tscte

Question Paper Name:	Mechanical Engineering 30th May 2019 Shift 1
Subject Name:	Mechanical Engineering
Creation Date:	2019-05-29 13:35:56
Duration:	120
Total Marks:	120
Display Marks:	No
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Mechanical Engineering

Group Number :	1
Group Id :	39090046
Group Maximum Duration :	0
Group Minimum Duration :	120
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	120

Mathematics

Section Id :	39090085
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	10
Number of Questions to be attempted:	10
Section Marks:	10
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	39090085
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 3909005401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If X is a random variable with variance 12, then variance $(X + 6) =$

Options :

1. 2

2. 72

3. 18

4. 12

Question Number : 2 Question Id : 3909005402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let X be a random variable with $P(X = n) = \frac{1}{n(n+1)}, (n = 1,2,3..)$. Then $P(X \leq 2019) =$

Options :

1. $\frac{2018}{2019}$

2. $\frac{2017}{2018}$

3. $\frac{2019}{2020}$

4. $\frac{2020}{2021}$

Question Number : 3 Question Id : 3909005403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\frac{1}{2\pi i} \oint_{|z|=1} \frac{4z^3 + 12z^2 + 1}{z^4 + 4z^3 + z + 1} dz =$$

Options :

1. 3

2. 4

3. 5

4. 6

Question Number : 4 Question Id : 3909005404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The residue of $f(z) = z^3 e^{z^{-1}}$ at $z = 0$ is

Options :

1. $\frac{1}{12}$

2. $\frac{1}{24}$

3. $\frac{1}{48}$

4. $\frac{1}{120}$

Question Number : 5 Question Id : 3909005405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\oint_{|z-i|=1} \frac{e^z}{z^2-1}\, dz =$$

Options :

1. $2\pi i$

2. πi

3. 0

4. $-2\pi i$

Question Number : 6 Question Id : 3909005406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A curve $y = f(x)$ is such that, $f'(x) = x - 1 - f(x), f(0) = 1$. Then $f(x) =$

Options :

1. $x + e^{-x}$

2. $x + 2e^{-x} - 1$

3. $x + 3e^{-x} - 2$

4. $x + 3e^{-x}$

Question Number : 7 Question Id : 3909005407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The solution of $xy''(x) + y'(x) = 1$ is $y =$

Options :

1. $a + x + b\log x$

2. $a - x + b\log x$

3. $a + \frac{1}{x} + b\log x$

4. $\frac{a}{x} + b\log x$

Question Number : 8 Question Id : 3909005408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Absolute maximum of $f(x, y) = -x^2 - y^2 + 2x + 4y + 2$ is

Options :

1. 5

2. 6

3. 7

4. 8

Question Number : 9 Question Id : 3909005409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\int_0^1 \int_y^1 \frac{\sin x}{x}\, dx\, dy =$$

Options :

1. $1 - \cos 1$

2. $1 + \cos 1$

3. $1 - \sin 1$

4. $1 + \sin 1$

Question Number : 10 Question Id : 3909005410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} 1 & 0 & -3 \\ -2 & 0 & 1 \\ 2 & -2 & -1 \end{pmatrix}$ then $A^4 + 7A^2 =$

Options :

1. $7A$

2. $8A$

3. $9A$

4. $10A$

Mechanical Engineering

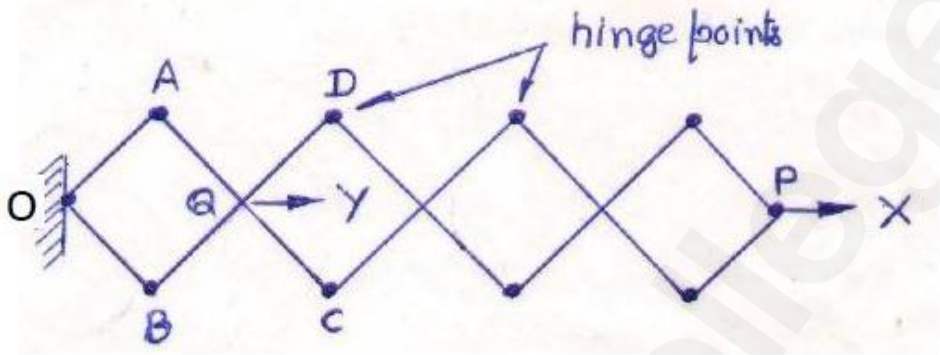
Section Id :	39090086
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	110
Number of Questions to be attempted:	110
Section Marks:	110
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Id: 39090086
Question Shuffling Allowed : Yes

