Telangana State Council 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 3rd Aug 2022 Shift 1
Subject Name :	Mechanical Engineering
Creation Date :	2022-08-03 15:05:17
Duration :	120
Total Marks :	120
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No

Mechanical Engineering

Group Number :	1
Group Id :	34058047
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	34058086
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	34058086

Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 3405805521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} 0 & -2 & 2 \\ -2 & 0 & 2 \\ -2 & 2 & 0 \end{bmatrix}$, then $A^5 =$

Options :

34058022081. ✔ $16\,A$

34058022082. ✖ $14\,A$

34058022083. ✖ $12\,A$

34058022084. ✖ $10\,A$

Question Number : 2 Question Id : 3405805522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the matrix $\begin{bmatrix} 0 & -1 & 2 \\ -1 & 0 & 2 \\ -1 & 2 & 0 \end{bmatrix}$ an eigen vector corresponding to the eigen value 1 is

Options :

34058022085. ✖ $(-1, 1, 1)$

34058022086. ✖ $(1, -1, 1)$

34058022087. ✖ $(1, 2, 1)$

34058022088. ✔ $(1, 1, 1)$

Question Number : 3 Question Id : 3405805523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The number of solutions of the system:

$x + y + z = 1, 2x + 3y + 4z = 5, x + 2y + 3z = 4$ is

Options :

34058022089. ✖ 1

34058022090. ✖ 2

34058022091. ✖ 3

34058022092. ✔ ∞

Question Number : 4 Question Id : 3405805524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two fair dice are thrown simultaneously. The probability that the sum of the faces is a prime is

Options :

34058022093. ✔

$\frac{5}{12}$

34058022094. ✖ $\frac{10}{12}$

34058022095. ✖ $\frac{3}{10}$

34058022096. ✖ $\frac{5}{14}$

Question Number : 5 Question Id : 3405805525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If X is a binomial variate with mean 12 and variance 6, then the parameters n and p are respectively

Options :

34058022097. ✖ $16, \frac{1}{4}$

34058022098. ✔ $16, \frac{3}{4}$

34058022099. ✖ $16, \frac{1}{3}$

34058022100. ✖ $16, \frac{1}{5}$

Question Number : 6 Question Id : 3405805526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\frac{1}{2\pi i}\int_{|z|=1}\frac{1-\cos z}{z^3}\,dz =$$

Options :

34058022101. ✔ $\frac{1}{2}$

34058022102. ✖ $\frac{1}{3}$

34058022103. ✖ $\frac{1}{4}$

34058022104. ✖ $\frac{1}{5}$

Question Number : 7 Question Id : 3405805527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $y_p = ae^x + be^x.x$ is a particular integral of $3y'' - 8y' - 3y = xe^x$, then $4a + b =$

Options :

34058022105. ✔ 0

34058022106. ✖ 1

34058022107. ✖ 3

34058022108. ✖ 4

Question Number : 8 Question Id : 3405805528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If $y = a + bx^2$ is a two parameter family of curves, then the differential equation representing this family is

Options :

34058022109. ✖ $xy'' = 5y'$

34058022110. ✖ $xy'' = 4y'$

34058022111. ✔ $xy'' - 2y' = 0$

34058022112. ✖ $xy'' = y'$

Question Number : 9 Question Id : 3405805529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The minimum value of $f(x, y) = 4x^2 + 9y^2 - 12xy + 16x - 24y + 36$ is

Options :

34058022113. ✖ 15

34058022114. ✔ 20

34058022115. ✖ 25

34058022116. ✖ 30

Question Number : 10 Question Id : 3405805530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\int_0^1\int_0^1\int_0^1 \left(x^2y+y^2z+z^2x\right)\,dzdydx\ =$$

Options :

34058022117. ✖ $\frac{1}{4}$

34058022118. ✖ $-\frac{1}{2}$

34058022119. ✔ $\frac{1}{2}$

34058022120. ✖ $-\frac{1}{4}$

Mechanical Engineering

Section Id :	34058087
Section Number :	2
Section type :	Online

Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	34058087
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 3405805531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A simple pendulum oscillates in the form of simple harmonic motion. The length of the pendulum is 10 m with a bob 10 kg. At mean position, the net force on the bob has speed of 10 m/s is

Options :

34058022121. ✖ 1000 N

34058022122. ✖ 100 N

34058022123. ✖ 50 N

34058022124. ✔ 0 N

Question Number : 12 Question Id : 3405805532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A small metal ball is tied to a light string and is suspended inside a lift. The ball is set for oscillations. The period of oscillations is maximum when the lift is

Options :

34058022125. ✖ Moving upward with constant speed

34058022126. ✖ Moving downward with constant speed

34058022127. ✔ Moving downward with acceleration

34058022128. ✖ Moving upward with acceleration

Question Number : 13 Question Id : 3405805533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A wheel of mass m and radius r is in accelerated rolling motion without slip under a steady axle torque T. If the coefficient of kinematic friction is μ, then friction force from the ground on the wheel is

Options :

34058022129. ✔ μmg

34058022130. ✖ zero

34058022131. ✖ T/r

34058022132. ✖ $T/r + \mu mg$

Question Number : 14 Question Id : 3405805534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

700 kg mass ball has been thrown vertically upwards with a velocity of 9.81 m/s. It is travelled to the top till reaches to zero velocity and return to the earth. What is the total time taken for return of the ball on to the earth

Options :

