Question Paper Preview

Question Paper Name: Mechanical Engineering 11th May 2017 Shift 2
Subject Name: Mechanical Engineering
Duration: 120

Mechanical Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 871112721 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$. Then the product of the eigen values of A is

Options :

1. Trace of A
2. determinant of A
3. $ac + bd$
4. $ab + cd$

Question Number : 2 Question Id : 871112722 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If f is an even function on [–a, a] then $\int_{-a}^{a} f(t)\,dt =$

Options :

1. 0
2. $2\int_{0}^{a} f(t)\,dt$
3. $f(a) - f(-a)$
4. $2\,f(a)$

Question Number : 3 Question Id : 871112723 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A necessary and sufficient condition for the line integral $\int_C \bar{F}.dR = 0$ for every closed C is

Options :

1. $\text{curl } \bar{F} = 0$
2. $\text{div } \bar{F} = 0$
3. $\text{curl } \bar{F} \neq 0$
4. $\text{div } \bar{F} \neq 0$

Question Number : 4 Question Id : 871112724 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The orthogonal trajectory of the family of curves $x^2 + y^2 = c^2$ is

Options :

1. $x + y = c$
2. $xy = c$
3. $x^2 + y^2 = x + y$
4. $y = cx$

Question Number : 5 Question Id : 871112725 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of $t^4 e^{-at}$ is

Options :

1. $\frac{4!}{(s+a)^4}$
2. $\frac{4!}{(s+a)^5}$
3. $\frac{4!}{(s-a)^4}$
4. $\frac{5!}{(s-a)^5}$

Question Number : 6 Question Id : 871112726 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of the integral $\int_C \frac{z^2 - z + 1}{z - 1} dz$ where c is the circle $|z| = \frac{1}{2}$ is

Options :

1. $\frac{-3}{2}$

2. 1

3. 0

4. $2\pi i$

Question Number : 7 Question Id : 871112727 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The probability of obtaining a total of 9 in a single throw of two dice is

Options :

1. $\frac{1}{36}$

2. $\frac{1}{9}$

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

4. $\frac{2}{3}$

Question Number : 8 Question Id : 871112728 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The probability that a number chosen at random between 100 and 999 (both inclusive) will not contain the digit 7 is

Options :

1. $\frac{16}{25}$

2. $\left(\frac{9}{10}\right)^3$

3. $\frac{27}{75}$

4. $\frac{18}{25}$

Question Number : 9 Question Id : 871112729 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One of the positive real roots of the equation $x^3 - 4x - 9 = 0$ lies between

Options :

1. 0 and 1

2. 1 and 2

3. 2 and 3

4. 3 and 4

Question Number : 10 Question Id : 871112730 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^1 \frac{dx}{1+x}$ is

Options :

1. *log 2*

2. *ln 2*

3. *log 5*

4. *ln 5*

Question Number : 11 Question Id : 871112731 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two forces are acting at an angle of 120° the bigger force is 40 N, and the resultant force is perpendicular to the smaller one. The smaller force is

Options :

1. 20 N

2. 30 N

3. 40 N

4. 35 N

Question Number : 12 Question Id : 871112732 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A couple produces

Options :

1. Translatory motion

2. Rotational motion

3. Translatory and rotational motion

4. Linear motion

Question Number : 13 Question Id : 871112733 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The moment of inertia of a solid cylinder of mass m, radius r and length *l* about the longitudinal axis is

Options :

1. $mr^2/2$

2. $mr^2/4$

3. $mr^2/6$

4. $mr^2/8$

Question Number : 14 Question Id : 871112734 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The friction experienced by a body, when in motion, is known as

Options :

1. Rolling friction

2. Limiting friction

3. Dynamic friction

4. Static friction

Question Number : 15 Question Id : 871112735 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The wheel of a moving car possesses

Options :

1. potential energy only

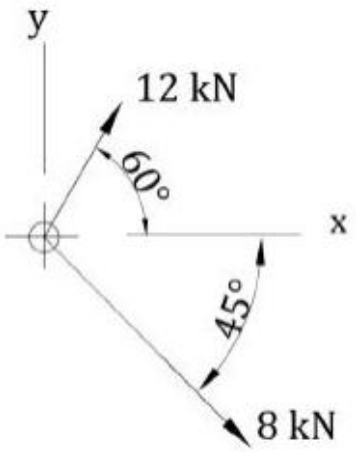
2. kinetic energy of translation only

3. kinetic energy of rotation only

4. kinetic energy of both translation and rotation

Question Number : 16 Question Id : 871112736 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle is subjected to two forces 8 kN and 12 kN as shown in the figure below. The magnitude of the resultant force acting on the particle is approximately _____.