Question Number : 11 Question Id : 3909005411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following Figure shows the mechanism of a collapsible door. OA = OB, AC and BD are two links and AC = BD, and so on. If X and Y are the displacements of points P and Q, respectively, then



Options :

1. $X = Y$

2. $X = 2Y$

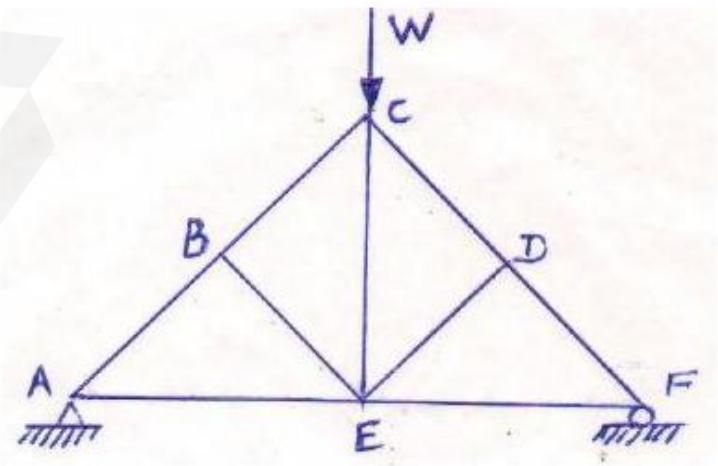
3. $X = 3Y$

4. $X = 4Y$

Question Number : 12 Question Id : 3909005412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The following Figure shows a point load acting at C on a Kingpost truss. The members which are in tension are,



Options :

1. AB, BC, CD and DF

2. BE and DE

3. CE

4. AE and EF

Question Number : 13 Question Id : 3909005413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When a point load of magnitude 90N is applied at the free end of a cantilever beam of length 1m, a maximum bending deflection of 1mm is noticed. What would be the value of EI?

Options :

1. 9×10^4 N.m^2

2. 6×10^4 N.m^2

3. 3×10^4 N.m^2

4. 1×10^4 N.m^2

Question Number : 14 Question Id : 3909005414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Match the items in the Lists I and II pertaining to beam bending.

List I	List II
P. Slope is zero	1. Bending moment is maximum
Q. Bending moment is zero	2. Deflection is maximum
R. Shear force is zero	3. Slope is maximum

Options :

1. P – 1 Q – 3 R – 2

2. P – 2 Q – 3 R – 1

3. P – 2 Q – 1 R – 3

4. P – 3 Q – 2 R – 1

Question Number : 15 Question Id : 3909005415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The principle stresses at a point in a loaded member are 100 MPa (compressive) and 700 MPa (tensile). The maximum shear stress at that point would be

Options :

1. 800 MPa

2. 700 MPa

3. 400 MPa

4. 300 MPa

Question Number : 16 Question Id : 3909005416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The connecting rod of a slider crank mechanism exhibits pure translation when the crank angle is

Options :

1. zero

2. 45^0

3. 90^0

4. 180^0

Question Number : 17 Question Id : 3909005417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the maximum permissible error for Class I micrometer?

Options :

1. 0.002 mm

2. 0.004 mm

3. 0.008 mm

4. 0.016 mm

Question Number : 18 Question Id : 3909005418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The surface finish factor for a mirror polished material is

Options :

1. 0.45

2. 0.65

3. 0.85

4. 1.00

Question Number : 19 Question Id : 3909005419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Coriolis component of acceleration is given by

Options :

1. $2\ (\omega \times V)$

2. $2(V \times \omega)$

3. $2\ (\omega \bullet V)$

4. $(V \bullet \omega)$

Question Number : 20 Question Id : 3909005420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a slider crank mechanism, when the slider is at a dead center, the slider

A. acceleration is zero
B. acceleration is maximum
C. velocity is zero
D. velocity is infinity

Options :

1. A and B are correct

2. B and C are correct

3. C and D are correct

4. D and A are correct

Question Number : 21 Question Id : 3909005421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a slider crank chain, R and L represent lengths of crank and connecting rod, respectively. The obliquity ratio $\lambda = R/L$ and θ is any crank angle. The crank is rotating with uniform angular velocity ω rad/s. Match the items in lists I and II.

