TSPSC
AMVI

Previous Year Paper
(Automobile Engg) Paper-II
28 Jun, 2023

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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 :	PC22312 Automobile Engineering AMVI2231
Subject Name :	PC22312 Automobile Engineering AMVI2231
Actual Answer Key :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Automobile Engineering

Section type :	Online
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 630680253404 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following laws provides the basis for the temperature measurement?

Options :

✔ Zeroth law of thermodynamics

✖ First law of thermodynamics

✖ Second law of thermodynamics

✖ Boyle’s law

Question Number : 2 Question Id : 630680253405 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For an isothermal process, which of the following is correct based on first law of thermodynamics?

Options :

✔ Heat added or rejected by the system equals to the work done by the system or work done on the system

✖ Work done by the system or work done on the system equals to the change in internal energy

✖ Heat added or rejected equals to the change in internal energy

✖ Heat added or rejected is equals to the sum of change in internal energy (not equal to zero) and work done by a system or work done on a system

Question Number : 3 Question Id : 630680253406 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

In context of I.C. engines, what is the ratio of shaft energy to the energy available at the piston is called?

Options :

✖ Brake thermal efficiency

✖ Indicated thermal efficiency

✔ Mechanical efficiency

✖ Volumetric efficiency

Question Number : 4 Question Id : 630680253407 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For the I.C. engine, the ratio of total volume of the cylinder to clearance volume is called _____.

Options :

✖ clearance ratio

✖ efficiency

✖ expansion ratio

✔ compression ratio

Question Number : 5 Question Id : 630680253408 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is an advantage of reciprocating internal combustion engines over external combustion engines?

Options :

✖ Starting torque is high

✔ Weight to power ratio is generally low

✖ Require more space

✖ Cheaper fuel can be used

Question Number : 6 Question Id : 630680253409 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a function of Gudgeon pin in internal combustion engines?

Options :

✖ It acts as a face to receive gas pressure and transmits the thrust to connecting rod

✖ Provide a good sealing fit between the piston and cylinder

✔ It supports and allows the swivel of the connecting rod

✖ It reduces friction and takes care of the fluctuations of speed during a cycle

Question Number : 7 Question Id : 630680253410 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

During which of the following stroke, the flywheel stores energy so that it can supply the energy during the idle strokes?

Options :

✖ Suction stroke

✔ Expansion stroke

✖ Compression stroke

✖ Exhaust stroke

Question Number : 8 Question Id : 630680253411 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

To allow the fresh charge to enter the cylinder, the inlet valve is opened in advance of the T.D.C position. The inlet valve is opened in advance by _____.

Options :

✔ 10° to 30°

✖ 50° to 60°

✖ 30° to 70°

✖ 0° to 10°

Question Number : 9 Question Id : 630680253412 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following factors affect the ignition timing of an internal combustion engine?

Options :

✔ Type of fuel

✖ Flywheel

✖ Piston material

✖ Cylinder material

Question Number : 10 Question Id : 630680253413 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

In a two-stroke engine, the process of clearing the cylinder after the expansion stroke is called _____.

Options :

✖ expansion

✔ scavenging

✖ compressing

✖ knocking

Question Number : 11 Question Id : 630680253414 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

What is the difference between indicated power and brake power of internal combustion engine?

Options :

✖ Total power

✖ Total available energy

✔ Total engine friction loss

✖ Total clearance

Question Number : 12 Question Id : 630680253415 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The lowest temperature at which lubricating oil changes from a liquid state to plastic or solid state is called _____.

Options :

✔ cloud point

✖ emulsification point

✖ flash point

✖ pour point

Question Number : 13 Question Id : 630680253416 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about cooling system of engines?

I. The cooling system is provided on an engine because high temperatures reduce strength of piston and cylinder liner.
II. The cooling system is provided on an engine because the overheated cylinder may lead to ignition lag in spark ignition engines.

Options :

✔ Only I

✖ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 14 Question Id : 630680253417 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the diesel engines?

I. Diesel engines uses an injector.
II. There is no pre-ignition in diesel engines.

Options :

✖ Only I

✖ Only II
✔ Both I and II
✖ Neither I nor II

Question Number : 15 Question Id : 630680253418 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about grease?

I. Grease is only used where there is a low bearing and shock loads.
II. Lubricating grease is a solid to semi solid dispersion of a thickening agent in liquid lubricant.

Options :

✖ Only I
✔ Only II
✖ Both I and II
✖ Neither I nor II

Question Number : 16 Question Id : 630680253419 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about lubricating oils?

I. Fatty oils exhibit less oiliness than mineral oils of the same viscosity.
II. Multigrade oil are not required to change as per ambient temperature.
III. Multigrade oil has short warming up period.

Options :

✖ Only I and II
✖ Only II
✔ Only II and III
✖ Only I and III

Question Number : 17 Question Id : 630680253420 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about the fuel injection system?

I. It controls the rate of fuel injection.
II. It filters the fuel.
III. It controls the quantity of fuel to be injected.

Options :

✖ Only I and II
✖ Only II and III
✔ All I, II and III
✖ Only I and III

Question Number : 18 Question Id : 630680253421 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following statement is correct regarding the effects of the air fuel mixtures in SI engine?

I. If the air fuel mixture is slightly richer, mean effective pressure reaches its maximum value.
II. The rate of fuel consumption is lowest for rich air fuel mixtures.
III. By decreasing the richness of air fuel mixture, the proportion of CO_2 will decrease while those of CO with certain traces of unburnt H_2 will increase.

Options :

✔ Only I
✖ Only II and III
✖ Only I and III
✖ Only II

Question Number : 19 Question Id : 630680253422 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following statements in context of Spark Ignition engine.