Options :

1. zero
2. 8 kN
3. 13 kN
4. 18 kN

Question Number : 17 Question Id : 871112737 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In projectile motion, to achieve maximum range, the projectile must be thrown at

Options :

1. 90 degrees to the horizontal
2. 45 degrees to the horizontal
3. 60 degrees to the horizontal
4. Zero degrees to the horizontal

Question Number : 18 Question Id : 871112738 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the number of links in a mechanism are equal to *l*, then number of possible inversions are equal to

Options :

1. $l-2$
2. $l-1$
3. l
4. $l+1$

Question Number : 19 Question Id : 871112739 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Coriolis component of acceleration leads the sliding velocity by

Options :

1. 45°
2. 90°
3. 135°
4. 180°

Question Number : 20 Question Id : 871112740 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

There are six gears A, B, C, D, E and F in a compound train. The number of teeth in the gears are 20, 60, 30, 80, 25 and 75 respectively. The ratio of angular speeds of the driven (F) to the driver (A) of the drive is

Options :

1. 1/24
2. 1/8
3. 4/15
4. 12

Question Number : 21 Question Id : 871112741 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In automobiles the power is transmitted from gear box to differential through

Options :

1. Bevel gear
2. Cotter joint
3. Hook's joint
4. Knuckle joint

Question Number : 22 Question Id : 871112742 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The governor used in gramophone is of the _____ type.

Options :

1. Pickering
2. Watt
3. Porter

4. Hartnell

Question Number : 23 Question Id : 871112743 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the diameters are same, then the ratio of the radius of gyration of disc type flywheel to that of the rim type flywheel is

Options :

1. $\sqrt{2}$

2. 2

3. $1/\sqrt{2}$

4. 1/2

Question Number : 24 Question Id : 871112744 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When two mutually perpendicular principal stresses are unequal but alike, the maximum shear stress is represented by

Options :

1. the diameter of the Mohr's circle

2. half the diameter of the Mohr's circle

3. one-third of the diameter of the Mohr's circle

4. one-fourth of the diameter of the Mohr's circle

Question Number : 25 Question Id : 871112745 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an inversion of single slider crank chain?

Options :

1. Beam engine

2. Watts indicator mechanism

3. Elliptical trammel

4. Whitworth quick return motion mechanism

Question Number : 26 Question Id : 871112746 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If n links are connected at the same joint, the joint is equivalent to

Options :

1. (n – 1) binary Joints
2. (n – 2) binary joints
3. (2n – 1) binary joints
4. (2n + 1) binary joints

Question Number : 27 Question Id : 871112747 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following would increase the interference in external involute profile gear teeth?

Options :

1. Increasing module
2. Decreasing number of gear teeth
3. Increasing centre distance between gear pair
4. Increasing pressure angle

Question Number : 28 Question Id : 871112748 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The instantaneous centre of rotation of the piston with respect to the cylinder will be

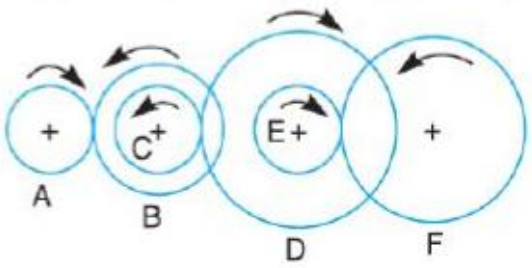
Options :

1. on the crank
2. on the piston itself
3. at Infinity
4. on the connecting rod

Question Number : 29 Question Id : 871112749 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The motor shaft is connected to gear A rotates at 975 rpm. The gear wheels B, C, D and E are fixed to parallel shafts rotating together. The final gear F is fixed on the output shaft. The number of teeth on each gear are as given below:

Gear	A	B	C	D	E	F
No. of teeth	20	50	25	75	26	65



The speed of the shaft F is

Options :

1. 45
2. 52
3. 76
4. 34

Question Number : 30 Question Id : 871112750 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The condition for maximum power transmission by an open belt drive considering centrifugal tension is (T = Max. tension, T_c = Centrifugal tension)