List I		List II	
P.	Velocity of the piston	1.	$\lambda\omega\cos\theta$
Q.	Acceleration of the piston	2.	$R\omega^2 (\cos\theta + \lambda \cos 2\theta)$
R.	Angular velocity of the connecting rod	3.	$-\lambda\omega^2 \sin\theta$
S.	Angular acceleration of the connecting rod	4.	$R\omega (\sin\theta + 0.5\lambda \sin 2\theta)$

Options :

1. P – 4 Q – 2 R – 3 S – 1

2. P – 2 Q – 4 R – 3 S – 1

3. P – 4 Q – 2 R – 1 S – 3

4. P – 2 Q – 4 R – 1 S – 3

Question Number : 22 Question Id : 3909005422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If φ is the pressure angle, the angle between the slant edges of the tooth of involute rack is

Options :

1. $\varphi/4$

2. $\varphi/2$

3. Φ

4. 2φ

Question Number : 23 Question Id : 3909005423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the base circle radius and pitch circle radius of an involute gear are, respectively, 58mm and 62mm, then the pressure angle would be

Options :

1. 14.5^0

2. 20^0

3. 20.7^0

4. 25.7^0

Question Number : 24 Question Id : 3909005424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An involute pinion of 14.5^0full depth system with 48 teeth has a pitch circle of diameter 288 mm. It has

A. module of 6mm

B. circular pitch of 18mm

C. addendum of 6mm

D. diametral pitch of $(11/113)$ mm^{-1}

Options :

1. B and C are correct

2. A and C are correct

3. A and D are correct

4. B and D are correct

Question Number : 25 Question Id : 3909005425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An idler in a simple gear train

Options :

1. effects only the speed ratio of the train

2. effects only the sense of rotation of the output gear

3. effects the speed ratio and also the sense of rotation of the output gear

4. effects neither the speed ratio nor the sense of rotation of the output gear

Question Number : 26 Question Id : 3909005426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The number of degrees of freedom of an epicylic gear train is

Options :

1. Zero

2. one

3. two

4. three

Question Number : 27 Question Id : 3909005427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If it is desired to make the speed of the engine perfectly constant, the size of the flywheel required is

Options :

1. very small

2. Moderate

3. Large

4. infinitely large

Question Number : 28 Question Id : 3909005428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the speed of rotation of the flywheel is increased by two times, its kinetic energy increases ____ times

Options :

1. 2

2. 3

3. 4

4. 8

Question Number : 29 Question Id : 3909005429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If p is the spin of the rotor, Ω is the precession velocity, M is the applied moment and J is the mass moment of inertia of the rotor, which one of the following is correctly expressing the principle of gyroscope?

Options :

1. $M = Jp \times \Omega$

2. $M = J\Omega \times p$

3. $M = J\Omega \bullet p$

4. $M = J\,\Omega\, p$

Question Number : 30 Question Id : 3909005430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a cyclist takes a left turn, then the effect of gyroscopic action would be

Options :

1. to tilt him towards his right

2. to tilt him towards his left

3. to apply more load on front wheel

4. to apply more load on rear wheel

Question Number : 31 Question Id : 3909005431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The control force of a centrifugal governor is expressed as $F_c = A\,r + B$, where A and B are constants. If the governor is to be a stable governor, then

Options :

1. $A>0$ and $B>0$

2. $A>0$ and $B<0$

3. $A<0$ and $B>0$

4. $A>0$ and $B=0$

Question Number : 32 Question Id : 3909005432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a Porter governor whose ball is of weight 5 N and sleeve of weight 50N, the friction at the sleeve is 10 N. The coefficient of detention is

Options :

1. 1.97

2. 0.20

3. 0.18

4. 0.02

Question Number : 33 Question Id : 3909005433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An isochronous governor is

Options :

1. a moderately sensitive governor

2. a zero sensitive governor

3. a sluggish governor

4. an infinitely sensitive governor

Question Number : 34 Question Id : 3909005434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a Hartnell governor, the mass of each ball is 2.5 kg. The maximum and the minimum speeds of rotation are 10 rad/s and 8 rad/s, respectively. The maximum and the minimum radii of rotation are 20 cm and 14 cm, respectively. The lengths of the horizontal and the vertical arms of the bell crank lever are, 10 cm and 20 cm, respectively. What is the lift of the sleeve? Neglect the obliquity and gravitational effects.

Options :

1. 15 mm

2. 30 mm

3. 60 mm

4. 120 mm

Question Number : 35 Question Id : 3909005435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mass of 3 kg is held in between two springs each of stiffness 12 N/m. What is the frequency of oscillations if the mass is slightly displaced and released?

Options :

1. 1.41 rad/s

2. 2.83 rad/s

3. 4.24 rad/s

4. 5.18 rad/s

Question Number : 36 Question Id : 3909005436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mass vibrating at 7 rad/s frequency, observed to have a maximum velocity of 0.178 mm/s. What is it's maximum acceleration?