	Effect		Cause
I	Results in lowering of efficiency	1	Running on the weakest air fuel mixture
II	Results in high efficiency	2	Running on the richest air fuel mixture
III	Results in complete burning of the fuel	3	During the cruising the air fuel mixture is approximately 16.5: 1 so that

Options :

✖ I-1, II-2, III-3

✔ I-2, II-1, III-3

✖ I-3, II-2, III-1

✖ I-2, II-3, III-1

Question Number : 20 Question Id : 630680253423 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following fuel standard to its specialty.

	Standard		Specialty
I	Iso-octane	1	Very prone to knock
II	Normal heptane	2	Measure of ignition quality of diesel
III	Cetane number	3	Very high resistance to knock
		4	Anti knock performance under severe operating conditions

Options :

✖ I-4, II-2, III-3

✔ I-3, II-1, III-2

✖ I-1, II-3, III-4

✖ I-2, II-4, III-1

Question Number : 21 Question Id : 630680253424 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correctly matched pair regarding Clausius Inequality?

Options :

✖ $\frac{\delta Q}{T} > 0$: Reversible cycle

✖ $\frac{\delta Q}{T} = 0$: Irreversible cycle

✔ $\frac{\delta Q}{T} < 0$: Irreversible cycle

✖ $\Delta S < 0$: Isolated system

Question Number : 22 Question Id : 630680253425 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For same compression ratio and same heat input, which of the following order of efficiency is correct?

Options :

✖ $\eta_{duel} > \eta_{otto} > \eta_{diesel}$

✖ $\eta_{diesel} > \eta_{duel} > \eta_{otto}$

✖ $\eta_{duel} > \eta_{diesel} > \eta_{otto}$

✔ $\eta_{otto} > \eta_{duel} > \eta_{diesel}$

Question Number : 23 Question Id : 630680253426 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in an increasing order of value of n in $PV^n = C$.
I. Constant pressure process
II. Reversible adiabatic process
III. Constant volume process
IV. Isothermal process

Options :

✖ I, II, III, IV

✖ II, I, III, IV

✖ II, III, I, IV

✔ I, IV, II, III

Question Number : 24 Question Id : 630680253427 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For the four stroke otto engines, arrange the following in the correct order (first to last).

I. The piston moves T.D.C. to B.D.C. and work is obtained after fuel is ignited.
II. The piston moves B.D.C. to T.D.C. and compresses the air fuel mixture.
III. The piston moves T.D.C. to B.D.C. and the inlet valve opens and air fuel mixture is sucked in.
IV. The piston moves B.D.C. to T.D.C. and gases are made to escape through exhaust value.

Options :

✖ I, III, IV, II

✔ III, II, I, IV

✖ IV, II, I, III

✖ III, I, IV, II

Question Number : 25 Question Id : 630680253428 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For a simple or elementary carburettor, arrange the following in a correct order (first to last).

I. The velocity of air increases as it passes through the constriction at the venturi.
II. Pressure decreases due to conversion of a portion of pressure head into kinetic energy.
III. The piston moves down and the suction is produced in the cylinder and the induction manifold.
IV. Due to pressure difference the jet issues fuel oil into air stream which vapourise forming air fuel mixture.
V. The air flows through the carburettor.

Options :

✔ III, V, I, II, IV

✖ II, V, III, I, IV

✖ III, II, I, IV, V

✖ II, IV, III, V, I

Question Number : 26 Question Id : 630680253429 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is an advantage of chassis with engine at front and drive is given to the wheels from rear of a vehicle?

Options :

✔ Increased efficiency of cooling system

✖ Inadequate space behind the rear seat for the luggage

✖ Elimination of propeller shaft

✖ The clutch, gear box and differential are usually made as one unit results in cost reduction

Question Number : 27 Question Id : 630680253430 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is a defect that may be found in chassis body of an automobile?

Options :

✖ Build up edges
✔ Broken welds
✖ Heat affected zone
✖ Toe out

Question Number : 28 Question Id : 630680253431 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For an automotive body, the magnitude of the drag force depends on _____.

Options :

✖ shear strength of automotive body
✖ magnitude of gravity
✔ velocity of automotive body
✖ strength of automotive body

Question Number : 29 Question Id : 630680253432 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following load acts on a chassis when a vehicle crosses a broken patch of road?

Options :

✖ Inertia load
✔ Short duration load
✖ Overload
✖ Impact load

Question Number : 30 Question Id : 630680253433 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

In which of the following the carriage unit of a car rolls about a transverse axis?

Options :

✖ Rolling
✖ Yawing
✔ Pitching
✖ Bending

Question Number : 31 Question Id : 630680253434 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is a function of the shackle in the context of a leaf spring?

Options :

✔ It helps in accommodating the change in the length of the spring.
✖ It is used to keep leaf spring in position on the axle.
✖ It is used to provide progressive stiffness against increasing load.
✖ It provides lubrication between the leaf spring.

Question Number : 32 Question Id : 630680253435 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is a formula of the effective mean radius of a clutch for uniform pressure condition? (Where r_1 is inner radius and r_2 is outer radius).

Options :

✖ $\frac{1}{3}\left(\frac{r_2^3 - r_1^3}{r_2^2 - r_1^2}\right)$

✔ $\frac{2}{3}\left(\frac{r_2^3 - r_1^3}{r_2^2 - r_1^2}\right)$

- $\left(\frac{r_2 + r_1}{2}\right)$
- $\frac{2}{3}\left(\frac{r_1^3 - r_2^3}{r_2^2 - r_1^2}\right)$

Question Number : 33 Question Id : 630680253436 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

In gear box, the device that is used to lock collar into the gear is called _____.

Options :

- reverse gear
- ✔ dog clutch
- electromagnetic clutch
- diaphragm clutch

Question Number : 34 Question Id : 630680253437 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The terms used for a combination of transmission and rear axles as a unit of a vehicle is _____.