Options :

1. $T = 2T_c$
2. $T = 4T_c$
3. $T = 3T_c$
4. $T = 3\,T_c^2$

Question Number : 31 Question Id : 871112751 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the controlling force of a governor increases with increase in speed, the governor is said to be

Options :

1. Sensitive
2. Insensitive
3. Isochronous
4. Powerful

Question Number : 32 Question Id : 871112752 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simple spring-mass vibrating system has a natural frequency of N. if the spring stiffness is halved and the mass is doubled, then the natural frequency will become

Options :

1. N/2
2. 2 N
3. 4 N
4. 8 N

Question Number : 33 Question Id : 871112753 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transmissibility, for all values of damping factor will be equal to unity, if ω/ω_n is

Options :

1. Equal to one
2. Less than $\sqrt{2}$
3. Equal to $\sqrt{2}$
4. Greater than $\sqrt{2}$

Question Number : 34 Question Id : 871112754 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of free vibration of a system is $\frac{d^2x}{dt^2} + 36\pi^2x = 0$. Its natural frequency is

Options :

1. 3 Hz
2. 3π Hz
3. 6 Hz
4. 6Π Hz

Question Number : 35 Question Id : 871112755 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If ω/ω_n is $\sqrt{2}$, where ω is the frequency of excitation and ω_n is the natural frequency of vibrations, then the transmissibility of vibrations will be

Options :

1. 0.5
2. 1
3. 1.5
4. 2

Question Number : 36 Question Id : 871112756 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In vibration acceleration system if $(\omega/\omega_n) > 1$, then the phase difference between the transmitted force and the disturbing force is

Options :

1. 0°
2. 90°

3. 180°

4. 270°

Question Number : 37 Question Id : 871112757 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following relations is true when springs are connected in parallel? (K = spring stiffness)

Options :

1. $K_e = K_1 + K_2$

2. $(1 / K_e) = (1/K_1) + (1/ K_2)$

3. $K_e = (1/K_1) + (1/ K_2)$

4. $K_e = K_1 – K_2$

Question Number : 38 Question Id : 871112758 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which type of vibrations are also known as transient vibrations?

Options :

1. Undamped vibrations

2. Damped vibrations

3. Torsional vibrations

4. Transverse vibrations

Question Number : 39 Question Id : 871112759 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A sliding bearing which can support steady loads without any relative motion between the journal and the bearing is called

Options :

1. zero film bearing

2. boundary lubricated bearing

3. hydrostatic lubricated bearing

4. hydrodynamic lubricated bearing

Question Number : 40 Question Id : 871112760 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stress concentration in static loading

Options :

1. is more serious in ductile materials
2. is more serious in brittle materials
3. is equally serious in both cases
4. depends on other factors

Question Number : 41 Question Id : 871112761 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Guest's theory is used for

Options :

1. brittle materials
2. ductile materials
3. elastic materials
4. plastic materials

Question Number : 42 Question Id : 871112762 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

P and Q are two ball bearings that operate at loads 20 kN and 50 kN respectively. The ratio of the life of bearing P to the life of bearing Q is

Options :

1. 16
2. 20
3. 24
4. 32

Question Number : 43 Question Id : 871112763 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The design torque on a solid circular shaft is 120 Nm. The allowable shear stress of the material is 150 MPa. Taking a factor of safety of 1.8, the minimum allowable design diameter in mm is

Options :

1. 10
2. 20

3. 30

4. 40

Question Number : 44 Question Id : 871112764 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following welded joints is designed for shear strength?

Options :

1. Transverse fillet welded joint

2. Parallel fillet welded joint

3. Butt welded joint

4. Lap welded joint

Question Number : 45 Question Id : 871112765 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resistance to fatigue of a material is measured by

Options :

1. elastic limit

2. Young's modulus

3. ultimate tensile strength

4. endurance limit

Question Number : 46 Question Id : 871112766 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As water flows through the runner of a reaction turbine, pressure acting on it would vary from

Options :

1. more than atmospheric pressure to vacuum

2. less than atmospheric pressure to zero gauge pressure

3. atmospheric pressure to more than atmospheric pressure

4. a pressure to vacuum

Question Number : 47 Question Id : 871112767 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following pumps is used for pumping viscous fluids?