Options :

1. $0.025\ mm/s^2$

2. $1.246\ mm/s^2$

3. $2.492\ mm/s^2$

4. $3.041\ mm/s^2$

Question Number : 37 Question Id : 3909005437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the range of frequency of excitation in which the Magnification Factor exceeds 2, in the case of an un-damped system

Options :

1. $\sqrt{0.5}\omega_n < \omega < \sqrt{1.5}\omega_n$

2. $\sqrt{0.4}\omega_n < \omega < \sqrt{1.6}\omega_n$

3. $\sqrt{0.3}\omega_n < \omega < \sqrt{1.7}\omega_n$

4. $\sqrt{0.2}\omega_n < \omega < \sqrt{1.8}\omega_n$

Question Number : 38 Question Id : 3909005438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A vibrating system is governed by the equation

$$\ddot{x} + 13x = (5.72)\ sin\ 4t \quad N$$

What is the time period of oscillations?

Options :

1. 1.74s

2. 1.57s

3. 2.14s

4. 3.14s

Question Number : 39 Question Id : 3909005439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The critical speed of the shaft may be reduced by

Options :

1. reducing the distance between the bearings

2. reducing the diameter of the shaft

3. increasing the diameter of the shaft

4. using long bearings

Question Number : 40 Question Id : 3909005440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A shaft carrying a flywheel has maximum deflection of 4 mm due to its self weight at a place where it is mounted. What is the critical speed of the shaft?

Options :

1. 473 rpm

2. 435 rpm

3. 534 rpm

4. 743 rpm

Question Number : 41 Question Id : 3909005441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The principal stresses at a point in a loaded member are 80 MPa and 60 MPa. If the critical stress of the material is 240 MPa, what is the factor of safety according to maximum shear stress theory?

Options :

1. 3

2. 4

3. 6

4. 12

Question Number : 42 Question Id : 3909005442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The diameters of a three stepped rod are 20mm, 25mm and 30mm. If the yield point stress is 300MPa, what would be the factor of safety when an axial load of 10kN is applied on the rod?

Options :

1. 8.7

2. 9.4

3. 14.7

4. 21.2

Question Number : 43 Question Id : 3909005443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Rivets are subjected to double shear in the case of

Options :

1. Lap joints

2. Single cover butt joints

3. Double cover butt joints

4. Chain type double riveted lap joints

Question Number : 44 Question Id : 3909005444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When a coil helical spring is applied with an axial tensile load, the nature of stresses induced in the wire of the coil of the spring is

Options :

1. tensile stress

2. compressive stress

3. torsional shear stress

4. crushing stress

Question Number : 45 Question Id : 3909005445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Lewis form factor

1. depends on the system of gears
2. increases its value with increase in the number of teeth
3. is minimum for rack

Options :

1. 1 and 2 are correct

2. 2 and 3 are correct

3. 3 and 1 are correct

4. 1, 2 and 3 are correct

Question Number : 46 Question Id : 3909005446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a journal bearing, the diameter and length of the journal are 150 mm and 250 mm respectively. The speed of the shaft is 900rpm and the load carried is 4000 N. If the coefficient of friction is 0.0055, the heat generated is

Options :

1. 119 W

2. 128 W

3. 147 W

4. 156 W

Question Number : 47 Question Id : 3909005447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a band brake arrangement, the tensions are 30 N and 10 N. If the angle of wrap is 130^0, the coefficient of friction is

Options :

1. 0.241

2. 0.448

3. 0.484

4. 0.848

Question Number : 48 Question Id : 3909005448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What percentage of clay content is required in furan-no-bake system?

Options :

1. Less than 0.3%

2. Less than 0.4%

3. Less than 0.5%

4. Less than 0.6%

Question Number : 49 Question Id : 3909005449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following methods is used for making crankshafts?

Options :

1. Drop forging
2. Press forging
3. Open die forging
4. Closed die forging

Question Number : 50 Question Id : 3909005450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The heat treatment process used for softening hardened steel is

Options :

1. Carburising
2. Normalising
3. Annealing
4. Tempering

Question Number : 51 Question Id : 3909005451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Select wrong statement about Soldering:

Options :

1. The filler metal fills the joint by capillary action (as in brazing)
2. Temperature in soldering are relatively low (unlike brazing)
3. Solders are not used for load bearing structural members
4. After soldering, the flux residue should not be removed to avoid corrosion

Question Number : 52 Question Id : 3909005452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Resistance spot welding is performed on two plates of 1.5 mm thickness with 6 mm diameter electrode, using 15000 A current for a time duration of 0.25 s. Assuming the interface resistance to be 0.0001 Ω, the heat generated to form the weld is

Options :

1. 5625 J

2. 8437 J

3. 22500 J

4. 33750 J

Question Number : 53 Question Id : 3909005453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. 1:2:0.5

2. 2:1:0.5

3. 1:2:1

4. 1:1:1

Question Number : 54 Question Id : 3909005454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a wire drawing operation, diameter of a sheet of steel wire is reduced from 10mm to 8mm. The mean flow stress of the material is 400MPa. The ideal force required for drawing (Ignoring friction and redundant work) is

Options :

1. 4.48 kN

2. 8.97 kN

3. 20.11 kN

4. 31.41 kN

Question Number : 55 Question Id : 3909005455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following processes produces a casting by forcing the molten under high pressure into the mold cavity?