Options :

- live axle
- tandem axle
- split axle
- ✔ trans axle

Question Number : 35 Question Id : 630680253438 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

If vehicle is taking a turn, what is the ratio of side force sustained to slip angle called?

Options :

- Camber force
- ✔ Cornering power
- Frictional power
- Camber angle

Question Number : 36 Question Id : 630680253439 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following statement is correct about front axles of a vehicle?

I. The front wheels are mounted on stub axles which are connected to the front axle by king pin.
II. When brakes are provided at the front wheels the front axle withstand bending stresses only.

Options :

- ✔ Only I
- Only II
- Both I and II
- Neither I nor II

Question Number : 37 Question Id : 630680253440 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding steering mechanism of a vehicle?

I. In order to avoid skidding, the two front wheels instantaneous centre should not coincide with the two rear wheels instantaneous centre.

II. The fundamental equation for correct steering is $\cot\phi - \cot\theta = \frac{c}{b}$.

Where, c = distance between the pivots of front axle.

b = wheel base

θ = inner wheel turning angle

ϕ = outer wheel turning angle

Options :

✖ Only I

✔ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 38 Question Id : 630680253441 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following statement is correct regarding transmission system of automobiles?

I. The main advantage of an overdrive is prolonged engine life since the engine turns slower.
II. A slip joint is attached to the driven yoke in order to increase or decrease the propeller shaft.

Options :

✖ Only I

✖ Only II

✔ Both I and II

✖ Neither I nor II

Question Number : 39 Question Id : 630680253442 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following statement is correct regarding rear axles of a vehicle?

I. The Banjo axle arrangement is a central housing that contains the final drive and it is fitted with a tube on each side to carry the half axles and bearings.
II. The main advantage of three-quarter floating rear axle over the half floating axle is that the major part of the load is taken by the axle and not by the axle casing.
III. A full floating rear axle is not supported by bearing at either end, is very strong and used for heavy duty vehicles.

Options :

✖ Only II

✖ I and II

✔ Only III

✖ II and III

Question Number : 40 Question Id : 630680253443 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding causes of axle failure of a vehicle?

I. Lubricant is not maintained at the required level.
II. The vehicle is over loaded.
III. Using of lubricant of correct grade.

Options :

✖ Only I

✖ II and III

✔ I and II

✖ Only III

Question Number : 41 Question Id : 630680253444 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following symptoms with their causes for troubleshooting of gear box.

	Symptoms		Causes
I	Oil leaks	1	Excessive wear on gear shift control
II	Gear jumps out	2	Defective synchronizer
III	Gears clash while they are shifted	3	Broken gaskets
		4	Heavy heat contact on the ring gear

Options :

✖ I-1, II-2, III-3

✔ I-3, II-1, III-2

✖ I-2, II-1, III-4

✖ I-4, II-3, III-1

Question Number : 42 Question Id : 630680253445 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correctly matched pair universal joint of a vehicle with their classification?

Options :

✖ Tracta type : Variable velocity joints

✖ Rzeppa type : Variable velocity joint

✔ Ball and Trunion type : Variable velocity joints

✖ Ring type : Constant velocity joint

Question Number : 43 Question Id : 630680253446 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correctly matched pair regarding the tyres?

Options :

✖ Ply : The cross grooved tyre tread

✖ Carcass : An aunclar torridal shaped inflatable envelope made of an elastic material

✖ Ribs : The layer of rubber coated parallel cords

✔ Bead : Part which is shaped to fit the rim and hold the tyre on it

Question Number : 44 Question Id : 630680253447 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following position in decreasing order of power transmission based on the position of gear shift lever of a vehicle.

I. Low position
II. Reverse position
III. Neutral position

Options :

✔ I, II, III

✖ II, I, III

✖ III, I, II

✖ III, II, I

Question Number : 45 Question Id : 630680253448 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in a correct order (first to last) for air brakes of a vehicle.

I. The air pressure act on a diaphragm of brake chamber.
II. Brake shoes expands outwards and hold the moving brake drums.
III. The foot pedal is pressed down.
IV. The diaphragm is pushed outward in the brake chamber causing movement of brake shoe operating cam.

Options :

✖ III, IV, I, II

✔ III, I, IV, II
✖ III, IV, II, I
✖ III, II, IV, I

Question Number : 46 Question Id : 630680253449 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following statements in correct order (first to last) regarding fluid coupling.

I. The prime mover starts rotating.
II. The oil is thrown outwards by centrifugal action by pump impeller.
III. The oil then enters the impeller pump again.
IV. The pump impeller starts rotating.
V. The oil enters the turbine runner and exerts force on runner blades.
VI. The torque increases results in rotation of turbine runner after overcoming inertia effects.

Options :

✖ I, V, II, IV, III, VI
✖ I, II, III, V, IV, VI
✔ I, IV, II, V, VI, III
✖ II, III, I, VI, IV, V

Question Number : 47 Question Id : 630680253450 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct for improving fuel economy of vehicle?

Options :

✖ Under inflated tyre consume less fuel
✖ Check and maintain low engine oil level
✖ Replace the brake fluid to avoid extra fuel consumption
✔ Keep a constant speed as road traffic situation permit

Question Number : 48 Question Id : 630680253451 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a standard operating condition for an automotive engine as per Indian Standard Institute?

Options :

✖ Intake air temperature is 25°C
✖ Water vapour pressure of 150 mm of Hg of mercury, corresponding to a relative humidity of 40 percent at 25°C
✔ Mean barometric pressure of 736 mm Hg corresponding to an altitude of 300 metres above mean sea level
✖ Intake temperature is 45°C

Question Number : 49 Question Id : 630680253452 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following information is conveyed by the lubrication chart of the vehicle?

