

परीक्षेचे नांव : सहायक प्राध्यापक, स्वयंचल अभियांत्रिकी, अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय,
महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-2014
परीक्षेचा दिनांक : 27 जुलै, 2014

महाराष्ट्र लोकसेवा आयोगामार्फत सहायक प्राध्यापक, स्वयंचल अभियांत्रिकी, अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय, महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-२०१४ या चाळणी परीक्षेच्या प्रश्नपत्रिकेची उत्तरतालिका उमेदवारांच्या माहितीसाठी संकेतस्थळावर प्रसिध्द करण्यात आली होती. उमेदवारांनी अधिप्रमाणित (Authentic) स्पष्टीकरण / संदर्भ देऊन पाठविलेली लेखी निवेदने, तसेच तज्ज्ञांचे अभिप्राय विचारात घेऊन आयोगाने उत्तरतालिका सुधारित केली आहे. या उत्तरतालिकेतील उत्तरे अंतिम समजण्यात येतील. यासंदर्भात आलेली निवेदने विचारात घेतली जाणार नाहीत व त्याबाबत कोणताही पत्रव्यवहार केला जाणार नाही, याची कृपया नोंद घ्यावी.

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उत्तरतालिका - KEY

Maharashtra Public Service Commission

Notations :

- Options shown in green color and with ✓ icon are correct.
- Options shown in red color and with ✗ icon are incorrect.

Question Paper Name:	Assistant Professor Automobile ACTUAL
Subject Name:	Assistant Professor Automobile
Creation Date:	2014-07-23 14:06:13.0
Cut Off:	10
Duration:	60
Number of Questions:	100

Group 1

Group Number :	1
Group Id :	67
Group Maximum Duration :	0
Group Minimum Duration :	60
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0

Assistant Professor Automobile

Section Id :	97
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100

Sub-Section Number:	1
Sub-Section Id:	107
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 8113 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A reversible engine working between the temperature limits of 600K and 1200K receives 50kJ of heat. The work done by the engine will be:

Options :

- ✗ -50kJ
- ✗ 100kJ
- ✓ 25kJ

4. ✘ -25kJ

Question Number : 2 Question Id : 8114 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Expansion in nozzle is a -

Options :

1. ✘ Isobaric Process
2. ✘ Isothermal Process
3. ✔ Adiabatic Process
4. ✘ Isochoric Process

Question Number : 3 Question Id : 8115 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The efficiency of Carnot cycle is maximum for -

Options :

1. ✘ Gas Engine
2. ✘ Well lubricated Engine
3. ✘ Petrol Engine
4. ✔ Reversible Engine

Question Number : 4 Question Id : 8116 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Second law of thermodynamics defines -

Options :

1. ✔ Entropy
2. ✘ Enthalpy
3. ✘ Heat and Work
4. ✘ Internal Energy

Question Number : 5 Question Id : 8117 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Sublimation is the process of -

Options :

1. ✔ Changing from solid state to direct gas state
2. ✘ Changing from gas state to direct solid state
3. ✘ Existence of liquid and gases together
4. ✘ Existence of liquid, solid and gas simultaneously.

Question Number : 6 Question Id : 8118 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

An ideal gas at 27°C is heated at constant pressure till its volume becomes three times. The temperature of gas then will be -

Options :

1. ✘ 81°C
2. ✘ 900°C
3. ✔ 627°C
4. ✘ 574°C

Question Number : 7 Question Id : 8119 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Stefan Boltzmann law is applicable for heat transfer by -

Options :

1. ✘ Conduction
2. ✘ Convection
3. ✔ Radiation
4. ✘ Convection and radiation combined

Question Number : 8 Question Id : 8120 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A perfect black body is one which -

Options :

1. ✘ Is black in color
2. ✘ Reflects all heat
3. ✘ Transmits all heat radiations
4. ✔ Absorbs heat radiations of all wavelengths falling on it

Question Number : 9 Question Id : 8121 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

LMTD in case of counter flow heat exchanger as compared to parallel flow heat exchanger is -

Options :

1. ✔ Higher
2. ✘ Lower
3. ✘ Depends on area of heat exchangers

4. ✘ Depends on temperature conditions

Question Number : 10 Question Id : 8122 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

In heat exchangers, degree of approach is defined as the difference between temperatures of -

Options :

1. ✘ Cold water inlet and outlet
2. ✘ Hot medium inlet and outlet
3. ✘ Hot medium outlet and cold water inlet
4. ✔ Hot medium outlet and cold water outlet

Question Number : 11 Question Id : 8123 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Which stroke in the four - stroke cycle begins as the compressed fuel mixture is ignited in the combustion chamber.

