id : 8318967262 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The continuity equation $\frac{du}{dx} + \frac{dv}{dy} + \frac{dw}{dz} = 0$ is valid only for:

Options :

1. ✖ Ideal fluid flow
2. ✖ Incompressible fluid
3. ✖ Steady flow and incompressible fluids
4. ✔ Steady flow and compressible fluids

Question Number : 63 Question Id : 8318967263 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a planar truss, the number of members (m), joints (j), and reactions (r) are related by:

Options :

$$m + r = 2j$$

1. ✖

2. ✖ $m + j = 2r$

3. ✔ $m + r = j$

4. ✖ $m + j = r$

Question Number : 64 Question Id : 8318967264 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Quick return mechanism is an inversion of:

Options :

1. ✖ Four bar chain

2. ✔ Single slider crank chain

3. ✖ Double slider crank chain

Crossed slider crank chain

4. ✖

Question Number : 65 Question Id : 8318967265 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In wire drawing operation, the maximum reduction per pass for perfectly plastic material in ideal condition is:

Options :

30 %

1. ✖

45 %

2. ✖

63 %

3. ✔

50 %

4. ✖

Question Number : 66 Question Id : 8318967266 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In metal cutting operations, discontinuous chips are produced while machining:

Options :

1. ✓ Brittle material
2. ✗ Ductile material
3. ✗ Hard material
4. ✗ Soft material

Question Number : 67 Question Id : 8318967267 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Least count of a micrometer screw gauge is usually:

Options :

1. ✗ 0.1 mm

2. ✓ 0.01 mm

3. ✗ 0.001 mm

4. ✗ 1 mm

Question Number : 68 Question Id : 8318967268 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In an open system, both _____ and _____ can cross the boundary?

Options :

1. ✗ Heat and mass

2. ✗ Work and energy

3. ✓ Mass and energy

Pressure and volume

4. ✖

Question Number : 69 Question Id : 8318967269 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Reheating in Brayton cycle:

Options :

Decreases work output

1. ✖

Reduces temperature

2. ✖

Increases work output

3. ✔

Reduces efficiency

4. ✖

Question Number : 70 Question Id : 8318967270 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Strength of a material is its ability to resist:

Options :

Deformation due to stress

1. ✖

Fracture due to high load

2. ✖

External forces applied with yielding or break down

3. ✔

The flow

4. ✖

Question Number : 71 Question Id : 8318967271 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

As the distance from the leading edge increases, the thermal boundary layer thickness:

Options :

Increases

1. ✔

Remains constant

2. ✖

3. ✖ Decreases

4. ✖ Becomes zero

Question Number : 72 Question Id : 8318967272 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Provision of fins on a given heat transfer surface will be more, if there are:

Options :

1. ✖ Fewer number of thick fins

2. ✖ Fewer number of thin fins

3. ✔ Large number of thin fins

4. ✖ Large number of thick fins

Question Number : 73 Question Id : 8318967273 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The primary mechanism of material removal in electrochemical machining (ECM) is:

Options :

- 1. ✖ Chemical corrosion
- 2. ✔ Ionic dissolution
- 3. ✖ Etching
- 4. ✖ Spark erosion

Question Number : 74 Question Id : 8318967274 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In the S-N curve, “N” represents :

Options :

- 1. ✖ Load cycles

2. ✓ Number of cycles to failure

3. ✗ Stress amplitude

4. ✗ Time to failure

Question Number : 75 Question Id : 8318967275 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of poisson's ratio for any material cannot exceed:

Options :

1. ✗ 0.2

2. ✗ 1.0

3. ✗ 1.414

0.5

4. ✓

Question Number : 76 Question Id : 8318967276 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Amount of external energy required to deform an elastic body is called:

Options :

Elastic energy

1. ✗

Plastic energy

2. ✗

Strain energy

3. ✓

Thermal energy

4. ✗

Question Number : 77 Question Id : 8318967277 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Balancing of a rigid rotor can be achieved by appropriately balancing masses in:

Options :

- 1. ✖ Single plane
- 2. ✔ Two planes
- 3. ✖ Three planes
- 4. ✖ Four planes

Question Number : 78 Question Id : 8318967278 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Forecasting in PPC helps in:

Options :

- 1. ✖ Inventory disposal

- 2. ✖ Machine maintenance
- 3. ✔ Planning future production needs
- 4. ✖ Waste disposal

Question Number : 79 Question Id : 8318967279 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Heat transfer takes place according to:

Options :

- 1. ✖ Zeroth law of thermodynamics
- 2. ✖ First law of thermodynamics
- 3. ✔ Second law of thermodynamics

Third law of thermodynamics

4. ✖

Question Number : 80 Question Id : 8318967280 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The locus of elevations that water will rise in a series of pitot tubes is called:

Options :

The hydraulic grade line

1. ✖

The energy grade line

2. ✖

The velocity head

3. ✔

The pressure head

4. ✖

Question Number : 81 Question Id : 8318967281 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which material is commonly used for pattern making?

Options :

- 1. ✖ Cast iron
- 2. ✔ Wood
- 3. ✖ Bronze
- 4. ✖ Lead

Question Number : 82 Question Id : 8318967282 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The instantaneous centre of rotation of a rigid thin disc rolling on a plane rigid surface is located at:

Options :

- 1. ✖ Centre of the disc

An infinite distance on the plane surface

2. ✖

The point of contact

3. ✔

The point on the circumference situated vertically opposite to the contact point

4. ✖

Question Number : 83 Question Id : 8318967283 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The gears employed for connecting two non-intersecting and non-parallel, i.e., non-coplanar shafts are:

Options :

Bevel gears

1. ✖

Spiral gears

2. ✔

Helical gears

3. ✖

4. ✖ Mitre gears

Question Number : 84 Question Id : 8318967284 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the machining process uses the principle of faraday's law for material removal?

Options :

1. ✖ EDM

2. ✖ LBM

3. ✔ ECM

4. ✖ EBM

Question Number : 85 Question Id : 8318967285 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A master gauge is a an:

Options :

New gauge

1. ✖

International reference standard

2. ✖

Standard gauge for checking accuracy of gauges used on shop floors

3. ✔

Gauge used by experienced technicians

4. ✖

Question Number : 86 Question Id : 8318967286 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Gating system in casting controls:

Options :

Cooling rate only

1. ✖

Flow of molten metal

2. ✔

3. ✖ Pouring time

4. ✖ Mold expansion

Question Number : 87 Question Id : 8318967287 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For the two shafts connected in parallel, find which statement is true?

Options :

1. ✖ Torque in each shaft is the same

2. ✖ Shear stress in each shaft is the same

3. ✔ Angle of twist of each shaft is the same

4. ✖ Torsional stiffness of each shaft is the same.

Question Number : 88 Question Id : 8318967288 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following metals shows a clear yield point?

Options :

- 1. ✖ Copper
- 2. ✖ Aluminium
- 3. ✔ Mild steel
- 4. ✖ Titanium

Question Number : 89 Question Id : 8318967289 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Cold working process can be applied on the components having
diameter up to:

Options :

- 1. ✖ 12 mm

2. ✓ 25 mm

3. ✗ 49 mm

4. ✗ 50 mm

Question Number : 90 Question Id : 8318967290 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Thermal stress occurs when:

Options :

1. ✗ Temperature is uniform

2. ✗ Expansion is allowed

3. ✓ Expansion is restrained

There is no temperature change

4. ✖

Question Number : 91 Question Id : 8318967291 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a vapour compression refrigeration cycle, the refrigerant absorbs heat in the following.

Options :

1. ✖ Condenser

2. ✖ Compressor

3. ✖ Expansion valve

4. ✔ Evaporator

Question Number : 92 Question Id : 8318967292 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Group technology brings together and organizes:

Options :

1. ✖ Parts and simulation analysis
2. ✖ Documentation and analysis
3. ✖ Automation and tool production
4. ✔ Common parts, problems, and tasks

Question Number : 93 Question Id : 8318967293 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Forging is typically done:

Options :

1. ✔ At room temperature
2. ✖ At elevated temperatures
3. ✖ In powder form

4. ✖ For non-metallic parts

Question Number : 94 Question Id : 8318967294 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

With rise in gas temperature, dynamic viscosity of most of the gases:

Options :

1. ✔ Increases

2. ✖ Decreases

3. ✖ Does not change significantly.