Options :

✔ The type of lubricant needed for a particular point
✖ The battery acid level
✖ Carbon deposition on sparkplug
✖ Type of engine oil needed

Question Number : 50 Question Id : 630680253453 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a part of charging system of the automotive electrical system?

Options :

✖ Horns
✔ Alternator
✖ Electronic ignition systems
✖ Lighting

Question Number : 51 Question Id : 630680253454 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following test is conducted to ascertain the conditions of a battery of an automobile?

Options :

✔ Hydrometer testing

✖ Morse testing

✖ Motoring test

✖ Static brake testing

Question Number : 52 Question Id : 630680253455 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a merit of transistorized coil ignition systems over conventional ignition system of a vehicle?

Options :

✖ Better working of contact breaker at high speeds

✖ Less costly

✔ Increased service life of spark plug

✖ Improves life of contact breaker

Question Number : 53 Question Id : 630680253456 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

According to Lucas, what is the colour of wiring cables for dynamo circuit of a car?

Options :

✖ Red

✖ Black

✖ Green

✔ Yellow

Question Number : 54 Question Id : 630680253457 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The lights which indicate the direction the vehicle is about to turn are _____.

Options :

✖ side lights

✔ trafficators

✖ tail light

✖ reverse light

Question Number : 55 Question Id : 630680253458 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding hot water liquid heater in an automobile?

Options :

✖ It consists of a combustion chamber and re-ignitor.

✖ Outside air made to flow through the passage between the covering and exhaust manifold and air then circulated inside the car.

✔ The heat from the coolant circulating inside the engine is converted into hot air.

✖ A mixture of air and fuel is drawn from carburetor and burns inside the combustion chamber.

Question Number : 56 Question Id : 630680253459 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the preventive maintenance of a car?

Options :

✖ The horsepower improves more than the rated level

✔ Fuel mileage is increased dramatically

✖ There is no replacement of parts

✖ It leads to sharp drop in performance of vehicle

Question Number : 57 Question Id : 630680253460 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correct about preventive maintenance of piston and piston rings of a car?

I. Piston rings are to be checked for tension and scratches.
II The carbon is removed and piston is cleaned using caustic cleaning solution and wire brush.

Options :

✔ Only I
✖ Only II
✖ Both I and II
✖ Neither I nor II

Question Number : 58 Question Id : 630680253461 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about vacuum spark advance mechanism of an engine?

I. It contains a spring loaded diaphragm which is connected with the distributor by means of a link and damp.
II. When distributor body is rotated opposite to the rotation of the rotor ignition is advanced.

Options :

✖ Only I
✖ Only II
✔ Both I and II
✖ Neither I nor II

Question Number : 59 Question Id : 630680253462 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following statements is correct regarding starting motor of an automobile?

I. Bendix drive is known as overrunning clutch drive.
II. The pole shoes hold the field coils and become magnetized when current flows through the coil.
III. The purpose of the solenoid switch is to shift the drive pinion magnetically into mesh with the flywheel to complete the circuit.
IV. If the starter works but does not crank the engine then the solenoid switch may be defective.

Options :

✖ I, II
✖ I, II and III
✖ II, IV
✔ II, III

Question Number : 60 Question Id : 630680253463 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following.

	Function		Components
I	Convert mechanical energy from engine into electrical energy	1	Regulator
II	Control the amount of electrical energy produced	2	Relay
III	Converts electrical energy into mechanical energy	3	Dynamo
		4	Starting motor

Options :

✔ I-3, II-1, III-4
✖ I-1, II-4, III-3
✖ I-2, II-1, III-4
✖ I-1, II-2, III-3

Question Number : 61 Question Id : 630680253464 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correctly matched pair regarding troubles in spark plug and ignition system with their cause?

I. Engine misfires on one cylinder : Detached high tension cable
II. External insulator broken : Defective ignition coil
III. Engine gets unduly hot : Loose contact screws

Options :

✖ Only III

✖ Only I and II

✔ Only I

✖ Only I and III

Question Number : 62 Question Id : 630680253465 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in decreasing order of total value of resistance.

I. V = 200 V, I = 10 Amp
II. R_1 = 5.5 Ω, R_2 = 10 Ω and R_3 = 6.5 Ω arranged in series circuit
III. R_1 = 5 Ω, R_2 = 12 Ω and R_3 = 6 Ω arranged in parallel circuit

Options :

✖ I, II, III

✖ I, III, II

✖ II, III, I

✔ II, I, III

Question Number : 63 Question Id : 630680253466 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in a correct order (first to last) for washing the car.

I. Wash all body panels.
II. Lift the car on a car lift.
III. Dry the car using a clean chamois.
IV. Complete the washing with a sponge using running water.
V. Wash the bottom of the car wheels included.
VI. Rub a polishing compound of good commercial grade with a cloth.

Options :

✖ II, V, VI, III, I, IV

✖ I, IV, III, VI, V, II

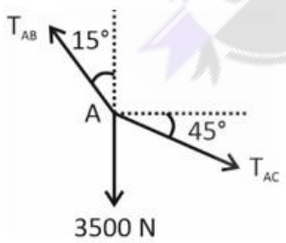
✖ III, II, V, IV, I, VI

✔ II, V, I, IV, III, VI

Question Number : 64 Question Id : 630680253467 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

What is the value of T_{AB} and T_{AC} in the given diagram? (where sin165° = 0.26)



Options :

✖ T_{AB} = 4950 N, T_{AC} = 3005 N

✔ T_{AC} = 1810 N, T_{AB} = 4950 N

✖ T_{AB} = 1810 N, T_{AB} = 3500 N

✖ T_{AB} = 3500 N, T_{AC} = 1810 N

Question Number : 65 Question Id : 630680253468 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The prefix used to show multiplying factor of 10^{-12} is _____.