Options :

1. ✘ Intake stroke
2. ✘ Compression stroke
3. ✔ Power stroke
4. ✘ Exhaust stroke

Question Number : 12 Question Id : 8124 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Which of the following has maximum value of thermal conductivity -

Options :

1. ✘ Aluminium
2. ✘ Steel
3. ✘ Brass
4. ✔ Copper

Question Number : 13 Question Id : 8125 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

For a kinematic chain which relation is true?

(Where L represents number of links and p represents number of pairs)

Options :

1. ✔ $L = 2p - 4$
2. ✘ $L = 2p + 4$

3. ✘ $L = p - 4$

4. ✘ $L = p + 4$

Question Number : 14 Question Id : 8126 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A combination of kinematic pairs, joined in such a way that the relative motion between the links is completely constrained, is called -

Options :

1. ✘ structure

2. ✘ mechanism

3. ✔ kinematic chain

4. ✘ inversion

Question Number : 15 Question Id : 8127 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The critical speed of a shaft is affected by the -

Options :

1. ✘ Diameter and the eccentricity of the shaft

2. ✔ Span and the eccentricity of the shaft

3. ✘ Diameter and the span of the shaft

4. ✘ Span of the shaft

Question Number : 16 Question Id : 8128 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

If three bodies move relatively to each other then according to Kennedy's theorem their instantaneous centre will lie on-

Options :

1. ✘ Parabolic curve

2. ✘ Ellipse

3. ✘ Circle

4. ✔ Straight line

Question Number : 17 Question Id : 8129 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

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

Options :

1. ✘ Sensitive

2. ✔ Isochronous

3. ✘ Insensitive

4. ✘ unstable

Question Number : 18 Question Id : 8130 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Torque developed by a disc clutch is given by -

(Where μ = coefficient of friction, w = Axial thrust; r = mean radius of friction face)

Options :

1. ✘ $T = 0.25 \mu w r$

2. ✘ $T = 0.5 \mu w r$

3. ✘ $T = 0.75 \mu w r$

4. ✔ $T = \mu w r$

Question Number : 19 Question Id : 8131 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The ratio of maximum displacement of the forced vibration to the deflection due to the static force is called -

Options :

1. ✘ Damping coefficient

2. ✘ Critical damping coefficient

3. ✔ Magnification factor

4. ✘ Damping factor

Question Number : 20 Question Id : 8132 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

In a gear train of n wheels, the speed ratio is defined as -

(Where N = speed of gears, T = No. of teeth on gears)

Options :

1. ✘ T_1 / T_n

2. ✔ N_1 / N_n

3. ✘ N_n / N_1

4. ✘ T_n / T_1

Question Number : 21 Question Id : 8133 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Softer Front tyre show -

Options :

1. ✓ More steerability, less stability and more wear
2. ✗ Less steerability, more stability and less wear
3. ✗ Less steerability, more stability and more bouncy
4. ✗ More steerability, more stability and more wear

Question Number : 22 Question Id : 8134 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The base of the triangle is aligned with the longitudinal axis of the vehicle; such a suspension mechanism is called -

Options :

1. ✗ Multi-link suspension system
2. ✗ Trailing arm suspension system
3. ✓ Swing arm suspension system
4. ✗ Semi-swing suspension system

Question Number : 23 Question Id : 8135 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The angle between vehicle's center line and perpendicular to the rear wheel axle

Options :

1. ✗ Castor angle
2. ✗ Camber angle
3. ✓ Thrust angle
4. ✗ Spin angle

Question Number : 24 Question Id : 8136 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Bump steer is:

Options :

1. ✗ The steering force created in the tyres when you hit a bump
2. ✓ The change in toe angle during bump and rebound travel of suspension
3. ✗ Camber changes during the bump and rebound travel of the suspension
4. ✗ Castor changes during the bump and rebound travel of the suspension

Question Number : 25 Question Id : 8137 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

To find the compression ratio if the total piston displacement is 45 cubic inches and the combustion chamber volume is 5 cubic inches.