Options :

1. Shell molding

2. Investment casting

3. Die casting

4. Continuous casting

Question Number : 56 Question Id : 3909005456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mould has a down sprue whose length is 30cm and the cross sectional area at the base of the down sprue is $1cm^2$. The down sprue feeds a horizontal runner leading into the mould cavity of volume $2000cm^3$. The time required to fill the mould cavity is

Options :

1. 4.05 sec

2. 5.05 sec

3. 6.05 sec

4. 8.25 sec

Question Number : 57 Question Id : 3909005457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Electrodes used in spot welding are made up of which material?

Options :

1. Only copper

2. Copper and tungsten

3. Copper and chromium

4. Copper and aluminum

Question Number : 58 Question Id : 3909005458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a rolling process, the state of stress of the material undergoing deformation is

Options :

1. Pure compression

2. Pure shear

3. Compression and shear

4. Tension and shear

Question Number : 59 Question Id : 3909005459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The spring back effect in press working is

Options :

1. Regaining the original shape of the sheet metal

2. Release of stored energy in the sheet metal

3. Partial recovery of the sheet ,metal

4. Elastic recovery of the sheet metal after removal of the load

Question Number : 60 Question Id : 3909005460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following welding process have highest heat flux density?

Options :

1. Metal Active Gas Welding

2. Submerged arc welding

3. Electron Beam welding

4. TIG welding

Question Number : 61 Question Id : 3909005461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thermosetting plastics can be formed by which of the following processes?

Options :

1. Injection molding

2. Transfer molding

3. Blow molding

4. Extrusion

Question Number : 62 Question Id : 3909005462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is not the characteristic of machining of plastics?

Options :

1. Poor surface finish after machining

2. Intense dust formation

3. Strong abrading action on cutting tools

4. Good heat dissipation from the cutting zone

Question Number : 63 Question Id : 3909005463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two cubical castings of the same metal and sizes of 2 cm and 4 cm are casted in a green sand mould. If the smaller casting solidifies in 2 mins, the expected time of solidification of larger casting will be

Options :

1. 64 min
2. 8 min
3. 4 min
4. 5.656 min

Question Number : 64 Question Id : 3909005464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Specific energy requirements in a grinding process are more than those in turning for the same metal removal rate because of the

Options :

1. Size effect of the larger contact areas between wheel and work.
2. High heat produced during grinding.
3. Specific pressures between wheel and work being high.
4. High cutting velocities.

Question Number : 65 Question Id : 3909005465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The quick return mechanism used in shaper has rocker arm drive of length 200 mm. if the crank radius is 50 mm and the offset between crank Centre and rocket arm pivot is 20 mm, length of the stroke (in meters) is

Options :

1. 1.0
2. 0.5
3. 2.0

4. 1.5

Question Number : 66 Question Id : 3909005466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The piston pin bearings in heavy duty diesel engines are

Options :

1. Needle roller bearings

2. Tapered roller bearings

3. Spherical roller bearings

4. Cylindrical roller bearings

Question Number : 67 Question Id : 3909005467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The flanks of teeth of rack-type gear cutter used for cutting gear profiles are

Options :

1. Cycloidal

2. Involute

3. Straight

4. Circular

Question Number : 68 Question Id : 3909005468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In turning operation the feed rate could be doubled to increase the metal removal rate. To keep the same level of surface finish, the nose radius of the tool has to be

Options :

1. Halved

2. Doubled

3. Multiplied by 4 times

4. Kept unchanged

Question Number : 69 Question Id : 3909005469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. 2/5 m/s

2. 2 m/s

3. 3 m/s

4. 1.33 m/s

Question Number : 70 Question Id : 3909005470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Electrical Discharge Machining, the work piece must have the following property

Options :

1. High hardness

2. High electrically conductive

3. High toughness

4. High modulus of elasticity

Question Number : 71 Question Id : 3909005471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not characteristic of the climb milling (down milling) operation?