Options :

1. Centrifugal pump

2. Screw pump

3. Reciprocating pump

4. Jet pump

Question Number : 48 Question Id : 871112768 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A piece weighing 3 kg in air was found to weigh 2.5 kg when submerged in water. Its specific gravity is

Options :

1. 1

2. 5

3. 6

4. 7

Question Number : 49 Question Id : 871112769 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a floating body to be in stable equilibrium, its meta centre should be

Options :

1. above the centre of gravity

2. below the centre of gravity

3. below the centre of buoyancy

4. above centre of buoyancy

Question Number : 50 Question Id : 871112770 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A stagnation point is a point in fluid flow where

Options :

1. velocity of flow is zero

2. total energy is zero

3. total energy is maximum

4. pressure is zero

Question Number : 51 Question Id : 871112771 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dimension of surface tension

Options :

1. ML^{-1}

2. L^2T^{-1}

3. $ML^{-1}T^{-1}$

4. MT^{-2}

Question Number : 52 Question Id : 871112772 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Impulse turbines have

Options :

1. low head and high specific speed

2. high head and low specific speed

3. high head and high specific speed

4. low head and low specific speed

Question Number : 53 Question Id : 871112773 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Match list I with list II and select the correct answer

A) Venturimeter	I. Flow rate
B) Current meter	II. Flow velocity
C) Piezo meter	III. Flow pressure

Options :

1. A-I B-II C-III

2. A-II B-III C-I

3. A-III B-II C-II

4. A-II B-III C-I

Question Number : 54 Question Id : 871112774 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A fluid flows at a mean velocity of 1.5 m/s inside a pipe of diameter 10 cm. If the kinematic viscosity of the fluid is $\nu = 1.0 \times 10^{-4}$ m^2/s, the Reynolds number is

Options :

1. 1000

2. 1500

3. 2000

4. 2500

Question Number : 55 Question Id : 871112775 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Compared to laminar flow, which of the following is true in turbulent flow?

Options :

1. Momentum transport is lower

2. Energy transport is lower

3. Momentum and energy transport are both higher

4. Neither energy nor momentum transport is higher

Question Number : 56 Question Id : 871112776 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two surfaces, of area 'A' and distance 'L' apart, of a material having thermal conductivity 'k' are at temperatures 't_1' and 't_2' then heat flow rate will be

Options :

1. $\frac{kA}{L}(t_1 - t_2)$

2. $\frac{kL}{A}(t_1 - t_2)$

3. $\frac{k}{AL}(t_1 - t_2)$

4. $\frac{L}{kA}(t_1 - t_2)$

Question Number : 57 Question Id : 871112777 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of heat flow Q_1/Q_2 from two walls of same thickness having their thermal conductivities as $k_1 = 2k_2$ will be

Options :

1. 1

2. 0.5

3. 2

4. 4

Question Number : 58 Question Id : 871112778 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A finned tube hot water radiator with a fan blowing air over it, is kept in room during winter. The major portion of the heat transfer from the radiator is due to

Options :

1. better conduction

2. convection to the air

3. radiation to the surroundings

4. combined conduction and radiation

Question Number : 59 Question Id : 871112779 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Aluminum

2. Steel

3. Copper

4. Silver

Question Number : 60 Question Id : 871112780 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A metallic cube initially at temperature 500° C is placed in a room maintained at 30° C. The steady state temperature of the cube is

Options :

1. 500° C

2. 328° C

3. 30° C

4. 273° C

Question Number : 61 Question Id : 871112781 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ice is very close to a

Options :

1. Grey body

2. Black body

3. White body

4. Specular body

Question Number : 62 Question Id : 871112782 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a body is in thermal equilibrium with its surroundings, the emissivity of its surface follows

Options :

1. Kirchhoff's law

2. Wien's law

3. Planck's law

4. Lambert's law

Question Number : 63 Question Id : 871112783 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Wien's displacement law, the wavelength corresponding to maximum energy is proportional to _____. (where T represents absolute temperature)

Options :

1. T

2. T^2

3. T^4

4. $1/T$

Question Number : 64 Question Id : 871112784 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The heat addition in dual combustion cycle is done at

Options :

1. constant pressure

2. constant volume

3. constant temperature

4. partly at constant pressure and partly at constant volume

Question Number : 65 Question Id : 871112785 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basis for measuring thermodynamic properties of temperature is given by

Options :

1. zeroth law of thermodynamics

2. first law of thermodynamics

3. second law of thermodynamics

4. third law of thermodynamics

Question Number : 66 Question Id : 871112786 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ideal gas as compared to a real gas at very high pressure occupies

Options :

1. more volume

2. less volume

3. same volume

4. zero volume

Question Number : 67 Question Id : 871112787 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The gas constant (R) is equal to the _____ of two specific heats namely, specific heat at constant pressure and specific heat constant volume.