34058022133. ✖ 4 seconds

34058022134. ✔ 2 seconds

34058022135. ✖ 1 second

34058022136. ✖ 3 seconds

Question Number : 15 Question Id : 3405805535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The condition for the redundant frame having n number of members and j number of joints is

Options :

34058022137. ✖ $n = 2j - 3$

34058022138. ✔ $n > 2j - 3$

34058022139. ✖ $n < 2j - 3$

34058022140. ✖ $n = 3j - 2$

Question Number : 16 Question Id : 3405805536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A spring has the stiffness of 500 N/m is stretched initially 5 cm from un-deformed position. The energy required to stretch it by another 5 cm is

Options :

34058022141. ✔ 1.875 N-m

34058022142. ✖ 5.000 N-m

34058022143. ✖ 2.500 N-m

34058022144. ✖ 3.750 N-m

Question Number : 17 Question Id : 3405805537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A circular disc rolls without any slip on an inclined plane. The ratio of rotational kinetic energy to the total energy is

Options :

34058022145. ✔ 1/3

34058022146. ✖ 2/3

34058022147. ✖ 1/4

34058022148. ✖ 1/2

Question Number : 18 Question Id : 3405805538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In the collision of two elastic bodies, the initial velocities u_1, u_2 and the final velocities v_1, v_2 and coefficient of restitution e is related by

Options :

34058022149. ✔ $e = (v_2 - v_1)/(u_1 - u_2)$

34058022150. ✖ $e = (u_2 - u_1)/(v_2 - v_1)$

34058022151. ✖ $e = (v_2 - v_1)/(u_2 - u_1)$

34058022152. ✖ $e = (u_1 - u_2)/(v_2 - v_1)$

Question Number : 19 Question Id : 3405805539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A solid cylindrical bar is hanged vertically downward subjected to self weight. If ρ is the density of the material, l is the length of bar and E is the Young's modulus, then the elongation of the bar is given by

Options :

34058022153. ✖ $2\rho l^2/9.81 E$

34058022154. ✖ $4\rho l^2/9.81 E$

34058022155. ✖ $9.81\rho l^2/4 E$

34058022156. ✔ $9.81\rho l^2/2 E$

Question Number : 20 Question Id : 3405805540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The interrelation among the Young's modulus E, Modulus of rigidity C and Bulk modulus K is

Options :

34058022157. ✖ $K = 9EC/(3E + C)$

34058022158. ✖ $C = 9KE/(3K + E)$

34058022159. ✔ $E = 9KC/(3K + C)$

34058022160. ✖ $E = (3K + C)/9KC$

Question Number : 21 Question Id : 3405805541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A state of plane stress at a point is given by $\sigma_x = 1000$ MPa, $\sigma_y = 200$ MPa and $\tau_{xy} =$ 300 MPa. Then the maximum shear stress value will be

Options :

34058022161. ✔ 500 MPa

34058022162. ✖ 600 MPa

34058022163. ✖ 400 MPa

34058022164. ✖ 300 MPa

Question Number : 22 Question Id : 3405805542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A load varying uniformly on a cantilever beam as zero at the free end to 'w' per unit run at the fixed end, the maximum bending would be calculated for the specified length of the beam 'l' as

Options :

34058022165. ✖ $w\,l^2/24$

34058022166. ✖ $w\,l^2/12$

34058022167. ✔ $w\,l^2/6$

34058022168. ✖ $w\,l^2/3$

Question Number : 23 Question Id : 3405805543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Generally the strength beam depends basically on

Options :

34058022169. ✖ Cross sectional area of the beam

34058022170. ✖ Location of centre of gravity

34058022171. ✖ Weight of the beam

34058022172. ✔ Section modulus of the beam

Question Number : 24 Question Id : 3405805544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The ratio of maximum deflections of cantilever beam subjected to a point load at end and a uniformly distributed over the span of the beam equivalent to point load is given by

Options :

34058022173. ✔ 8/3

34058022174. ✖ 3/2

34058022175. ✖ 3/8

34058022176. ✖ 2/3

Question Number : 25 Question Id : 3405805545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A circular shaft has been designed to transmit a torque of 10 kN-m. If the torque in the shaft is reduced to 6 kN-m, then the maximum value of bending moment that can be transmitted by the shaft is

Options :

34058022177. ✖ 10 kN-m

34058022178. ✔ 8 kN-m

34058022179. ✖ 6 kN-m

34058022180. ✖ 4 kN-m

Question Number : 26 Question Id : 3405805546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A Watt mechanism is capable of generating

Options :

34058022181. ✖ Exact circular path

34058022182. ✖ Approximate circular path

34058022183. ✖ Exact straight line

34058022184. ✔ Approximate straight line

Question Number : 27 Question Id : 3405805547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Knocking tendency of spark ignition engine is being reduced by

Options :

34058022185. ✔ Retarding the spark advance

34058022186. ✖ Increasing the compression ratio

34058022187. ✖ Increasing the cooling of water temperature

34058022188. ✖ Increasing the inlet air temperature

Question Number : 28 Question Id : 3405805548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Klein's construction method is used generally to determine

Options :

34058022189. ✔ Linear acceleration of the piston

34058022190. ✖ Linear displacement of the piston

34058022191. ✖ Linear velocity of the piston

34058022192. ✖ Angular velocity of the crank

Question Number : 29 Question Id : 3405805549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A fixed gear having 100 teeth meshed with another gear having 25 teeth. The centre lines of the gears being joined by an arm so as to form an epicyclic gear train. The number of rotations made by the smaller gear for one revolution of the arm is

Options :

34058022193. ✖ 6

34058022194. ✔ 5

34058022195. ✖ 4

34058022196. ✖ 3

Question Number : 30 Question Id : 3405805550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a four bar linkages mechanism, S denotes the shortest link length, L is the longest link length, P and Q are the lengths of two other links. What is the condition to be satisfied to get at least one of the three moving links will rotate 360^0

Options :

34058022197. ✖ $S + L > P + Q$

34058022198. ✖ $S + P \leq L + Q$

34058022199. ✖ $S + P > L + Q$

34058022200. ✔ $S + L \leq P + Q$

Question Number : 31 Question Id : 3405805551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The flywheel is designed to store the energy for the engine speed varies from 210 rad/s to 190 rad/s.

