परीक्षेचे नांव : सहायक प्राध्यापक, स्वयंचल अभियांत्रिकी, **परीक्षेचा दिनांक : 27 जुलै, 2014**

अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय, महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-2014

विषय : स्वयंचल अभियांत्रिकी

महाराष्ट्र लोकसेवा आयोगामार्फत सहायक प्राध्यापक, स्वयंचल अभियांत्रिकी, अस्वायत्त शासकीय अभियांत्रिकी महाविद्यालय, महाराष्ट्र अभियांत्रिकी महाविद्यालयीन शिक्षक सेवा, गट -अ, चाळणी परीक्षा-२०१४ या परीक्षेच्या प्रश्नपत्रिकेची उत्तरतालिका उमेदवारांच्या माहितीसाठी संकेतस्थळावर प्रसिध्द करण्यात आली आहे. सदर उत्तरतालिकेतील प्रश्न-उत्तरांसंबंधी उमेदवारांना निवेदन करावयाचे असल्यास त्यांनी अधिप्रमाणीत स्पष्टीकरण / संदर्भ देऊन तसेच विषय, परीक्षेचे नाव, प्रश्नसंच, प्रश्नक्रमांक यांच्या उल्लेखासह आपले लेखी निवेदन उपसचिव (गोपनीय), महाराष्ट्र लोकसेवा आयोग, बँक ऑफ इंडिया बिल्डिंग, ३ रा मजला, हुतात्मा चौक, मुंबई ४०० ००१ या पत्त्यावर टपालाने पाठवावे. यासंदर्भात दि. ०८ ऑगस्ट, २०१४ पर्यंत आयोगाकडे प्राप्त झालेल्या निवेदनांचीच दखल घेतली जाईल. तद्नंतर आलेली निवेदने विचारात घेतली जाणार नाहीत, याची कृपया नोंद घ्यावी

उत्तरतालिका - KEY

MPSC

MPSC 27th July 2014 Shift 2

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:	Assistant Professor Automobile ACTUAL
Subject Name:	Assistant Professor Automobile
Duration:	60

Group 1	
Group Maximum Duration :	0
Group Minimum Duration :	60
Revisit allowed for view? :	No
Revisit allowed for edit? :	No

Assistant Professor Automobile	
Mandatory or Optional:	Mandatory

Question Number : 1 Question Type : MCQ
Correct : 2 Wrong : 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 :

1. ✖ -50kJ
2. ✖ 100kJ
3. ✔ 25kJ
4. ✖ -25kJ

Question Number : 2 Question Type : MCQ
Correct : 2 Wrong : 0

Expansion in nozzle is a -

Options :

1. ✖ Isobaric Process
2. ✖ Isothermal Process
3. ✔ Adiabatic Process

4. ✖ Isochoric Process

Question Number : 3 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Second law of thermodynamics defines -

Options :

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

Question Number : 5 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

An ideal gas at $27^{\circ}C$ is heated at constant pressure till its volume becomes three times. The temperature of gas then will be -

Options :

1. ✖ $81^{\circ}C$
2. ✖ $900^{\circ}C$
3. ✔ $627^{\circ}C$

4. ✖ 574 °C

Question Number : 7 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Which of the following has maximum value of thermal conductivity -

Options :

1. ✔ Aluminium

2. ✖ Steel

3. ✖ Brass

4. ✖ Copper

Question Number : 13 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Torque developed by a disc clutch is given by -

(Whereμ = 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. ✖ $T = 0.75 \mu wr$
4. ✔ $T = \mu w r$

Question Number : 19 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Radiation pyrometers are used in temperature range of-

Options :

1. ✖ 0 - 250 ^{0}C

2. ✖ 500 -1000^{0}C

3. ✖ 250 - 500^{0}C

4. ✔ 1200-2500^{0}C

Question Number : 35 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Autocollimator is used for -

Options :

1. ✖ Parallelism measurement

2. ✖ Straightness measurement

3. ✖ Flatness measurement

4. ✔ Angular measurement

Question Number : 37 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

For measuring the temperature in the range of - 20 to 550 ^{0}C, following liquid is used in glass thermometer -

Options :

1. ✓ Mercury

2. ✗ Alcohol

3. ✗ Toluene

4. ✗ pentane

Question Number : 41 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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°C 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ

Correct : 2 Wrong : 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. ✖ Gelerkin Method
4. ✖ Weighted residual Method

Question Number : 54 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

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

Options :

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

2. ✖ $(q^2/2c) \times$ Volume of shaft

3. ✖ $(q^2/c) \times$ Volume of shaft

4. ✖ $(2q^2/c) \times$ Volume of shaft

Question Number : 58 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

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

Options :

1. ✔ Distilled water

2. ✖ H_2SO_4

3. ✖ HCl

4. ✖ Petrol

Question Number : 60 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Guide ways of lathe beds are hardened by -

Options :

1. ✖ Carburising

2. ✖ Cynaiding

3. ✖ Nitriding

4. ✔ Flame hardening

Question Number : 66 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Work hardening reduces -

Options :

1. ✖ Malleability
2. ✖ Hardness
3. ✖ Toughness
4. ✔ Ductility

Question Number : 69 Question Type : MCQ
Correct : 2 Wrong : 0

Chances of crack 'propagation' is more in -

Options :

1. ✖ Hot working
2. ✔ Cold working
3. ✖ Welding
4. ✖ Machining

Question Number : 70 Question Type : MCQ
Correct : 2 Wrong : 0

The structure of eutectoid steel is-

Options :

1. ✔ Purely cementite
2. ✖ Cementite & pearlite
3. ✖ Purely pearlite
4. ✖ Pearlite & ferrite

Question Number : 71 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

The face angle in exhaust valve is-

Options :

1. ✔ 45^0
2. ✖ 30^0
3. ✖ 75^0
4. ✖ 15^0

Question Number : 85 Question Type : MCQ

Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Which thermodynamics cycle follows constant volume combustion?

Options :

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

Question Number : 87 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 0

Important pollutants of the engine exhaust are-

Options :

1. ✖ HC, CO_2 and H_2O
2. ✔ HC, CO and NO_x
3. ✖ HC, CO and CO_2

4. ✖ HC, SO_2 and H_2O

Question Number : 93 Question Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ

Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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 Type : MCQ
Correct : 2 Wrong : 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. ✔ $h = g/w^2$