Options :

✖ tera

✖ nano

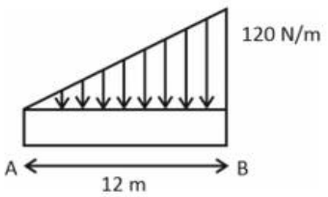
✔ pico

✖ fermi

Question Number : 66 Question Id : 630680253469 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

What is the total load acting on the beam AB?



Options :

✖ 14400 N

✖ 7200 N

✔ 720 N

✖ 1440 N

Question Number : 67 Question Id : 630680253470 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of the limiting force of friction (F) to the normal reaction (R) between two bodies is called _____.

Options :

✖ Coefficient of repose

✖ Angle of repose

✖ Frictional power

✔ Coefficient of friction

Question Number : 68 Question Id : 630680253471 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The change in length (elongation) of bar due to self-weight is given by _____. (P = Load, ρ = density, E = Young's Modulus, d_1 and d_2 are diameters)

Options :

✖ $\frac{\rho g l}{3E}$

✔ $\frac{\rho g l^2}{2E}$

✖ $\frac{4PL}{\pi d_1 d_2 E}$

✖ $\frac{\rho g L}{2\pi d_1 d_2 G}$

Question Number : 69 Question Id : 630680253472 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correct relation between the material properties? (where (1/m) is poission ratio, K is bulk modulus, E is Young's modulus)

Options :

✔ $K = \frac{mE}{3(m-2)}$

✖ $K = \frac{E}{2\left(\frac{1}{m}+1\right)}$

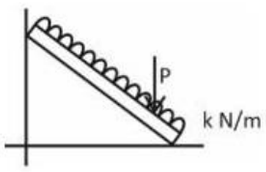
✖ $K = \frac{2mE}{(m+2)}$

✖ $K = \frac{mE}{(2m+1)}$

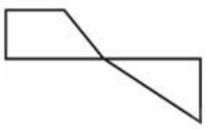
Question Number : 70 Question Id : 630680253473 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a possible shear force diagram for an inclined beam under uniformly distributed load and a point load as shown in a diagram?



Options :

✖ 

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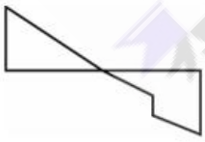
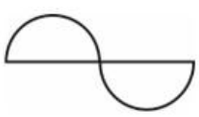
✔ 

✖ 

Question Number : 71 Question Id : 630680253474 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The maximum deflection for a simply supported beam with a uniformly distributed load is given by _____. (Where w is weight per unit length)

Options :

✖ $\frac{wl^3}{584El}$

✔ $\frac{5wl^4}{384El}$

✖ $\frac{wl^3}{16El}$

✖ $\frac{wl^4}{48El}$

Question Number : 72 Question Id : 630680253475 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a bending moment diagram for a cantilever beam with a uniformly distributed load?

Options :

✖ 

✖ 

✖ 

✔ 

Question Number : 73 Question Id : 630680253476 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of lateral strain to linear strain of a body is called _____.

Options :

✖ Resilience

✖ Deflection

✔ Poisson's ratio

✖ Young’s modulus

Question Number : 74 Question Id : 630680253477 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about strain in a body?
I. Shear strain is defined as the ratio between change in volume and original volume of the body.
II. The ratio between the compressing stress and compressive strain is called modulus of elasticity.

Options :

✖ Only I

✔ Only II

✖ Both I and II

✖ Neither I nor II

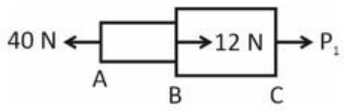
Question Number : 75 Question Id : 630680253478 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding load?

I. For a bar with different section subjected to axial load P, the resultant deformation will be summation of change of length of every section.

II.



For the above diagram the value of P_1 is 52 N.

Options :

✔ Only I

✖ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 76 Question Id : 630680253479 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

A 1 m long rod is fixed at both ends. What is the temperature through which rod can be heated to NOT exceed the thermal stress of 90 MPa? The value of α is $2 \times 10^{-5} K^{-1}$ and E is 90 GPa.

Options :

✖ 90 K

✖ 180 K

✔ 50 K

✖ 100 K

Question Number : 77 Question Id : 630680253480 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding thermal stress?

I. If the supports yield by an amount Δ, the change in length will be summation of $l\ \alpha\ T$ and Δ.

II. The stress of the supports yield by an amount Δ is $\left(\alpha t - \frac{\Delta}{l}\right) E$.

(where l = length of the original body, α = coefficient of thermal expansion)

Options :

✖ Only I

✔ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 78 Question Id : 630680253481 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding elasticity of a body?

I. In elasticity, the body regains its shape after force is removed.
II. The resistance force remains even after load is removed.
III. The body can regain its original shape after load removed upto elastic limit.

Options :

✖ Only I

✖ II and III only

✔ I and III only

✖ I and II only

Question Number : 79 Question Id : 630680253482 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding shearing force, bending moment and loading condition on the beam?

I. A point load at a section on the beam will cause sudden change in shear force.
II. A point load at a section on the beam will results in sudden change in bending moment.
III. When there is no load between two point, then shear force does not change.

Options :

✖ Only I
✖ II and III only
✔ I and III only
✖ II only

Question Number : 80 Question Id : 630680253483 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following bending moment diagram with the conditions.

	Bending Moment Diagram		Conditions
I		1	Cantilever beam with a point load at its free end
II		2	Cantilever beam with a uniformly distributed load
III		3	Cantilever beam with uniformly loaded to particular length
IV		4	Cantilever beam is with only moment acting on it

Options :

✖ I-1, II-2, III-3, IV-4
✖ I-2, II-1, III-3, IV-4
✖ I-2, II-3, III-4, IV-1
✔ I-1, II-4, III-2, IV-3

Question Number : 81 Question Id : 630680253484 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correctly matched pair regarding section modulus of different section?