It has been noticed that the kinetic energy change is 400 N-m during the cycle.

The inertia of the fly wheel required will be

Options :

34058022201. ✖ $0.40\ kg - m^2$

34058022202. ✖ $0.30\ kg - m^2$

34058022203. ✔ $0.10\ kg - m^2$

34058022204. ✖ $0.20\ kg - m^2$

Question Number : 32 Question Id : 3405805552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the reciprocating masses, If the ratio of the length of connecting rod to crank radius increases then

Options :

34058022205. ✖ Primary force increases

34058022206. ✖ Primary force decreases

34058022207. ✔ Secondary force decreases

34058022208. ✖ Secondary force increases

Question Number : 33 Question Id : 3405805553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When shaking force is transmitted through the spring, damping becomes detrimental when the ratio of its frequency to the natural frequency is greater than

Options :

34058022209. ✖ 0.707

34058022210. ✖ 0.5

34058022211. ✖ 1.0

34058022212. ✔ 1.414

Question Number : 34 Question Id : 3405805554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For a vibrating body under steady state forced vibrations, if ratio of forcing frequency to natural frequency is very high, then phase angle would tend to approach

Options :

34058022213. ✖ 270^0

34058022214. ✔ 180^0

34058022215. ✖ 90^0

34058022216. ✖ 0^0

Question Number : 35 Question Id : 3405805555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Large field guns which comes to initial position after firing in shortest possible time are

Options :

34058022217. ✖ Un-damped vibration

34058022218. ✖ Under damped vibration

34058022219. ✔ Critical damped vibration

34058022220. ✖ Over damped vibration

Question Number : 36 Question Id : 3405805556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The static deflection of a shaft under a flywheel is 4 mm. What is the critical speed in rad/s if the acceleration due to gravity is taken as 10 m/s^2

Options :

34058022221. ✔ 50

34058022222. ✖ 20

34058022223. ✖ 10

34058022224. ✖ 5

Question Number : 37 Question Id : 3405805557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The factor of safety for the member subjected to varying load can be considered as the ratio of

Options :

34058022225. ✖ Ultimate stress to design stress

34058022226. ✔ Endurance limit to design stress

34058022227. ✖ Yield stress to design stress

34058022228. ✖ Ultimate stress to endurance limit

Question Number : 38 Question Id : 3405805558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

According to maximum strain energy theory, the failure of the material due to complex stresses occur when total stored energy reached per unit volume at a point

Options :

34058022229. ✖ Reaches the value of yield point

34058022230. ✖ Reaches the value of strain energy stored per unit volume at yield point

34058022231. ✔ Reaches the value of strain energy stored per unit volume at elastic limit

34058022232. ✖ Exceeds the total strain energy caused by uni-axial stress at elastic point

Question Number : 39 Question Id : 3405805559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the tensile stress in the bolt is double the shear stress in the nut, then the nut length required would be equal to

Options :

34058022233. ✔ 0.5 times of the diameter of the bolt

34058022234. ✖ 1.25 times of the diameter of the bolt

34058022235. ✖ Diameter of the bolt

34058022236. ✖ 1.50 times of the diameter of the bolt

Question Number : 40 Question Id : 3405805560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a double riveted butt joint, the resistance to crushing in front of two rivets interms of diameter of rivet d, thickness of plate t and crushing stress f_c is given by

Options :

34058022237. ✖ $d \times t \times f_c$

34058022238. ✔ $2 \times d \times t \times f_c$

34058022239. ✖ $1.5 \times d \times t \times f_c$

34058022240. ✖ $4 \times d \times t \times f_c$

Question Number : 41 Question Id : 3405805561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When a shaft is subjected to combined torsional and bending moment, then the shaft is designed based on the following theory (ductile materials)

Options :

34058022241. ✖ Maximum principal stress theory

34058022242. ✖ Maximum principal strain theory

34058022243. ✔ Maximum shear stress theory

34058022244. ✖ Maximum shear strain energy theory

Question Number : 42 Question Id : 3405805562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two spur gears are mate, for which E_p is the Young's modulus of the pinion and E_g is the Young's modulus of the gear, then the limiting wear load of spur gear is proportional to

Options :

34058022245. ✖ $1/(E_p + E_g)$

34058022246. ✖ $1 + (E_p/E_g)$

34058022247. ✖ $1 + (E_g/E_p)$

34058022248. ✔ $((E_p + E_g)/(E_pE_g))$

Question Number : 43 Question Id : 3405805563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the ball bearing, if the dynamic capacity is increased to 2 times its earlier value without changing its equivalent load, then the life of the bearing increases to____ times its earlier life.