Options :

1. The work piece is fed in the opposite direction

2. Forces are less

3. High rigidity of the machine tool is required

4. Chip thickness is maximum at the end of the cut

Question Number : 72 Question Id : 3909005472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For angle measurement in metrology, the following pair can be used in Conjunction with each other

Options :

1. Sine bar and Vernier calipers

2. Bevel protractor and slip gauges

3. Slip gauges and sine bar

4. Sine bar and bevel protractor

Question Number : 73 Question Id : 3909005473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Interference fit joints are provided for

Options :

1. Assembling bush bearing in housing

2. Mounting pulley on shafts

3. Mounting heavy duty gears on shafts

4. Assembly of flywheels on shaft

Question Number : 74 Question Id : 3909005474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the tolerance specification 25 D6,the letter D represents

Options :

1. Upper deviation

2. Grade of tolerance

3. Type of fit

4. Lower deviation

Question Number : 75 Question Id : 3909005475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A metric thread of pitch 2mm and thread angle 60^0 is inspected for its pitch diameter using the 3-wire method. The indicated diameter of the wire will be nearly

Options :

1. 1.15 mm

2. 1.05 mm

3. 0.85 mm

4. 2.05 mm

Question Number : 76 Question Id : 3909005476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The rake angle in a twist drill is

Options :

1. Maximum at the dead center and zero at the periphery

2. Constant at every point of the cutting edge.

3. A function of the size of the chisel edge

4. Varies from minimum near the dead center to a maximum value at the periphery.

Question Number : 77 Question Id : 3909005477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The function of interpolator in a CNC machine controller is to

Options :

1. Control spindle speed

2. Control tool approach speed

3. Coordinate feed rates of axes

4. Perform miscellaneous (M) functions (tool change, coolant control etc.)

Question Number : 78 Question Id : 3909005478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

NC contouring is an example of

Options :

1. Continuous path positioning

2. Point-to-point positioning

3. Absolute positioning

4. Incremental positioning

Question Number : 79 Question Id : 3909005479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Slack represents the difference between

Options :

1. Earliest completion time and latest allowable time

2. Latest allowable time and earliest completion time

3. Earliest completion time and normal expected time

4. Latest allowable time and normal allowable time

Question Number : 80 Question Id : 3909005480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sale of cycles in a shop for four consecutive months are given as 70, 68, 82, 95. Exponentially smoothing average method with a smoothing factor of 0.4 is used for forecasting. The expected number of sales in the next month is

Options :

1. 59

2. 72

3. 86

4. 136

Question Number : 81 Question Id : 3909005481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The individual human variability in time studies to determine the production standard is taken care of by

Options :

1. Mean absolute deviation

2. Trend value

3. Moving average

4. Price fluctuation

Question Number : 82 Question Id : 3909005482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider a single server queuing model with Poisson arrivals (λ = 4/hour) and exponential service (μ = 4/hour). The number in the system is restricted to a maximum of 10. The probability that a person who comes and leaves without joining the queue

Options :

1. 1/11

2. 1/10

3. 1/9

4. 1/2

Question Number : 83 Question Id : 3909005483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Simplex method of solving Linear programming problem uses

Options :

1. All the points in the feasible region

2. Only the corner points of the feasible region

3. Intermediate points within the in feasible region

4. Only the interior points in the feasible region

Question Number : 84 Question Id : 3909005484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If there are 'm' sources and 'n' destinations in a transportation matrix, the total number of basic variables in basic feasible solution is

Options :

1. m+n

2. m+n+1

3. m+n-1

4. m-n

Question Number : 85 Question Id : 3909005485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Annual demand for a product costing Rs. 100 per item is 900. Ordering cost per order is Rs. 100 and inventory holding cost is Rs 2 per unit per year. The economical lot size is

Options :

1. 200

2. 300

3. 400

4. 500

Question Number : 86 Question Id : 3909005486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a Newtonian fluid

Options :

1. Shear stress is proportional to shear strain

2. Rate of shear stress is proportional to shear strain

3. Shear stress is proportional to rate of shear strain

4. Rate of shear stress is proportional to square root of shear strain

Question Number : 87 Question Id : 3909005487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the stability of a floating body, under the influence of gravity alone, which of the following is TRUE?