Options :

1. ✘ 9 : 1
2. ✔ 10 : 1
3. ✘ 11 : 1
4. ✘ 12 : 1

Question Number : 26 Question Id : 8138 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Metacentric height is the distance between the metacentre and

Options :

1. ✘ Water surface
2. ✘ Centre of pressure
3. ✔ Centre of gravity
4. ✘ Centre of buoyancy

Question Number : 27 Question Id : 8139 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The total energy line lies over the hydraulic gradient line by an amount equal to the -

Options :

1. ✘ pressure head
2. ✔ velocity head
3. ✘ pressure head + velocity head
4. ✘ pressure head - velocity head

Question Number : 28 Question Id : 8140 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

A flow in which the viscosity of fluid is dominating over the inertia force is called -

Options :

1. ✘ Steady flow
2. ✘ Unsteady flow
3. ✔ Laminar flow
4. ✘ Turbulent flow

Question Number : 29 Question Id : 8141 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The specific speed of a centrifugal pump, delivering 750 litres of water per second against a head of 15 metres at 725 r.p.m., is

Options :

1. ✘ 24.8 r.p.m.
2. ✘ 48.2 r.p.m
3. ✔ 82.4 r.p.m.
4. ✘ 248 r.p.m

Question Number : 30 Question Id : 8142 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Calculate the metric displacement of a 4-cylinder engine with a 75 mm stroke and a 100mm diameter bore.

Options :

1. ✔ 2.355 liters
2. ✘ 23.55 liters
3. ✘ 235.5 cubic centimeters
4. ✘ 23.55 cubic centimeters

Question Number : 31 Question Id : 8143 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The stiffness of a spring is defined as force per unit--

Options :

1. ✘ Area
2. ✔ Deflection
3. ✘ Length
4. ✘ Diameter

Question Number : 32 Question Id : 8144 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Cavitation in a hydraulic turbine is most likely to occur at the turbine -

Options :

1. ✘ Entry
2. ✘ Exit
3. ✘ Stator exit
4. ✔ Rotor exit

Question Number : 33 Question Id : 8145 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A two dimensional vortex has -

Options :

1. ✘ Radial stream line
2. ✘ Zero circulation around it
3. ✘ Rotational fluid at all radii
4. ✔ Constant circulation around a closed path including the origin

Question Number : 34 Question Id : 8146 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Radiation pyrometers are used in temperature range of-

Options :

1. ✘ 0 - 250 °C
2. ✘ 500 -1000°C
3. ✘ 250 - 500°C
4. ✔ 1200-2500°C

Question Number : 35 Question Id : 8147 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

At which condition does an universal joint transmit power without fluctuation?

When the angle of intersection is-

Options :

1. ✘ Anywhere in the transmission system
2. ✘ **At one end of the propeller shaft**
3. ✔ At both the ends of the propeller shaft
4. ✘ At the middle of the propeller shaft

Question Number : 36 Question Id : 8148 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Autocollimator is used for -

Options :

1. ✘ Parallelism measurement
2. ✘ Straightness measurement
3. ✘ Flatness measurement
4. ✔ Angular measurement

Question Number : 37 Question Id : 8149 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Which gauge is used to measure pressure below 1 μm ?

Options :

1. ✘ Dead weight gauge
2. ✘ Pirani gauge
3. ✔ Ionization gauge
4. ✘ Mc-leod gauge

Question Number : 38 Question Id : 8150 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Tolerances are specified -

Options :

1. ✘ To obtain desire fits
2. ✘ To obtain high accuracy
3. ✘ To have proper allowances
4. ✔ Because it is not possible to manufacture a size exactly

Question Number : 39 Question Id : 8151 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Errors due to assignable causes are called -

Options :

1. ✘ Static errors
2. ✔ Systematic errors
3. ✘ Calibration errors
4. ✘ Random errors

Question Number : 40 Question Id : 8152 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

For measuring the temperature in the range of - 20 to 550 $^{\circ}\text{C}$, following liquid is used in glass thermometer -

Options :

1. ✔ Mercury
2. ✘ Alcohol
3. ✘ Toluene
4. ✘ pentane

Question Number : 41 Question Id : 8153 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Hysteresis errors in bourdon tubes can be minimized by -

Options :

1. ✘ Selecting proper material
2. ✘ Proper design and fabrication
3. ✔ Using them well within the designed pressure range
4. ✘ Avoiding direct entry of steam into it

Question Number : 42 Question Id : 8154 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the following is not a synthetic entity?