Options :

✖ Hollow circular section : $Z = \frac{\pi}{32}\frac{(D^4-d^4)}{\left(\frac{D}{2}\right)}$

✔ Solid circular section : $Z = \frac{\pi}{32}d^3$

✖ Solid semi-circular section : $Z = \frac{3\pi}{64}d^3$

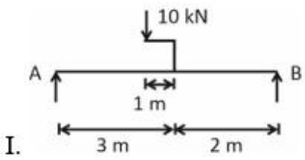
✖ Hollow circular section : $Z = \frac{\pi}{14}(D^4 - d^4)$

Question Number : 82 Question Id : 630680253485 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

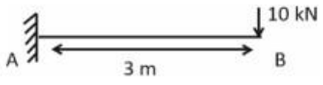
Correct Marks : 2

Arrange the following in the increasing order of maximum bending moment for the given loading condition.

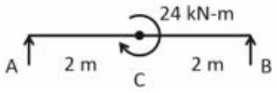
I.



II.



III.



Options :

✖ I, II, III

✖ II, III, I

✖ III, II, I

✔ III, I, II

Question Number : 83 Question Id : 630680253486 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in a decreasing order of the moment of inertia of the given geometric shapes.

I. Circle
II. Quarter circle
III. Semi-circle

Options :

✖ I, II, III

✖ II, III, I

✔ I, III, II

✖ II, I, III

Question Number : 84 Question Id : 630680253487 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following steps of analysis of machines in a correct order (first to last).

I. Dismember the machine and draw a free body diagram of each member.
II. Draw a free body diagram of the whole machine.
III. Equilibrium equations can be written and solved.
IV. Consider multiforce member and show all the forces acting on the member.
V. Finally check your solution.

Options :

✖ I, III, IV, II, V

✖ II, I, III, IV, V

✔ II, I, IV, III, V

✖ IV, I, II, III, V

Question Number : 85 Question Id : 630680253488 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

For the limit system, what is the difference between the basic dimensions of the mating parts is called?

Options :

✔ Allowance

✖ Fundamental deviation

✖ Tolerance

✖ Mean deviation

Question Number : 86 Question Id : 630680253489 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of maximum stress to the working stress of a material is called _____.

Options :

✖ Strain

✖ Poisson's ratio

✔ Factor of safety

✖ Young modulus

Question Number : 87 Question Id : 630680253490 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The stresses which vary from one value of tensile to same value of compressive or vice versa of the beam are known as _____.

Options :

✖ repeated stress

✖ bending stress

✖ fluctuating stress

✔ completely reversed stress

Question Number : 88 Question Id : 630680253491 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

What does the weld symbol '—' represents according to IS : 813 – 1961?

Options :

✖ Field weld

✖ Chipping finish

✔ Flush contour

✖ Flash welding

Question Number : 89 Question Id : 630680253492 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The surface joining the crest and root of the screw threads is called _____.

Options :

✖ pitch

✖ slope

✖ lead

✔ flank

Question Number : 90 Question Id : 630680253493 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of load lifted to the effort applied for a lever is called _____.

Options :

✖ Notch sensitivity

✖ Moment

✔ Mechanical advantage

✖ Mechanical efficiency

Question Number : 91 Question Id : 630680253494 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The perpendicular distance between the centre lines of the successive rows in riveted joints is called _____.

Options :

✖ pitch

✖ marginal pitch

✔ back pitch

✖ diagonal pitch

Question Number : 92 Question Id : 630680253495 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is related to the crushing of the rivets? (where, α = coefficient of thermal expansion, ΔT = change in temperature, σ_c = crushing stress, p = pitch of rivets, d = diameter of rivet hole, t = thickness of the plate and n = number rivets, P_c = crushing resistance)

Options :

✔ $P_c = n.d.t.\sigma_c$

✖ $P_c = n(\pi/4).d^2.\sigma_c$

✖ $P_c = (p - d)t.\sigma_c$

✖ $P_c = \alpha \Delta T$

Question Number : 93 Question Id : 630680253496 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following gives the coefficient of fluctuation of speed of a flywheel? (where N_1 = Maximum speed during cycle and N_2 is minimum speed during the cycle)

Options :

✖ $C_s = \frac{N_1 + N_2}{N_1 - N_2}$

✖ $C_s = \frac{N_1 - N_2}{2(N_1 + N_2)}$

✔ $C_s = \frac{2(N_1 - N_2)}{N_1 + N_2}$

✖ $C_s = \frac{2(N_1 + N_2)}{N_1 - N_2}$

Question Number : 94 Question Id : 630680253497 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding leaf spring?

Options :

✔ It consists of a number of flat plates of varying lengths.

✖ In this spring, fluid behave as a compressive spring.

✖ This type of springs are helical in shape and used under compressive load only.

✖ It is made of a wire coiled in the form of a helix.

Question Number : 95 Question Id : 630680253498 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding clutches?

I. The material used as a friction surface of clutch should have low heat conductivity.
II. The material used as a friction surface for clutches should have high and uniform coefficient of friction.

Options :

✖ Only I

✔ Only II
✖ Both I and II
✖ Neither I nor II

Question Number : 96 Question Id : 630680253499 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is the advantage of rolling contact bearings over sliding contact bearings?

I. They have high resistance to shock loading.
II. They have low starting and running friction except at very high speeds.

Options :

✖ Only I
✔ Only II
✖ Both I and II
✖ Neither I nor II

Question Number : 97 Question Id : 630680253500 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is the advantage of the involute gears?

I. The centre distance for a pair of involute gear can be varied within limits without changing the velocity ratio.
II. The interference does not occur at all in this type of gears.