Options :

1. Metacenter should be below the centre of gravity

2. Metacenter should be above the centre of gravity

3. Metacenter and the centre of gravity must lie on the same horizontal line

4. Metacenter and the centre of gravity must lie on the same vertical line

Question Number : 88 Question Id : 3909005488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A streamline and equipotential line in a flow field

Options :

1. are parallel to each other

2. are perpendicular to each other

3. intersect at an acute angle

4. are identical

Question Number : 89 Question Id : 3909005489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Existence of velocity potential implies that

Options :

1. Fluid is rotational

2. Fluid is irrotational

3. Fluid is ideal

4. Fluid is compressible

Question Number : 90 Question Id : 3909005490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Navier – Stokes equation represents the conservation of

Options :

1. Energy

2. Mass

3. Pressure

4. Momentum

Question Number : 91 Question Id : 3909005491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The head loss for a linear incompressible flow through a horizontal circular pipe is h_1. Pipe length and the fluid remain the same, and, if the average velocity doubles and the pipe diameter reduces to half their previous value, the head loss is h_2. The ratio of h_2/ h_1 is

Options :

1. 1

2. 4

3. 8

4. 16

Question Number : 92 Question Id : 3909005492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The velocity profile in fully developed laminar flow in a pipe of diameter D is given by $u = u_0 (1-4r^2/D^2)$, where r is the radial distance from the centre. If the viscosity of the fluid is μ, the pressure drop across a length L of the pipe is

Options :

1. $(\mu u_0 L) / (D^2)$

2. $(4 \mu u_0 L) / (D^2)$

3. $(8 \mu u_0 L) / (D^2)$

4. $(16 \mu u_0 L) / (D^2)$

Question Number : 93 Question Id : 3909005493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A phenomenon is modeled using 'n' dimensional variables with 'k' primary dimensions. The number of non-dimensional variables is

Options :

1. (k)

2. (n)

3. $(n-k)$

4. $(n+k)$

Question Number : 94 Question Id : 3909005494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If 'x' is the distance measured from the leading edge of a flat plate, the laminar boundary layer thickness varies as

Options :

1. $1/x$

2. $x^{4/5}$

3. x^{2}

4. $x^{1/2}$

Question Number : 95 Question Id : 3909005495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the speed of a centrifugal pump is doubled, the power required to drive the pump will

Options :

1. Increase 8 times

2. Increase 4 times

3. Increase 2 times

4. Remain the same

Question Number : 96 Question Id : 3909005496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As the temperature of a gas increases, its thermal conductivity

Options :

1. Increases

2. Decreases

3. Remains constant

4. Increases upto a certain temperature and then decreases

Question Number : 97 Question Id : 3909005497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a current carrying wire of 20 mm diameter exposed to air (h=25 W/m^2K), maximum heat dissipation occurs, when the thickness of insulation (k=0.5 W/mK) is:

Options :

1. 20 mm

2. 10 mm

3. 2.5 mm

4. 0 mm

Question Number : 98 Question Id : 3909005498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Biot number signifies the ratio of

Options :

1. Convective resistance in the fluid to conductive resistance in the solid

2. Conductive resistance in the solid to convective resistance in the fluid

3. Conductive resistance in the fluid to convective resistance in the fluid

4. Convective resistance in the fluid to conductive resistance in the fluid

Question Number : 99 Question Id : 3909005499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Grashoff number signifies the ratio of

Options :

1. Inertia force to viscous force

2. Buoyancy force to viscous force

3. Buoyancy force to inertia force

4. Inertia force to surface tension force

Question Number : 100 Question Id : 3909005500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For laminar forced convection heat transfer over a flat plate, if the free stream velocity increases by a factor of 2, the average heat transfer coefficient

Options :

1. Remains the same

2. Decreases by a factor of $\sqrt{2}$

3. Increases by a factor of $\sqrt{2}$

4. Increases by a factor of 4

Question Number : 101 Question Id : 3909005501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the fluid flowing over a flat plate with Prandtl number greater than unity, the thermal boundary layer for laminar forced convection

Options :

1. Is thinner than the hydrodynamic boundary layer

2. Has thickness equal to zero

3. Is of same thickness as the hydrodynamic boundary layer

4. Is thicker than the hydrodynamic boundary layer

Question Number : 102 Question Id : 3909005502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is impulse turbine?

Options :

1. Francis turbine only

2. Kaplan turbine only

3. Pelton turbine only

4. Francis & Kaplan turbines

Question Number : 103 Question Id : 3909005503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The emissive power of a black body is P. If its absolute temperature is doubled, the emissive power becomes

Options :

1. 2P

2. 4P

3. 8P

4. 16P

Question Number : 104 Question Id : 3909005504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A solid sphere of radius $r_1 = 20$ mm is placed concentrically inside a hollow sphere of radius $r_2 = 30$ mm. The view factor F_{21} for radiation heat transfer is

Options :

1. 2/3

2. 4/9

3. 8/27

4. 9/4

Question Number : 105 Question Id : 3909005505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the same inlet and outlet temperatures of hot and cold fluids, the Log mean Temperature Difference (LMTD) is

Options :