Options :

34058022249. ✖ 2.0

34058022250. ✖ 4.0

34058022251. ✔ 8.0

34058022252. ✖ 16.0

Question Number : 44 Question Id : 3405805564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the spring having a stiffness value of K is divided into four number of springs and attached all four parallel, then the final equivalent stiffness of the spring is

Options :

34058022253. ✖ K/16

34058022254. ✖ K/4

34058022255. ✖ K

34058022256. ✔ 16 K

Question Number : 45 Question Id : 3405805565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The height of the depression in tube due capillary fall, (if surface tension is 'σ', acceleration due to gravity is 'g' , diameter of the tube is 'd', density is 'ρ' and the depression angle is 'θ') is given by _____

Options :

34058022257. ✔ $(4\sigma \cos \Theta)/\rho\ g\ d$

34058022258. ✖ $(3\sigma \cos \Theta)/\rho\ g\ d$

34058022259. ✖ $(2\sigma \cos \Theta)/\rho\ g\ d$

34058022260. ✖ $(\sigma \cos \Theta)/\rho\ g\ d$

Question Number : 46 Question Id : 3405805566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the submerged body, if the weight of body is equal to buoyancy force and the centre of buoyancy above the centre of gravity, then the body is said to be

Options :

34058022261. ✖ Stable equilibrium

34058022262. ✖ Neutral equilibrium

34058022263. ✔ Unstable equilibrium

34058022264. ✖ Floating equilibrium

Question Number : 47 Question Id : 3405805567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The rate of change of velocity due to the change of position of the fluid particles in a fluid flow is being called as

Options :

34058022265. ✖ Local acceleration

34058022266. ✔ Convective acceleration

34058022267. ✖ Total acceleration

34058022268. ✖ Dynamic acceleration

Question Number : 48 Question Id : 3405805568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is not the assumption for the application of Bernoulli's equation

Options :

34058022269. ✖ The flow is steady

34058022270. ✔ The flow is rotational

34058022271. ✖ The fluid is ideal

34058022272. ✖ The flow is incompressible

Question Number : 49 Question Id : 3405805569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An incompressible fluid flows over a flat plate with zero pressure gradient. The boundary layer thickness is 1 mm at a location where the Reynolds number is 1000. If the velocity of the fluid alone is increased by a factor 4, then the boundary layer thickness at the same location is

Options :

34058022273. ✖ 4 mm

34058022274. ✖ 2 mm

34058022275. ✖ 1 mm

34058022276. ✔ 0.5 mm

Question Number : 50 Question Id : 3405805570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A design has been made to manufacture a fountain to raise the water to height of 20 m from an orifice of 5 mm. What is speed of water and the pressure to be applied Take g = 10 m/s^2

Options :

34058022277. ✖ 5 m/s and 50 kPa

34058022278. ✖ 5 m/s and 250 kPa

34058022279. ✖ 10 m/s and 100 kPa

34058022280. ✔ 20 m/s and 200 kPa

Question Number : 51 Question Id : 3405805571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A differential manometer is connected to an orifice meter to measure the flow rate. What is the percentage of error associated in discharge measurement, if 2 % error associated with the measurement of manometer reading

Options :

34058022281. ✖ 4 %

34058022282. ✔ 1 %

34058022283. ✖ 2 %

34058022284. ✖ 0.5 %

Question Number : 52 Question Id : 3405805572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Three pipes of different diameters and different lengths are connected in series. The Dupuit's equation for the estimation of diameter of equivalent pipe, if the length of the equivalent pipe is equal to sum of lengths of individual pipes for the same discharge and same head is

Options :

34058022285. ✔ $L/d^5 = L_1/d_1^5 + L_2/d_2^5 + L_3/d_3^5$

34058022286. ✖ $L/d^4 = L_1/d_1^4 + L_2/d_2^4 + L_3/d_3^4$

34058022287. ✖ $L/d^3 = L_1/d_1^3 + L_2/d_2^3 + L_3/d_3^3$

34058022288. ✖ $L/d^2 = L_1/d_1^2 + L_2/d_2^2 + L_3/d_3^2$

Question Number : 53 Question Id : 3405805573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The rate of heat flow through a hallow sphere of inner radius 0.25 m and outer radius 0.35 m, whose thermal conductivity is 5 W/m K, maintained at temperatures of 400^0C and 300^0C respectively equal to

Options :

34058022289. ✖ 2425 W

34058022290. ✔ 5495 W

34058022291. ✖ 2747.5 W

34058022292. ✖ 4850 W

Question Number : 54 Question Id : 3405805574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The thermal contact resistance in a composite (multi-layer) wall is generally due to

Options :

34058022293. ✖ Zero temperature gradient at the interface

34058022294. ✖ Perfect contact between the adjacent layers

34058022295. ✔ Reduced area and presence of air voids at the interface

34058022296. ✖ Zero pressure gradient at the interface

Question Number : 55 Question Id : 3405805575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The maximum temperature raise in the solid sphere with internal heat generation (Q_g) is given by

Options :

34058022297. ✔ $T_w + Q_g R^2/6k$

34058022298. ✖ $T_w - Q_gR^2/6k$

34058022299. ✖ $T_w + Q_gR/6k$

34058022300. ✖ $T_w - Q_gR/6k$

Question Number : 56 Question Id : 3405805576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In turbulent flow, the loss of pressure head is approximately (where v is the velocity of flow)

Options :