Options :

✔ Only I
✖ Only II
✖ Both I and II
✖ Neither I nor II

Question Number : 98 Question Id : 630680253501 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding springs?

I. For the springs connected in series, the total deflection of the springs is summation of the deflection of each spring.
II. For the springs connected in series, the combined stiffness of the spring is sum of the stiffness of each spring.
III. For the springs connected in parallel, the total load acting on it is the sum of the loads acting on individual springs.

Options :

✖ I and II
✖ II and III
✔ I and III
✖ Only III

Question Number : 99 Question Id : 630680253502 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the sunk keys?

I. A rectangular sunk key with a head at one end is called splines.
II. A key attached as one member of a pair and which permits relative axial movement is known as woodruff key.
III. Woodruff key’s advantage is it accommodates itself to any taper in the hub or boss of the mating piece.

Options :

✖ Only I
✖ II and III
✔ Only III
✖ I and III only

Question Number : 100 Question Id : 630680253503 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following method with the equation for combination of stresses. (where σ_v = variable stress, σ_m = mean stress, σ_u = ultimate stress, σ_e = endurance limit for reversed loading, K_f = fatigue stress concentration factor, F.S. = factor of safety, σ_y = yielding stress)

	Equation for combination of stress		Method
I	$\frac{1}{F.S.}=\left(\frac{\sigma_m}{\sigma_u}\right)^2 F.S.+\frac{\sigma_v.K_f}{\sigma_e}$	1	Soderberg method
II	$\frac{1}{F.S.}=\frac{\sigma_m}{\sigma_u}+\frac{\sigma_v.K_f}{\sigma_e}$	2	Gerber method
III	$\frac{1}{F.S.}=\frac{\sigma_m}{\sigma_y}+\frac{\sigma_v.K_f}{\sigma_e}$	3	Goodman method

Options :

✖ I-1, II-3, III-2

✖ I-2, II-1, III-3

✖ I-3, II-2, III-1

✔ I-2, II-3, III-1

Question Number : 101 Question Id : 630680253504 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correctly matched pair regarding the classification of gears based on the position of axes of shafts?

Options :

✔ Mitres : Intersecting and non-parallel

✖ Spur gear : Non-parallel and non-intersecting

✖ Helical gear : Intersecting and non-parallel

✖ Spiral gear : Parallel and non-intersecting

Question Number : 102 Question Id : 630680253505 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is a correctly matched pair?

	Section	:	Distance from the neutral axis to the extreme fibre
I	Triangle	:	$\frac{h}{2}$
II	Hollow rectangle	:	$\frac{h}{2}$
III	I-section	:	$\frac{h}{3}$
IV	Hollow circle	:	$\frac{d-d_1}{2}$, (where d = outer diameter and d_1 = inner diameter)

Options :

✖ Only I

✔ Only II

✖ II and III

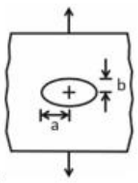
✖ Only IV

Question Number : 103 Question Id : 630680253506 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

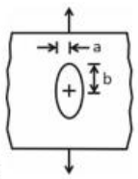
Correct Marks : 2

For a same tensile load, arrange the following in an increasing order of maximum stress, given the theoretical stress concentration factor is $\left(1+\frac{2a}{b}\right)$. (where r = radius of the circle)

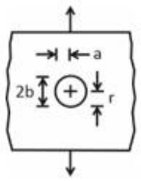
I.



II.



III.



Options :

✖ I, II, III

✖ II, I, III

✔ II, III, I

✖ I, III, II

Question Number : 104 Question Id : 630680253507 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following steps of procedure to solve design problem in a correct order (first to last).

I. Synthesis
II. Material selection
III. Recognition of need
IV. Detailed drawing
V. Modification
VI. Production
VII. Analysis of forces
VIII. Design of elements (size and stresses)

Options :

✔ III, I, VII, II, VIII, V, IV, VI

✖ II, III, V, VI, I, VIII, VII, IV

✖ VI, I, II, III, V, IV, VIII, VII

✖ IV, II, III, I, VII, VIII, V, VI

Question Number : 105 Question Id : 630680253508 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following steps in a correct order (first to last) of design procedure for journal bearing.

I. Determine the bearing length by choosing ratio of l/d.
II. Check the bearing pressure for a probable satisfactory value.
III. Determine the heat generated.
IV. Determine the operating value of ZN/p for the assumed bearing temperature and check this value.
V. Determine the thermal equilibrium to see that the heat dissipated at least equal to heat generated.
VI. Determine the coefficient of friction.
VII. In case the heat generated is more than the heat dissipated than bearing is artificially cooled by water.

Options :

✔ I, II, IV, VI, III, V, VII

✖ II, I, III, V, VI, IV, VII

✖ I, II, VII, IV, VI, V, III

✖ III, V, VI, II, I, IV, VII

Question Number : 106 Question Id : 630680253509 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a finishing process of manufacturing?

Options :

✖ Soldering

✖ Extrusion

✔ Burnishing

✖ Milling

Question Number : 107 Question Id : 630680253510 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a permanent mould casting process?

Options :

✖ Investment casting process

✔ Die casting

✖ Sand casting

✖ Lost foam casting

Question Number : 108 Question Id : 630680253511 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Nylon is a _____.

Options :

✔ thermoplastic

✖ resin

✖ thermoset

✖ elastomer

Question Number : 109 Question Id : 630680253512 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The property which allows material to undergo plastic deformation under tensile load before fracture is _____.

Options :

✖ brittleness

✔ ductility

✖ fatigue

✖ resilience

Question Number : 110 Question Id : 630680253513 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a test used to measure hardness of the material?

Options :

✖ Disk test

✖ Izod test

✖ Charpy test

✔ Vickers test

Question Number : 111 Question Id : 630680253514 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The permanent elongation of a component under a static load maintained for a long period of time is called _____.