Options :

1. sum

2. difference

3. product

4. ratio

Question Number : 68 Question Id : 871112788 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Entropy of an isolated system

Options :

1. always decreases

2. always increases

3. always remains constant

4. always infinite

Question Number : 69 Question Id : 871112789 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Absolute zero temperature is taken as

Options :

1. –273° C

2. 273° C

3. 237° C

4. –373° C

Question Number : 70 Question Id : 871112790 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Kelvin Planck's law deals with

Options :

1. Conservation of energy

2. Conversion of work into heat

3. Conversion of heat into work

4. Conservation of heat

Question Number : 71 Question Id : 871112791 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three engines A, B and C operating on Carnot cycle respectively use air, steam and helium as the working fluid. If all the engines operate within the same high and low temperature limits, then _____ efficiency.

Options :

1. engine A has highest

2. engine B has highest

3. engine C has highest

4. all engines have equal

Question Number : 72 Question Id : 871112792 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example of tangential flow impulse turbine is

Options :

1. Kaplan Turbine

2. Francis Turbine

3. Parsons turbine

4. Pelton wheel

Question Number : 73 Question Id : 871112793 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Draft tube is required for _____.

Options :

1. impulse turbine

2. reaction turbine

3. pelton wheel

4. pumps

Question Number : 74 Question Id : 871112794 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Air vessels are generally fitted to

Options :

1. centrifugal pump

2. reciprocating pump

3. screw pump

4. turbines

Question Number : 75 Question Id : 871112795 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cycle consists of two adiabatic and two constant pressure processes is known as

Options :

1. Otto cycle

2. Ericsson cycle

3. Joule cycle

4. Stirling cycle

Question Number : 76 Question Id : 871112796 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ignition quality of petrol is expressed by _____.

Options :

1. octane number

2. cetane number

3. calorific value

4. self-ignition temperature

Question Number : 77 Question Id : 871112797 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The critical pressure ratio for initially dry saturated steam is

Options :

1. 0.546

2. 0.577

3. 582

4. 0.64

Question Number : 78 Question Id : 871112798 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

From American Society of Heating, Refrigeration and Air Conditioning Engineers comfort chart, it is observed that _____dry bulb temperature and _____moisture content are recommended for _____.

Options :

1. lower, higher, winter

2. lower, lower, winter

3. lower, higher, summer

4. higher, lower, summer

Question Number : 79 Question Id : 871112799 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Reheat factor in steam turbine depends on

Options :

1. exit pressure

2. stage efficiency

3. initial pressure and temperature

4. exit pressure and stage efficiency

Question Number : 80 Question Id : 871112800 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A two-stroke diesel engine has a displacement volume of 30.0 litres. The engine has an output of 1000 kW at 2000 rpm. The mean effective pressure (in MPa) is approximately

Options :

1. 1.0 MPa
2. 2.0 MPa
3. 3.0 MPa
4. 4.0 MPa

Question Number : 81 Question Id : 871112801 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Property of material due to which it can be rolled or hammered into thin sheets is called

Options :

1. brittleness
2. ductility
3. malleability
4. fatigue

Question Number : 82 Question Id : 871112802 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Haematite iron ore contains iron about _____%

Options :

1. 30
2. 45
3. 55
4. 70

Question Number : 83 Question Id : 871112803 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a case hardening process?

Options :

1. Spherodising
2. Tempering
3. Sheradising
4. Cyaniding

Question Number : 84 Question Id : 871112804 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The crystal structure of brass is

Options :

1. B.C.C
2. F.C.C
3. H.C.P
4. Simple cubic

Question Number : 85 Question Id : 871112805 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Slow plastic deformation of metals under a constant stress is known as _____.

Options :

1. fatigue
2. proof deformation
3. endurance failure
4. creep

Question Number : 86 Question Id : 871112806 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In casting, gating ratio is defined as the ratio of

Options :

1. sprue area : total area : total gate area
2. total gate area : sprue area : total area
3. total area : sprue area : total gate area
4. total area : total gate area : sprue area

Question Number : 87 Question Id : 871112807 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following processes is used for core making?