Options :

1. ✔ Hyperbola
2. ✘ Beizer curve
3. ✘ B-spline curve
4. ✘ Cubic spline curve

Question Number : 43 Question Id : 8155 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

In a CAD package, mirror image of a 2D point P (5, 10) is to be obtained about a line which passes through the origin and makes an angle of 45° counterclockwise with the X-axis. The coordinates of the transformed point will be -

Options :

1. ✘ (7.5,5)
2. ✔ (10,5)
3. ✘ (7.5,-5)
4. ✘ (10, -5)

Question Number : 44 Question Id : 8156 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A single cylinder diesel engine is tested at 350 r.p.m. A braking torque of 48 Nm is applied during the test period. Calculate the brake horse power.

Options :

1. ✘ 2.76 kW
2. ✘ 2.16 kW
3. ✔ 1.76 kW
4. ✘ 1.16 kW

Question Number : 45 Question Id : 8157 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The machine tool in which the point-to-point Numerical controlled system is applied is the -

Options :

1. Drilling Machine
2. Machining centre
3. Turning centre
4. Grinding Machine

Question Number : 46 Question Id : 8158 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

BOM structure is used to calculate -

Options :

1. Due dates
2. Net requirements
3. Manpower requirements
4. Bills to be paid

Question Number : 47 Question Id : 8159 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

In CNC part program, M30 stands for -

Options :

1. End of program
2. End of tape and tape rewind
3. Coolant OFF
4. Coolant ON

Question Number : 48 Question Id : 8160 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the two cycles form a dual cycle?

Options :

1. Otto and Carnot
2. Diesel and Carnot
3. Carnot and Rankine
4. Otto and Diesel

Question Number : 49 Question Id : 8161 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the following is the correct data structure for solid models?

Options :

1. ✘ solid part → faces → edges → vertices
2. ✘ solid part → edges → faces → vertices
3. ✔ vertices → edges → faces → solid parts
4. ✘ vertices → faces → edges → solid parts

Question Number : 50 Question Id : 8162 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The total number of instantaneous centres for a mechanism containing 'n' links is given by -

Options :

1. ✘ $(n - 1) / 2$
2. ✔ $n (n - 1) / 2$
3. ✘ n
4. ✘ $n / 2$

Question Number : 51 Question Id : 8163 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Computer program help the user to interpret the result displaying them in graphical form is called -

Options :

1. ✘ Preprocessor
2. ✘ Analysis
3. ✔ Post processor
4. ✘ Representation

Question Number : 52 Question Id : 8164 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The deformation includes displacement rotation, and or strains is known as –

Options :

1. ✘ Discretization
2. ✘ Assemblage
3. ✘ Degree of deformation
4. ✔ Degree of freedom

Question Number : 53 Question Id : 8165 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Integral approach method of FEA which is useful for solving complex structural problem is known as –

Options :

1. ✓ Ritz method
2. ✗ Gaussian Method
3. ✗ Galerkin Method
4. ✗ Weighted residual Method

Question Number : 54 Question Id : 8166 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the following is considered a type of mechanism analysis?

Options :

1. ✗ Functional analysis
2. ✓ Kinematic analysis
3. ✗ Finite Element analysis
4. ✗ Human Factors analysis

Question Number : 55 Question Id : 8167 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Fatigue consideration plays an important role in the design of all the following components except-

Options :

1. ✓ Keys
2. ✗ Springs
3. ✗ Bearing
4. ✗ Gears

Question Number : 56 Question Id : 8168 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

For the transmission of maximum power, the tension T_1 on tight side and maximum tension T in belt confirms to the-

Options :