4. ✖ Remains constant

Question Number : 95 Question Id : 8318967295 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Conduction requires:

Options :

1. ✓ Temperature gradient
2. ✗ Fluid motion
3. ✗ Radiation
4. ✗ Vacuum

Question Number : 96 Question Id : 8318967296 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A system of masses rotating in different parallel planes is in dynamic balance if the resultant:

Options :

1. ✗ Force is equal to zero
2. ✗ Couple is equal to zero

3. ✓ Force and the resultant couple are both equal to zero

4. ✗ Force is numerically equal to the resultant couple, but neither of them need necessarily be zero.

Question Number : 97 Question Id : 8318967297 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Ability of a material to retain the deformation permanently is called:

Options :

1. ✗ Stiffness

2. ✗ Ductility

3. ✗ Hardness

4. ✓ Plasticity

Question Number : 98 Question Id : 8318967298 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The creep in belt drive is due to the:

Options :

1. ✖ Material of the pulleys
2. ✖ Material of the belt
3. ✖ Unequal size of the pulleys
4. ✔ Unequal tension on tight side and slack sides of the belt

Question Number : 99 Question Id : 8318967299 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Spur gears have:

Options :

1. ✖ Helical teeth
2. ✔ Straight teeth

3. ✖ Bevel teeth

4. ✖ Spiral teeth

Question Number : 100 Question Id : 8318967300 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A flow in which each liquid particle has a definite path and their paths do not cross each other, is called:

Options :

1. ✖ Steady flow

2. ✖ Uniform flow

3. ✔ Streamline flow

4. ✖ Turbulent flow

Question Number : 101 Question Id : 8318967301 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Heat conduction through a wall follows:

Options :

1. ✓ Fourier's law
2. ✗ Newton's law
3. ✗ Stefan–Boltzmann law
4. ✗ Kirchhoff's law

Question Number : 102 Question Id : 8318967302 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the efficiency of a belt drive is more than 50%, then it is called:

Options :

1. ✗ Self-locking

2. ✖ Over loading

3. ✔ Over-hauling

4. ✖ Over efficiency drive

Question Number : 103 Question Id : 8318967303 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Discontinuous chips are formed during machining of:

Options :

1. ✔ Cast iron

2. ✖ Mild steel

3. ✖ Aluminium

4. ✖ Stainless steel

Question Number : 104 Question Id : 8318967304 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Limits and fits ensure:

Options :

- 1. ✖ Aesthetic appeal
- 2. ✔ Proper function and interchangeability
- 3. ✖ Heat transfer
- 4. ✖ Colour coding

Question Number : 105 Question Id : 8318967305 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

For maximum horizontal range, the angle of projection of a projectile should be:

Options :

1. ✖ 30°

2. ✔ 45°

3. ✖ 60°

4. ✖ 90°

Question Number : 106 Question Id : 8318967306 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Francis, Kaplan and propeller turbines fall under the category of:

Options :

1. ✔ Reaction turbines

2. ✖ Impulse turbines

Axial flow turbines

3. ✖

Mixed flow turbines

4. ✖

Question Number : 107 Question Id : 8318967307 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Bernoulli's equation is applicable to:

Options :

Compressible viscous flows

1. ✖

All types of flow

2. ✖

Incompressible and inviscid flow

3. ✔

Steady turbulent flows

4. ✖

Question Number : 108 Question Id : 8318967308 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The area enclosed by a thermodynamic cycle on a p-v diagram represents:

Options :

1. ✖ Heat rejected
2. ✔ Net work done
3. ✖ Energy loss
4. ✖ Efficiency

Question Number : 109 Question Id : 8318967309 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In electrical resistance welding, pressure applied varies in the range:

Options :

1. ✖ 50 to 100 kgf/cm²

2. ✖ 100 to 200 kgf/cm²

3. ✔ 250 to 550 kgf/cm²

4. ✖ 600 to 900 kgf/cm²

Question Number : 110 Question Id : 8318967310 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Compared to the Otto cycle for the same compression ratio, the diesel cycle efficiency is:

Options :

1. ✔ Lower

2. ✖ Higher

3. ✖ Equal

Cannot be determined

4. ✖

Question Number : 111 Question Id : 8318967311 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Determine the value of λ and μ for which such that the system of equations $x + 2y + z = 6$, $x + 4y + 3z = 10$, and

$2x + 4y + \lambda z = \mu$ has infinite number of solutions

Options :

$\lambda = 2, \mu \neq 12$

1. ✖

$\lambda = 2, \mu = 12$

2. ✖

$\lambda \neq 2, \mu \neq 12$

3. ✔

for any λ and any μ

4. ✖

Question Number : 112 Question Id : 8318967312 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the matrix $A = \begin{pmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{pmatrix}$ has three distinct eigenvalues and one of its eigenvectors is $\begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$, then which of the following can be another eigenvector of A ?

Options :

1. ✖ $\begin{pmatrix} -1 \\ 0 \\ 1 \end{pmatrix}$

2. ✖ $\begin{pmatrix} -1 \\ 0 \\ 2 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 1 \\ 1 \\ -1 \end{pmatrix}$

4. ✓ $\begin{pmatrix} 1 \\ -2 \\ 1 \end{pmatrix}$

Question Number : 113 Question Id : 8318967313 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $\vec{F} = x(x^2 + y^2 + z^2)\hat{i} + 2y(x^2 + y^2 + z^2)\hat{j} + 3z(x^2 + y^2 + z^2)\hat{k}$, then $\text{div}\vec{F}$ at (1,1,1) is equal to _____

Options :

1. ✗ 12

2. ✗ 21

3. ✓ 30

4. ✗ 33

Question Number : 114 Question Id : 8318967314 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of the line integral $\int_C (2xy^2 dx + 2x^2 y dy - \frac{1}{3} z dz)$ along a path joining the origin $(0,0,0)$ and the point $(1,1,1)$ is _____

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $\frac{7}{6}$

3. ✖ $\frac{3}{2}$

4. ✔ $\frac{5}{6}$

Question Number : 115 Question Id : 8318967315 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If $y(x)$ satisfies the differential equation $x \frac{dy}{dx} + (x - y) = 0$ subject to the condition $y(1) = 0$, then $y(e)$ is _____

Options :

1. ✓ $-e$

2. ✗ $-2e$

3. ✗ e

4. ✗ $2e$

Question Number : 116 Question Id : 8318967316 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

If the Laplace transform of a function $f(t)$ is given by $\frac{2s+1}{(s+1)(s+2)}$, then
 $f(0)$ is equal to _____

Options :

1. ✓ 2

2. ✗ 4

3. ✖ -4

4. ✖ $3e - 1$

Question Number : 117 Question Id : 8318967317 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Let A, B be two events and $\bar{A}$ be the complement of A . If

$P(\bar{A}) = 0.7, P(B) = 0.7$ and $P(B|A) = 0.5$, then $P(A \cup B) =$

Options :

1. ✖ 0.65

2. ✔ 0.85

3. ✖ 0.75

4. ✖ 0.50

Question Number : 118 Question Id : 8318967318 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

A machine produces 0, 1 or 2 defective items in a day with probabilities of $\frac{1}{4}, \frac{1}{2}, \frac{1}{4}$, respectively. Then, the standard deviation of the number of defective items produced by the machine in a day, is

Options :

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{1}{\sqrt{2}}$

3. ✖ $\frac{1}{4}$

4. ✖ 1

Question Number : 119 Question Id : 8318967319 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Evaluation of the integral $\int_2^4 x^2 dx$ using the trapezoidal rule (with two equal segments) gives a value of _____

Options :

- 1. ✖ 14.5
- 2. ✖ 22.5
- 3. ✔ 19.0
- 4. ✖ 18.6

Question Number : 120 Question Id : 8318967320 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Let $f(x) = x^3 + 2x^2 + 3x - 1$. Newton-Raphson method is used to find the root of the equation $f(x) = 0$. If the initial guess is $x_0 = 1$, then the value of x after first iteration is _____

Options :

- 1. ✖ 0.30

2. ✖ 0.36

3. ✖ 0.40

4. ✔ 0.50