34058022301. ✖ Directly proportional to v

34058022302. ✖ Inversely proportional to v

34058022303. ✔ Directly proportional to v^2

34058022304. ✖ Inversely proportional to v^2

Question Number : 57 Question Id : 3405805577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the temperature of solid surface changes from 27^0C to 627^0C, then its emissive radiation heat transfer will increase _____ times than the original heat transfer

Options :

34058022305. ✖ 3

34058022306. ✖ 9

34058022307. ✖ 27

34058022308. ✔ 81

Question Number : 58 Question Id : 3405805578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A body is said to be transparent, when the following radiation conditions are being satisfied (α = absorptivity, ρ = reflectivity and τ = transmissibility)

Options :

34058022309. ✖ $\alpha = 1, \rho = 0$ and $\tau = 0$

34058022310. ✖ $\alpha = 0, \rho = 1$ and $\tau = 0$

34058022311. ✖ $\alpha = 0, \rho = 0$ and $\tau = 1$

34058022312. ✔ $\alpha = 0, \rho + \tau = 1$

Question Number : 59 Question Id : 3405805579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the flow over flat plate the hydrodynamic boundary layer thickness is given as 1.5 mm. The dynamic viscosity is 25 x 10^{-6} Pa-s, specific heat 2.0 kJ/kg K and thermal conductivity is 0.005 W/m K. What will be the thermal boundary layer thickness

Options :

34058022313. ✔ 1.50 mm

34058022314. ✖ 3.00 mm

34058022315. ✖ 0.75 mm

34058022316. ✖ 4.50 mm

Question Number : 60 Question Id : 3405805580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a regenerative type heat exchanger generally the heat transfer takes place

Options :

34058022317. ✖ Direct of mixing of hot fluid and cold fluid

34058022318. ✔ Flow of hot and cold fluids alternatively over a surface

34058022319. ✖ Generation of heat again and again

34058022320. ✖ Between cold and hot fluids without direct contact

Question Number : 61 Question Id : 3405805581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The condition for the consideration of lumped mass system during transient heat conduction is given by (where Bi = Biot number and Fo = Fourier number)

Options :

34058022321. ✖ $Fo < 0.01$

34058022322. ✖ $Fo > 0.01$

34058022323. ✔ $Bi < 0.01$

34058022324. ✖ $Bi > 0.01$

Question Number : 62 Question Id : 3405805582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

During the polytropic process the entropy change can be calculated by using

Options :

34058022325. ✔ $(n-\gamma)/(1-\gamma)\ R \ln (V_2/V_1)$

34058022326. ✖ $(n-\gamma)/(n-1)\ R \ln (P_2/P_1)$

34058022327. ✖ $(n-\gamma)/(\gamma-1)\ R \ln (T_2/T_1)$

34058022328. ✖ $(n-\gamma)/(\gamma-1)(n-1)\ R \ln (P_2/P_1)$

Question Number : 63 Question Id : 3405805583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The condition for the estimation of constants of Vander Waal's equation of real gases are

Options :

34058022329. ✖ $(\partial P/\partial T)_{V=Vc} = 0\ ;\ (\partial^2 P/\partial T^2)_{V=Vc} = 0$

34058022330. ✖ $(\partial V/\partial T)_{p=Pc} = 0\ ;\ (\partial^2 V/\partial T^2)_{P=Pc} = 0$

34058022331. ✔ $(\partial P/\partial V)_{T=Tc} = 0\ ;\ (\partial^2 P/\partial V^2)_{T=Tc} = 0$

34058022332. ✖ $(\partial V/\partial P)_{T=Tc} = 0\ ;\ (\partial^2 V/\partial P^2)_{T=Tc} = 0$

Question Number : 64 Question Id : 3405805584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The absolute zero pressure will be

Options :

34058022333. ✔ when the molecular momentum of the system becomes zero

34058022334. ✖ at sea level

34058022335. ✖ at the temperature of -273 K

34058022336. ✖ at the centre of the earth

Question Number : 65 Question Id : 3405805585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a piston cylinder arrangement, the cylinder contains air at 320 kPa and 300 K. A constant pressure process gives out 32 kJ of work, then the change in volume is calculated as

Options :

34058022337. ✔ $0.1\ m^3$

34058022338. ✖ $0.32\ m^3$

34058022339. ✖ $0.64\ m^3$

34058022340. ✖ $0.96\ m^3$

Question Number : 66 Question Id : 3405805586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The Claussius Claperyon equation is generally used to determine the change in enthalpy during

Options :

34058022341. ✖ Polytropic process

34058022342. ✖ Adiabatic process

34058022343. ✔ Phase change from liquid to vapour

34058022344. ✖ Reversible process

Question Number : 67 Question Id : 3405805587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The triple point for the pure substance on p-v diagram is being represented by

Options :

34058022345. ✔ a line

34058022346. ✖ a point

34058022347. ✖ a dome

34058022348. ✖ a curve

Question Number : 68 Question Id : 3405805588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The compressibility factor for the given ideal gas is defined with standard notations as

Options :

34058022349. ✔ PV/RT

34058022350. ✖ RT/PV

34058022351. ✖ PV^n/RT

34058022352. ✖ RT/PV^n

Question Number : 69 Question Id : 3405805589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two thermodynamic cycles are connected in series having the topping cycle efficiency of 40 % and bottoming cycle efficiency is 25%. Then what would be the thermal efficiency of the combined cycle

Options :