1. ✗ $T_1 = T/3$
2. ✓ $T_1 = 2T/3$

3. ✘ $T_1 = 3T/4$

4. ✘ $T_1 = 3T/5$

Question Number : 57 Question Id : 8169 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The strain energy in a solid shaft subjected to twisting moment is -
(Where q = shear stress and c = Modulus of rigidity)

Options :

1. ✔ $(q^2/4c) \times \text{Volume of shaft}$

2. ✘ $(q^2/2c) \times \text{Volume of shaft}$

3. ✘ $(q^2/c) \times \text{Volume of shaft}$

4. ✘ $(2q^2/c) \times \text{Volume of shaft}$

Question Number : 58 Question Id : 8170 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A spring having spring index constant 'S' has been cut into 'n' equal parts. Each portion of cut spring will have a spring constant equal to -

Options :

1. ✘ S

2. ✘ S/n

3. ✔ nS

4. ✘ $(S)^{1/n}$

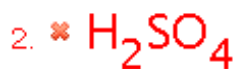
Question Number : 59 Question Id : 8171 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which one of the following fluids is used to level the electrolyte in a battery?

Options :

1. ✔ Distilled water



3. ✘ HCl

4. ✘ Petrol

Question Number : 60 Question Id : 8172 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Critical damping coefficient is given by:
(Where ω_n is Natural frequency and m is mass of rotor)

Options :

1. ✘ $Cc = m \omega_n$
2. ✔ $Cc = 2m \omega_n$
3. ✘ $Cc = \omega_n / 2m$
4. ✘ $Cc = m/2 \omega_n$

Question Number : 61 Question Id : 8173 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

A Spring used to absorb shock and vibration is:

Options :

1. ✘ Closely coiled helical spring
2. ✔ Leaf spring
3. ✘ Open coiled helical spring
4. ✘ Torsional spring

Question Number : 62 Question Id : 8174 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Failure of material is called fatigue when it fails-

Options :

1. ✘ at the elastic limit
2. ✘ below the elastic limit
3. ✘ at the yield point
4. ✔ below the yield point

Question Number : 63 Question Id : 8175 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

During heat treatment of steel, the hardness of various structures in increasing order is;

Options :

1. ✘ Martensite, fine pearlite, coarse pearlite, spherodite

2. ✘ Fine pearlite, Martensite, spherodite, coarse pearlite
3. ✘ Martensite, coarse pearlite, fine pearlite, spherodite
4. ✔ Spherodite, coarse pearlite, fine pearlite, Martensite

Question Number : 64 Question Id : 8176 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

An allotropic material -

Options :

1. ✘ has its atoms distributed in random pattern
2. ✘ has a fixed structure at all temperatures
3. ✔ has a different crystal structure at different temperatures
4. ✘ respond to heat treatment

Question Number : 65 Question Id : 8177 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Guide ways of lathe beds are hardened by -

Options :

1. ✘ Carburising
2. ✘ Cynaiding
3. ✘ Nitriding
4. ✔ Flame hardening

Question Number : 66 Question Id : 8178 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The method that does not improve fatigue resistance of materials is-

Options :

1. ✘ Fine grain size
2. ✘ Shot peening
3. ✘ Polishing the surface
4. ✔ Decarburizing

Question Number : 67 Question Id : 8179 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Fine grain sizes are not obtained by:

Options :

1. ✓ Slow cooling
2. ✗ Increasing nucleation rate
3. ✗ Decreasing growth rate
4. ✗ Fast cooling

Question Number : 68 Question Id : 8180 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Work hardening reduces -

Options :

1. ✗ Malleability
2. ✗ Hardness
3. ✗ Toughness
4. ✓ Ductility

Question Number : 69 Question Id : 8181 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Chances of crack 'propagation' is more in -

Options :

1. ✗ Hot working
2. ✓ Cold working
3. ✗ Welding
4. ✗ Machining

Question Number : 70 Question Id : 8182 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The structure of eutectoid steel is-

Options :

1. ✗ Purely cementite
2. ✗ Cementite & pearlite
3. ✓ Purely pearlite
4. ✗ Pearlite & ferrite

Question Number : 71 Question Id : 8183 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Relation between Modulus of elasticity (E), modulus of rigidity (C) and bulk modulus (K) is;

Options :

1. ✘ $E = \frac{KC}{K+C}$
2. ✘ $E = \frac{3KC}{3K+C}$
3. ✔ $E = \frac{9KC}{3K+C}$
4. ✘ $E = \frac{K+C}{KC}$

Question Number : 72 Question Id : 8184 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A four cylinder engine has 75 percent mechanical efficiency. It delivers a brake horse power of 35kW. Determine the indicated horse power.