Options :

1. Shell moulding
2. Investment casting

3. CO_2 moulding

4. Die casting

Question Number : 88 Question Id : 871112808 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The core in the centrifugal casting is made of _____.

Options :

1. Carbon steel

2. Core sand

3. Wax

4. Wood

Question Number : 89 Question Id : 871112809 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is an advantage of closed die forging?

Options :

1. Good surface finish

2. Low tooling cost

3. Close tolerance

4. Improved physical property

Question Number : 90 Question Id : 871112810 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The draft allowance on the pattern is provided in order to

Options :

1. provide good draft of air in the sand moulding

2. provide for distortion that might take place

3. remove the pattern easily from the moulding

4. increase the strength of the mould walls

Question Number : 91 Question Id : 871112811 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Match the List I and List II

LIST-I	LIST-II
A) Upsetting	I) increasing the thickness of bar at the expense of length
B) Swaging	II) increasing the length of bar at the expense of width/thickness
C) Bending	III) spreading the metal along the length of job
D) Fullering	IV) shortening and stretching of layer

Options :

1. A-I B-II C-IV D-III

2. A-I B-II C-III D-IV

3. A-II B-I C-IV D-III

4. A-II B-I C-III D-IV

Question Number : 92 Question Id : 871112812 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bending force required to bend 10 cm steel workpiece is 10 tonnes. The bending force required to bend steel workpiece of 20 cm thickness of same length with same die is ____.

Options :

1. 10 tonnes

2. 20 tonnes

3. 40 tonnes

4. 80 tonnes

Question Number : 93 Question Id : 871112813 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The important property of the material in all metal forming processes is _____.

Options :

1. Elasticity

2. Plasticity

3. Ductility

4. Brittleness

Question Number : 94 Question Id : 871112814 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Coining is the operation of _____.

Options :

1. cold forging

2. hot forging

3. cold extrusion

4. piercing

Question Number : 95 Question Id : 871112815 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hot working operation is carried at _____.

Options :

1. recrystallisation temperature

2. near plastic stage temperature

3. below recrystallisation temperature

4. above recrystallisation temperature

Question Number : 96 Question Id : 871112816 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Non consumable electrode is used in _____.

Options :

1. shielded metal arc welding

2. submerged arc welding

3. TIG welding

4. MIG welding

Question Number : 97 Question Id : 871112817 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is a standard time for SMAW of steel using 3 mm diameter electrode with a welding current of 150 A and a deposition ratio of 10 g/A.h.? (The cross sectional area of the weld is 0.5 cm^2 and it is 0.5 m long. Take density of steel as 7.85 g/cm^3 and an operator factor is 0.32)

Options :

1. 12.32 minutes

2. 16.74 minutes

3. 19.37 minutes

4. 24.53 minutes

Question Number : 98 Question Id : 871112818 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In arc welding, the electric arc is produced between the work and electrode by

Options :

1. voltage

2. flow of current

3. contact resistance

4. heat

Question Number : 99 Question Id : 871112819 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following constituent of electrode coating is useful for shielding?

Options :

1. $CaCO_3$

2. TiO_2

3. FeO

4. SiO_2

Question Number : 100 Question Id : 871112820 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In soldering, lead-free solder is made of

Options :

1. Copper and Titanium

2. Tin and Copper

3. Tin and Aluminium

4. Copper and steel

Question Number : 101 Question Id : 871112821 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Internal gears can be made by

Options :

1. Hobbing

2. Gear shaping with rack cutter

3. Gear shaping with pinion cutter

4. Grand milling

Question Number : 102 Question Id : 871112822 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tool in case of ultrasonic machining is made of

Options :

1. HSS

2. Brass or Copper

3. Diamond

4. Plain Carbon

Question Number : 103 Question Id : 871112823 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

M06 represents the following instruction

Options :

1. Program stop

2. Tool change

3. Coolant ON

4. Spindle ON

Question Number : 104 Question Id : 871112824 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 25 mm diameter steel bar was turned at 300 rpm using an HSS tool. Tool failure occurred after 10 minutes, when the speed was decreased to 250 rpm, the tool failed in 52.5 minutes. Assuming that Taylor's equation applies, find the expected tool life at a cutting speed of 275 rpm.