34058022353. ✖ 65 %

34058022354. ✔ 55 %

34058022355. ✖ 15 %

34058022356. ✖ 75 %

Question Number : 70 Question Id : 3405805590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following rotary compressor is NOT a positive displacement compressor

Options :

34058022357. ✖ Roots blower

34058022358. ✖ Screw compressor

34058022359. ✔ Axial flow compressor

34058022360. ✖ Sliding vane compressor

Question Number : 71 Question Id : 3405805591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Generally during chocking of the rotary compressor, the

Options :

34058022361. ✔ Mass flow rate reaches to maximum value

34058022362. ✖ Mass flow rate reaches to minimum value

34058022363. ✖ The pressure ratio reaches to a maximum value

34058022364. ✖ The pressure ratio reaches to a minimum value

Question Number : 72 Question Id : 3405805592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The heat rate of Rankine power cycle is defined as

Options :

34058022365. ✔ The rate of heat input required to produce unit power

34058022366. ✖ The rate of heat required for generating 1 kg of steam

34058022367. ✖ The rate of heat required to condense 1 kg of steam

34058022368. ✖ The rate of heat required to start the steam power plant

Question Number : 73 Question Id : 3405805593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The compression ratio of a Diesel cycle is 16 and the cut off takes place at 6% of the stroke. Then the cut off ratio is

Options :

34058022369. ✖ 1.06

34058022370. ✖ 1.14

34058022371. ✖ 1.20

34058022372. ✔ 1.90

Question Number : 74 Question Id : 3405805594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The compression ratio used for S.I. Engine is limited because

Options :

34058022373. ✖ of its higher thermal efficiency

34058022374. ✖ To minimize the heat requirement

34058022375. ✔ To avoid knocking

34058022376. ✖ Difficult to compress the air fuel mixture

Question Number : 75 Question Id : 3405805595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In an ideal vapour compression refrigeration system, the refrigerant is in form of dry saturated vapour before entering into

Options :

34058022377. ✖ Throttle valve

34058022378. ✖ Evaporator

34058022379. ✔ Compressor

34058022380. ✖ Condenser

Question Number : 76 Question Id : 3405805596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Inter cooling is provided in gas turbine cycle between high pressure compressor and low pressure compressor results in (in general)

Options :

34058022381. ✔ Increase in net work output and decrease in thermal efficiency

34058022382. ✖ Decrease in net work output and increase in thermal efficiency

34058022383. ✖ Decrease both thermal efficiency and net work output

34058022384. ✖ Increase both thermal efficiency and net work output

Question Number : 77 Question Id : 3405805597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Stalling of blades in axial flow compressor is the phenomena of

Options :

34058022385. ✖ Air stream blocking the passage

34058022386. ✖ Motion of stream at sonic velocity

34058022387. ✔ Air stream not able to follow the blade contour

34058022388. ✖ Periodic and reversed flow of air

Question Number : 78 Question Id : 3405805598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If moist air is available at 30^0C DBT and saturated, then its dew point temperature is

Options :

34058022389. ✖ 42^0C

34058022390. ✔ 30^0C

34058022391. ✖ 21^0C

34058022392. ✖ 15^0C

Question Number : 79 Question Id : 3405805599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In impulse turbines, the compounding is needed to control the speed of the shaft.

The velocity compounding involves

Options :

34058022393. ✖ Expansion of steam in number of stages with uniform pressure reduction

34058022394. ✔ Recovery of kinetic energy of steam leaving the blades in subsequent rows of blades

34058022395. ✖ Velocity and pressure equalization at different stages

34058022396. ✖ Increased velocity after each stage due to expansion

Question Number : 80 Question Id : 3405805600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A 5 cm diameter water jet is directed against a flat plate which is held normal to the axis of the stream. If the velocity of jet is 35 m/s, the force exerted by the jet is

Options :

34058022397. ✖ 240 N

34058022398. ✖ 1202 N

34058022399. ✖ 2045 N

34058022400. ✔ 2405 N

Question Number : 81 Question Id : 3405805601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The critical pressure ratios for superheated steam, dry steam and wet steam respectively are

Options :

34058022401. ✖ 0.582, 0.577, 0.546

34058022402. ✔ 0.546, 0.577, 0.582

34058022403. ✖ 0.577, 0.582, 0.546

34058022404. ✖ 0.582, 0.546, 0.577

Question Number : 82 Question Id : 3405805602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The blade efficiency of reaction turbine is maximum when the blade speed (u) is

Options :

34058022405. ✔ $V \cos \alpha$

34058022406. ✖ $(V \cos \alpha)/2$

34058022407. ✖ $V \cos^2 \alpha$

34058022408. ✖ $(V \cos^2 \alpha)/2$

Question Number : 83 Question Id : 3405805603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A small percentage of boron is added to steel for

Options :

34058022409. ✖ Increase of wear resistance

34058022410. ✔ Increase of hardenability

34058022411. ✖ Increase of machinability

34058022412. ✖ Increase of endurance strength

Question Number : 84 Question Id : 3405805604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Quenching is not necessary when hardening is done by

Options :

34058022413. ✖ Case carburizing

34058022414. ✖ Flame hardening

34058022415. ✖ Induction hardening

34058022416. ✔ Normalising

Question Number : 85 Question Id : 3405805605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Delta iron occurs generally at a temperature of

Options :

34058022417. ✖ Room temperature

34058022418. ✖ Above melting point

34058022419. ✔ Between 1400^0C and 1539^0C

34058022420. ✖ Between 910^0C and 1400^0C

Question Number : 86 Question Id : 3405805606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In which of the following phases of steel cementite is in lamellar form