Options :

1. ✔ 46.66 kW
2. ✘ 36.66 kW
3. ✘ 46.16 kW
4. ✘ 36.16 kW

Question Number : 73 Question Id : 8185 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Point of contra' flexure is a point where;

Options :

1. ✘ The shear force is maximum
2. ✘ Shear force is zero
3. ✘ Bending moment is maximum
4. ✔ Bending moment is zero

Question Number : 74 Question Id : 8186 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Area of Shear force diagram between two points of span represents -

Options :

1. ✘ Change in shear force between the points
2. ✔ Change in bending moment between two points
3. ✘ Change in load between two points
4. ✘ Change in stress between two points

Question Number : 75 Question Id : 8187 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Maximum deflection of a simply supported beam of span 'l' carrying a uniformly distributed load W/unit length over the whole span is?

Options :

1. ✘ $Wl^4/384EI$
2. ✘ $3Wl^4/384EI$
3. ✔ $5Wl^4/384EI$
4. ✘ $Wl^4/184EI$

Question Number : 76 Question Id : 8188 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Which of the following theory is suited for ductile materials?

Options :

1. ✘ Distribution energy theory
2. ✔ Maximum shear stress theory
3. ✘ Maximum principal strain theory
4. ✘ Maximum principal stress theory

Question Number : 77 Question Id : 8189 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Proof resilience per unit volume is known as;

Options :

1. ✘ Strain energy
2. ✘ Young's modulus
3. ✔ Modulus of resilience

4. ✘ Impact energy

Question Number : 78 Question Id : 8190 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Strength of a beam is more if its section modulus is;

Options :

1. ✘ Decreased
2. ✘ Zero
3. ✔ Increased
4. ✘ No change

Question Number : 79 Question Id : 8191 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

A 25 mm wide and 100 mm deep beam is 3.40 m long. It carries a load of 1500 kN at the middle. Determine the maximum stress due to bending;

Options :

1. ✔ 30.6 MPa
2. ✘ 25.5 MPa
3. ✘ 35.6 MPa
4. ✘ 29.0 MPa

Question Number : 80 Question Id : 8192 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Determine power transmitted by solid shaft of 5cm diameter while rotating at 1200 rpm. Maximum permissible shear stress is 8kN/cm^2 .

Options :

1. ✔ 24.67 W
2. ✘ 29.67 W
3. ✘ 20.5 W
4. ✘ 27.67 W

Question Number : 81 Question Id : 8193 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

In a diesel engine, fuel is ignited by -

Options :

1. ✘ A spark plug

2. ✘ An injector

3. ✔ Virtue of the temperature of the compressed air

4. ✘ A glow plug

Question Number : 82 Question Id : 8194 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The material which are used for cylinder block are -

Options :

1. ✘ Cast iron and steel

2. ✘ Brass and steel

3. ✔ Cast iron and aluminium alloy

4. ✘ Steel and Zinc

Question Number : 83 Question Id : 8195 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The firing order of a four stroke, six cylinder engine (in-line) is –

Options :

1. ✘ 1- 5 -3- 2- 6 - 4 -1

2. ✔ 1- 5- 3- 6- 2- 4 -1

3. ✘ 1- 3- 5- 6- 2- 4-1

4. ✘ 1- 2- 3- 4- 5 -6-1

Question Number : 84 Question Id : 8196 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The face angle in exhaust valve is-

Options :

1. ✔ 45°

2. ✘ 30°

3. ✘ 75°

4. ✘ 15°

Question Number : 85 Question Id : 8197 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

What is the best Anti-knock agent added to gasoline.

Options :

1. ✘ Hexane
2. ✔ Tetra-ethyl lead
3. ✘ Ethyl-nitrate
4. ✘ Heptane

Question Number : 86 Question Id : 8198 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Which thermodynamics cycle follows constant volume combustion?