1. Greater for parallel flow heat exchanger than for counter flow heat exchanger

2. Greater for counter flow heat exchanger than for parallel flow heat exchanger

3. Same for both parallel and counter flow heat exchangers

4. Dependent on the properties of the fluids

Question Number : 106 Question Id : 3909005506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A condenser of a refrigeration system rejects heat at a rate of 120 kW, while its compressor consumes a power of 30 kW. The coefficient of performance of the system would be:

Options :

1. 1/4

2. 4

3. 1/3

4. 3

Question Number : 107 Question Id : 3909005507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a mass of moist air contained in a closed metallic vessel is heated, then its

Options :

1. Relative humidity decreases

2. Relative humidity increases

3. Specific humidity decreases

4. Specific humidity increases

Question Number : 108 Question Id : 3909005508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For air with a relative humidity of 80%,

Options :

1. The dry bulb temperature is less than the wet bulb temperature

2. The dew point temperature is less than the wet bulb temperature

3. The dew point temperature and wet bulb temperature are equal

4. The dry bulb temperature and dew point temperature are equal

Question Number : 109 Question Id : 3909005509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For two cycles coupled in series, the top cycle has an efficiency of 30% and the bottom cycle has an efficiency of 20%. The overall combined cycle efficiency is

Options :

1. 50%

2. 44%

3. 38%

4. 55%

Question Number : 110 Question Id : 3909005510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. $mR/n\ (P_2 / P_1)$

2. $mR/n\ (P_1 / P_2)$

3. $mR/n\ (P_2 / P_1) - Q/T_1$

4. Zero

Question Number : 111 Question Id : 3909005511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A cyclic heat engine does 50 kJ of work per cycle. If the efficiency of the heat engine is 75%, the heat rejected per cycle is

Options :

1. 16. 67 kJ

2. 33.33 kJ

3. 37.50 kJ

4. 66.67 kJ

Question Number : 112 Question Id : 3909005512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A heat reservoir at 900 K is brought into contact with the ambient at 300 K for a short time. During this period, 9000 kJ of heat is lost by the heat reservoir to the surroundings. The total loss in availability due to this process is

Options :

1. 18,000 kJ

2. 9,000 kJ

3. 6,000 kJ

4. 12,000 kJ

Question Number : 113 Question Id : 3909005513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If V_N and α are the nozzle exit velocity and nozzle angle in an impulse turbine, the optimum blade velocity is given by

Options :

1. $V_N \cos 2\alpha$
2. $V_N \sin 2\alpha$
3. $(V_N \cos \alpha) / 2$
4. $(V_N)^2 / 2$

Question Number : 114 Question Id : 3909005514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Subsonic and supersonic diffusers have the following geometry

Options :

1. Divergent and convergent respectively
2. Both divergent
3. Both convergent
4. Convergent and divergent respectively

Question Number : 115 Question Id : 3909005515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An economizer in a steam generator performs the function of

Options :

1. Preheating the combustion air
2. Preheating the feed water
3. Preheating the input fuel
4. Raising the temperature of the steam

Question Number : 116 Question Id : 3909005516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A rigid container of volume 0.5 m^3 contains 1.0 kg of water at 120 ^0C (v_f = 0.00106 m^3/kg, v_g = 0.8908 m^3/kg). The state of water is

Options :

1. Compressed liquid

2. Saturated liquid

3. A mixture of saturated liquid and saturated vapour

4. Superheated vapour

Question Number : 117 Question Id : 3909005517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An air-standard Diesel cycle consists of the following reversible processes:

Options :

1. Two adiabatic processes and two isobaric processes

2. Two adiabatic processes, one isochoric process and one isobaric process

3. Two adiabatic processes and two isothermal processes

4. Two adiabatic processes, one isochoric process and one isothermal process

Question Number : 118 Question Id : 3909005518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Brake thermal efficiency of three types of reciprocating engines commonly used in automobiles are given in the increasing order as

Options :

1. 2 stroke SI engine, 4 stroke SI engine, 4 stroke CI engine

2. 2 stroke SI engine, 4 stroke CI engine, 4 stroke SI engine

3. 4 stroke SI engine, 2 stroke SI engine, 4 stroke CI engine

4. 4 stroke CI engine, 4 stroke SI engine, 2 stroke SI engine

Question Number : 119 Question Id : 3909005519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For determining the ignition quality of compression ignition engine fuels, the reference fuels used are

Options :

1. Iso-octane and n-heptane

2. Cetane and α-methylnapthalene

3. Hexadecane and n-heptane

4. Cetane and iso-octane

Question Number : 120 Question Id : 3909005520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The crank radius of a single cylinder IC engine is 60 mm and the diameter of the cylinder is 80 mm. The stroke length of the piston is

Options :

1. 12 cm

2. 6 cm

3. 8 cm

4. 48 cm