Options :

34058022421. ✔ Ferrite

34058022422. ✖ Bainite

34058022423. ✖ Martensite

34058022424. ✖ Pearlite

Question Number : 87 Question Id : 3405805607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The number of atoms per unit area of a crystal plane is known as

Options :

34058022425. ✖ Atomic packing factor

34058022426. ✖ Interplanar spacing

34058022427. ✔ Planar density

34058022428. ✖ Coordination number

Question Number : 88 Question Id : 3405805608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The mould cracks after drying process, it indicates

Options :

34058022429. ✖ Excess of clay

34058022430. ✖ Lack of sufficient clay

34058022431. ✖ Coarse irregular grains

34058022432. ✔ Lack of chemical resistance

Question Number : 89 Question Id : 3405805609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Metal is poured in mould opening of 2×10^6 mm^3 volume through space of 175 mm height and area at the bottom of 90 mm^2. If area of horizontal runner is also 90 mm^2, then the velocity of the metal and time to fill the cavity are

Options :

34058022433. ✔ 1.87 m/s and 11.88 s

34058022434. ✖ 2.87 m/s and 7.74 s

34058022435. ✖ 2.87 m/s and 11.88 s

34058022436. ✖ 1.87 m/s and 7.74 s

Question Number : 90 Question Id : 3405805610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following material requires the largest shrinkage allowance while making the pattern for casting

Options :

34058022437. ✖ Aluminum

34058022438. ✖ Plain Carbon steel

34058022439. ✔ Brass

34058022440. ✖ Cast Iron

Question Number : 91 Question Id : 3405805611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two streams of liquid metal which are not hot enough to fuse properly result into a casting defect known as

Options :

34058022441. ✖ Sand wash

34058022442. ✖ Swell

34058022443. ✔ Cold shut

34058022444. ✖ Swab

Question Number : 92 Question Id : 3405805612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

During press working, the spring back effect indicates

Options :

34058022445. ✖ Regaining the original shape of the sheet metal

34058022446. ✔ Elastic recovery of the sheet metal after removal of the load

34058022447. ✖ Release of stored energy in the sheet metal

34058022448. ✖ Partial recovery of the sheet metal

Question Number : 93 Question Id : 3405805613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The process in which oil is permeated into the pores of a powder metallurgy product is known as

Options :

34058022449. ✔ Impregnation

34058022450. ✖ Mixing

34058022451. ✖ Sintering

34058022452. ✖ Infiltration

Question Number : 94 Question Id : 3405805614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If the surface crack causing fracture in a brittle material is made twice as deep, the fracture strength will

Options :

34058022453. ✔ Decrease by a factor of $\sqrt{2}$

34058022454. ✖ Decrease by a factor of 2

34058022455. ✖ Decrease by a factor of 2^2

34058022456. ✖ Decrease by a factor of 2^3

Question Number : 95 Question Id : 3405805615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Two steel sheets of 2 mm thickness are to be spot welded. If welding current of 5000 A is supplied for 0.2 s, what is the volume of weld nugget? Assume 250 kJ heat dissipated to the base metal, 20 J heat is needed to melt 1mm^3 volume of steel and interfacial contact resistance between sheets is 2 x 10^{-4} ohm

Options :

34058022457. ✖ 75 mm^3

34058022458. ✔ 37.5 mm^3

34058022459. ✖ 150 mm^3

34058022460. ✖ 112.5 mm^3

Question Number : 96 Question Id : 3405805616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The bonding of a rubber sheet with a metal sheet is being done by

Options :

34058022461. ✖ Arc Welding

34058022462. ✖ High frequency die electric heating

34058022463. ✖ Induction welding

34058022464. ✔ Adhesive bonding

Question Number : 97 Question Id : 3405805617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The major important difficulty associated with the welding of Aluminium is

Options :

34058022465. ✖ High thermal conductivity

34058022466. ✔ High tendency of oxidation

34058022467. ✖ Low melting point temperature

34058022468. ✖ Low density

Question Number : 98 Question Id : 3405805618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

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

Options :

34058022469. ✖ Mn, Cr, V

34058022470. ✖ Cr, Ni, C

34058022471. ✔ W, Cr, V

34058022472. ✖ Mn, Ni, V

Question Number : 99 Question Id : 3405805619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In drilling operation, average cutting speed with H S S drills is maximum in

Options :

34058022473. ✔ Aluminum

34058022474. ✖ Cast Iron

34058022475. ✖ Mild steel

34058022476. ✖ Ferrous alloy

Question Number : 100 Question Id : 3405805620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Automobile gears are generally manufactured by

Options :

34058022477. ✔ Gear Hobbing

34058022478. ✖ Stamping

34058022479. ✖ Milling

34058022480. ✖ Die casting

Question Number : 101 Question Id : 3405805621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A good machinability of metal is possible when it has

Options :

34058022481. ✔ Lower chip tool contact area and larger shear angle

34058022482. ✖ Higher chip tool contact area and smaller shear angle.

34058022483. ✖ Lower chip tool contact area and smaller shear angle.