Options :

1. ✔ Otto
2. ✘ Diesel
3. ✘ Dual
4. ✘ Carnot

Question Number : 87 Question Id : 8199 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Supercharging supplies air-fuel mixture to the engine at:

Options :

1. ✘ Atmospheric pressure
2. ✔ Higher pressure than the atmospheric pressure
3. ✘ Lower Pressure than the atmospheric Pressure
4. ✘ Vacuum pressure

Question Number : 88 Question Id : 8200 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The function of the muffler is:

Options :

1. ✘ To decrease the temperature of the exhaust gases
2. ✘ To increase the pressure of the exhaust gases
3. ✔ To reduce the loud noise of the exhaust gases
4. ✘ To increase the temperature of the exhaust gases

Question Number : 89 Question Id : 8201 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

In a turbo-charger, the exhaust gases:

Options :

1. ✘ Run the centrifugal pump rotor
2. ✘ Heat the incoming air
3. ✔ Run the turbine rotor
4. ✘ Clean the air from the dirt

Question Number : 90 Question Id : 8202 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

The function of a governor in a diesel engine is to –

Options :

1. ✘ Increase the speed of the engine at full load.
2. ✘ Decrease the speed of the engine at no load.
3. ✘ To maintain constant load when speed changes.
4. ✔ To maintain intermediate speed irrespective of the load

Question Number : 91 Question Id : 8203 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

If the thermostat is stuck closed, the engine will -

Options :

1. ✘ Warm up slowly
2. ✔ Overheat
3. ✘ Fail to start
4. ✘ cool

Question Number : 92 Question Id : 8204 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

Important pollutants of the engine exhaust are-

Options :

1. ✘ HC, CO₂ and H₂O
2. ✔ HC, CO and NO_x
3. ✘ HC, CO and CO₂
4. ✘ HC,SO₂ and H₂O

Question Number : 93 Question Id : 8205 Question Type : MCQ Option Shuffling : No
Correct : 2.0 Wrong : 0.0

What type of gears is used in a synchromesh gear box?

Options :

1. ✘ Spur gear
2. ✘ Hypoid gear
3. ✔ Spiral gear
4. ✘ Spur and Hypoid gear

Question Number : 94 Question Id : 8206 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which one of the following consists of final drive system?

- (a) Gear box
- (b) Universal joint
- (c) Axle shaft
- (d) Differential

Options :

1. ✘ a, b and c
2. ✔ b, c and d
3. ✘ a, c and d
4. ✘ a, b and d

Question Number : 95 Question Id : 8207 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Where is an air bleeder provided?

Options :

1. ✔ At the wheel cylinder
2. ✘ At the master cylinder
3. ✘ Any place on the brake pipe line
4. ✘ In the reservoir

Question Number : 96 Question Id : 8208 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the following wheel of a four-wheeler follows longest radius of curvature on a curved road?

Options :

1. ✘ Inner front wheel
2. ✘ Inner rear wheel
3. ✔ Outer front wheel
4. ✘ Outer rear wheel

Question Number : 97 Question Id : 8209 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

When a four wheeler runs on a curved road, then the front wheels are -

Options :

1. ✔ Toe-out
2. ✘ Toe-in
3. ✘ Parallel
4. ✘ Toe-in and Toe-out

Question Number : 98 Question Id : 8210 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

Which of the following is a camber angle?

Options :

1. ✘ Angle between the stub axle and the wheel
2. ✘ Angle between the king pin and the road wheel
3. ✔ Tilting angle of the wheel from vertical
4. ✘ Tilting angle of the wheel from horizontal

Question Number : 99 Question Id : 8211 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The function of a leaf spring is to -

Options :

1. ✘ Transmit shock energy
2. ✘ Store the shock energy
3. ✘ Absorb the shock energy
4. ✔ Store and absorb the shock energy

Question Number : 100 Question Id : 8212 Question Type : MCQ Option Shuffling : No

Correct : 2.0 Wrong : 0.0

The height of watt's governor is expressed as –
(Where g = acceleration due to gravity, h = height of governor, w = Angular velocity of arm)

Options :

1. ✘ $h = w^2/g$

2. ✘ $h = gw^2$

3. ✘ $h = gw$

4. ✔ $h = g/w^2$