Options :

1. 12 minutes

2. 16 minutes

3. 22 minutes

4. 31 minutes

Question Number : 105 Question Id : 871112825 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tool life is said to be over when

Options :

1. finish of the work becomes too rough

2. chips become blue

3. chattering starts

4. a certain amount of wear occurs on the flank

Question Number : 106 Question Id : 871112826 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used for checking internal diameter of the cylinders?

Options :

1. Solex comparator

2. Sigma comparator

3. Johnson Mikrokater

4. Electric comparator

Question Number : 107 Question Id : 871112827 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used to measure effective diameter in screw threads?

Options :

1. Floating carriage micrometer

2. Screw pitch gauge

3. Taper parallels

4. Sine bar

Question Number : 108 Question Id : 871112828 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The term "Allowance" in limits and fits is usually referred to as

Options :

1. minimum clearance between shaft and hole

2. maximum clearance between shaft and hole

3. difference of tolerance of hole and shaft

4. difference between maximum size and minimum size of the hole

Question Number : 109 Question Id : 871112829 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

NOGO plug gauge is used to check _____.

Options :

1. lower limit of hole
2. lower limit of shaft
3. higher limit of hole
4. higher limit of shaft

Question Number : 110 Question Id : 871112830 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The mechanism of metal removal in Electro-discharge machining (EDM) is

Options :

1. corrosive reaction
2. ion displacement
3. erosion
4. fusion and vaporization

Question Number : 111 Question Id : 871112831 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

ABC analysis deals with which of the following?

Options :

1. Analysis of process charts
2. Flow of material
3. Ordering schedule of jobs
4. Controlling inventory costs

Question Number : 112 Question Id : 871112832 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In PERT analysis a critical activity has

Options :

1. Maximum float
2. Maximum cost
3. Zero float

4. Minimum cost

Question Number : 113 Question Id : 871112833 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The demand for a product in the month of March turned out to be 20 units against an earlier made forecast of 20 units. The actual demand for April and May turned to be 25 and 26 units respectively. What will be the forecast for the month of June, using exponential smoothing method and taking smoothing constant as 0.2?

Options :

1. 20 units
2. 22 units
3. 26 units
4. 28 units

Question Number : 114 Question Id : 871112834 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In P-system of inventory control

Options :

1. order quantity remains constant
2. time between ordering remains constant
3. recorder points remain constant
4. production rate remains constant

Question Number : 115 Question Id : 871112835 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inventory control in production, planning and control aims at

Options :

1. achieving optimization
2. ensuring against market fluctuations
3. acceptable customer service at low capital investment in inventory
4. discounts allowed in bulk purchase

Question Number : 116 Question Id : 871112836 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum level of inventory of an item is 100 and it is achieved with infinite replenishment rate. The inventory becomes zero over one and half a month due to consumption at a uniform rate. This cycle continues throughout the year. Ordering cost is Rs. 100 per order and inventory carrying cost is Rs. 10 per item per month. Annual cost (in Rs.) of the plan, neglecting material cost is _____.

Options :

1. 800
2. 2800
3. 4800
4. 6800

Question Number : 117 Question Id : 871112837 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In order to avoid excessive multiplication of facilities, the layout preferred is _____.

Options :

1. product layout
2. process layout
3. group layout
4. static layout

Question Number : 118 Question Id : 871112838 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A company has two factories S_1, S_2 and two warehouses D_1, D_2. The supplies from S_1 and S_2 are 50 and 40 units respectively. Warehouse D_1 requires a minimum of 20 units and a maximum of 40 units. Warehouse D_2 requires a minimum of 20 units and, over and above, it can take as much as can be supplied. A balanced transportation problem is to be formulated for the above situation. The number of supply points, the number of demand points, and the total supply (or demand) in the balanced transportation problem respectively are _____.

Options :

1. 2, 4, 90
2. 2, 4, 110
3. 3, 4, 90
4. 3, 4, 11

Question Number : 119 Question Id : 871112839 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A company uses 2555 units for an item annually. Delivery lead time is 8 days. The reorder point (in number of units) to achieve optimum inventory is ____.

Options :

1. 7
2. 8
3. 56
4. 60

Question Number : 120 Question Id : 871112840 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A feasible solution to the linear programming problem should

Options :

1. satisfy the problem constraints
2. optimize the objective function
3. satisfy the problem constraints and non-negative restrictions
4. satisfy the non-negative restrictions