34058022484. ✖ Higher chip tool contact area and larger shear angle

Question Number : 102 Question Id : 3405805622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A basic shaft is one whose

Options :

34058022485. ✖ Lower deviation is zero

34058022486. ✔ Upper deviation is zero

34058022487. ✖ Lower and upper deviations are zero

34058022488. ✖ Lower deviation is maximum

Question Number : 103 Question Id : 3405805623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A diamond locating pin is used in jigs and fixtures because

Options :

34058022489. ✔ It helps in assembly with tolerance on centre distance

34058022490. ✖ It occupies very little space

34058022491. ✖ It has a very long life

34058022492. ✖ Diamond is very hard and wear resistant

Question Number : 104 Question Id : 3405805624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

A progressive limit gauge has

Options :

34058022493. ✔ GO and NO GO members on same side of the gauge

34058022494. ✖ GO and NO GO members separately exist

34058022495. ✖ GO member at one end and NO GO member on the other end

34058022496. ✖ GO and NO GO members are right angle to each other

Question Number : 105 Question Id : 3405805625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The clinometers is an instrument used to measure the

Options :

34058022497. ✖ Temperature

34058022498. ✖ Flatness

34058022499. ✖ Roundness

34058022500. ✔ Angles

Question Number : 106 Question Id : 3405805626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following errors are inevitable in the measuring system and it is vainful exercise to avoid them

Options :

34058022501. ✔ Systematic errors

34058022502. ✖ Random errors

34058022503. ✖ Calibration errors

34058022504. ✖ Environmental errors

Question Number : 107 Question Id : 3405805627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The flexible manufacturing systems allows

Options :

34058022505. ✖ Automated design

34058022506. ✖ Factory management

34058022507. ✔ Quick and inexpensive product changes

34058022508. ✖ Tool design and tool production

Question Number : 108 Question Id : 3405805628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following forecasting method take a fraction of forecast error into account for the next period of forecast

Options :

34058022509. ✖ Simple average method

34058022510. ✖ Moving average method

34058022511. ✔ Exponential smoothening method

34058022512. ✖ Delphi technique

Question Number : 109 Question Id : 3405805629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The demand and forecast for February are 12000 and 11000 respectively. Using exponential smoothening method with smoothening coefficient as 0.25, forecast for the month of March is

Options :

34058022513. ✔ 11250

34058022514. ✖ 12250

34058022515. ✖ 10750

34058022516. ✖ 11750

Question Number : 110 Question Id : 3405805630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which one of the following is NOT a decision taken during the aggregate production planning stage

Options :

34058022517. ✖ Scheduling of machines

34058022518. ✖ Amount of labour to be committed

34058022519. ✖ Rate at which production should happen

34058022520. ✔ Inventory to be carried forward

Question Number : 111 Question Id : 3405805631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The objective of the time study is to determine the time required to complete the job by

Options :

34058022521. ✖ Skilled worker

34058022522. ✔ Average worker

34058022523. ✖ New entrant

34058022524. ✖ Slow worker

Question Number : 112 Question Id : 3405805632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Free trade zone means

Options :

34058022525. ✔ Two countries without tariff

34058022526. ✖ Two manufacturers without tax liability

34058022527. ✖ Manufacturer and consumer put together

34058022528. ✖ Manufacturer and wholesaler put together

Question Number : 113 Question Id : 3405805633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In perpetual inventory control, the material is checked as it reaches its___ value

Options :

34058022529. ✖ Maximum

34058022530. ✖ Average

34058022531. ✖ Alarming

34058022532. ✔ Minimum

Question Number : 114 Question Id : 3405805634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

When the annual demand of the product is 12000 units, the economic order quantity is 1000 units. If the annual demand is 24000 units, the most appropriate economic order quantity will be

Options :

34058022533. ✖ 1000 units

34058022534. ✖ 2000 units

34058022535. ✔ 1414 units

34058022536. ✖ 707 units

Question Number : 115 Question Id : 3405805635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Gnatt chart gives the information related

Options :

34058022537. ✖

Sales

34058022538. ✔ Scheduling and routing

34058022539. ✖ Production schedule

34058022540. ✖ Machine utilization

Question Number : 116 Question Id : 3405805636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The optimality of a transportation problem is determined by the application of

Options :

34058022541. ✔ Vogel's approximation method

34058022542. ✖ North west corner method

34058022543. ✖ Modi method

34058022544. ✖ Least cost method

Question Number : 117 Question Id : 3405805637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In a M/M/1 queue model, the mean rate of arrival rate is λ, the length of the queue is Q.

The expected waiting time in the queue is

Options :

34058022545. ✖ Q

34058022546. ✔ Q/λ

34058022547. ✖ λ/Q

34058022548. ✖ $1/\lambda Q$

Question Number : 118 Question Id : 3405805638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The total number of decision variables in the objective function of an assignment problem of size N jobs and N machines is

Options :

34058022549. ✔ N^2

34058022550. ✖ $2N-1$

34058022551. ✖ $2N$

34058022552. ✖ N

Question Number : 119 Question Id : 3405805639 Question Type : MCQ Option Shuffling : Yes

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

Correct Marks : 1 Wrong Marks : 0

In A - B - C control technique, the maximum attention is given to the items which

Options :

34058022553. ✖ Consume more time to get supply

34058022554. ✔ Are expensive

34058022555. ✖ Are surplus

34058022556. ✖ Are perishable in nature

Question Number : 120 Question Id : 3405805640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

In case of solution of two variable linear programming problems by a graphical method one constraint line comes parallel to the objective function line. The problem will have

Options :

34058022557. ✖ Infeasible solution

34058022558. ✖ Unbound solution

34058022559. ✖ Degenerate solution

34058022560. ✔ Infinite number of solutions