Options :

✖ Plasticity

✔ Creep

✖ Fatigue fracture

✖ Residual stress

Question Number : 112 Question Id : 630680253515 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

When white cast iron is annealed in an atmosphere of carbon monoxide and carbon dioxide, at temperature between 800°C and 900°C for several hours depending on size, we obtain _____.

Options :

✖ compacted graphite iron

✖ nodular iron

✖ gray cast iron

✔ malleable iron

Question Number : 113 Question Id : 630680253516 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The heating process by which hardness is reduced and toughness is improved is called _____.

Options :

✖ quenching

✖ cyaniding

✔ tempering

✖ carburizing

Question Number : 114 Question Id : 630680253517 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The machining process of making a hole by removing a disk shaped piece from a flat plate is called _____.

Options :

✔ trepanning

✖ gun drilling

✖ boring

✖ tapping

Question Number : 115 Question Id : 630680253518 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correct relation of material removal rate for milling? (l = length of cut, w = width of the cut, d = depth of cut, t = cutting time, f = feed per tooth, v = feed rate)

Options :

✖ $MRR = \frac{l \times w}{d \times t}$

✖ $MRR = \frac{f \times d \times t}{l}$

✖ $MRR = \frac{w \times d}{v}$

✔ $MRR = \frac{l \times w \times d}{t}$

Question Number : 116 Question Id : 630680253519 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The phenomenon of wandering of arc that occurs in DC welding is called _____.

Options :

✔ Arc blow

✖ Spattering

✖ Underfilling

✖ Lamellar tears

Question Number : 117 Question Id : 630680253520 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the process of reaming?

I. Reaming is an operation used to achieve a high grade of surface finish on a hole.
II. The tool used in reaming operation has multiple cutting edges.

Options :

✖ Only I

✖ Only II

✔ Both I and II

✖ Neither I nor II

Question Number : 118 Question Id : 630680253521 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the lathe operations?

I. Process of reducing the diameter of a workpiece over a very narrow surface is called knurling.
II. Knurling is done at the slowest speed available in a lathe.

Options :

✖ Only I

✔ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 119 Question Id : 630680253522 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about broaching?

I. It is a process of machining a surface with a special multipoint tool.
II. Gears cannot be manufactured using a broaching process.

Options :

✔ Only I

✖ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 120 Question Id : 630680253523 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding forging?

I. Upsetting is a process of increasing cross sectional dimensions when forging.
II. Process of cutting large holes of various shapes by using a chisel over a hole in the sewage block is called setting down.
III. One of the advantages of open die forging is, it can be employed for long run production.

Options :

✔ Only I

✖ I and II only

✖ II and III only

✖ Only III

Question Number : 121 Question Id : 630680253524 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding electron beam machining?

I. It can be used on all materials.
II. Material removal rate is low and vacuum is needed for operation.
III. The voltage required for electron beam machining is 1150 kV.

Options :

✖ I and III only
✔ I and II only
✖ II and III only
✖ Only III

Question Number : 122 Question Id : 630680253525 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding advantages of cold working?

I. Ductility of metal is improved.
II. Minimum contamination during cold working compare to hot working.
III. Good surface finish and better dimensional accuracy than hot working.

Options :

✖ Only I
✖ Only II
✔ II and III only
✖ I and II only

Question Number : 123 Question Id : 630680253526 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following elements with its effect on the steel.

	Elements	:	Effect on the steel
I	Calcium	1	Improves hardenability
II	Boron	2	Improves resistance to atmospheric corrosion
III	Lead	3	Improves toughness and formability
IV	Copper	4	Improves machinability

Options :

✖ I-3, II-4, III-1, IV-2
✖ I-2, II-1, III-4, IV-3
✔ I-3, II-1, III-4, IV-2
✖ I-2, II-4, III-1, IV-3

Question Number : 124 Question Id : 630680253527 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which one of the following is a correctly matched pair?

Options :

✔ Grey cast iron : Graphite exists largely in form of flakes
✖ White cast iron : Graphite in a spherical form
✖ Ductile iron : Graphite in form of short, thick interconnected flakes
✖ Compacted graphite iron : Do not have any carbon flakes

Question Number : 125 Question Id : 630680253528 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following brazing alloys in order of their increasing melting point.

I. Copper = 50 percent, Zinc = 50 percent
II. Copper = 70 percent, Zinc = 30 percent
III. Copper = 60 percent, Zinc = 40 percent

Options :

✖ I, II, III
✖ II, III, I
✖ III, II, I
✔ I, III, II

Question Number : 126 Question Id : 630680253529 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following three region in decreasing order of percentage of heat generated during metal cutting.

I. The shear zone
II. The chip tool interface region
III. The tool-work interface region

Options :

✖ III, II, I

✔ I, II, III

✖ II, III, I

✖ II, I, III

Question Number : 127 Question Id : 630680253530 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following steps in a correct order (first to last) regarding thermit welding.

I. After cutting, pouring and heating gates and risers a flame is directed into heating oven to drain out wax.
II. Molten iron run into the mould which fuses with part to be welded.
III. Wax pattern of desired size and shape is prepared around joint.
IV. The thermit mixture packed in the crucible of conical shape formed from sheet iron casting lined with heat resisting cement is ignited.

Options :

✖ I, II, IV, III

✔ III, I, IV, II

✖ II, IV, III, I

✖ IV, III, II, I

Question Number : 128 Question Id : 630680253531 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following steps in a correct order (first to last) of greens and mouldings.

I. Making the mould
II. Closing and weighing
III. Core setting
IV. Preparation of the pattern

Options :

✖ II, I, III, IV

✔ IV, I, III, II

✖ III, II, IV, I

✖ II, IV, I, III

Question Number : 129 Question Id : 630680253532 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The actual average rate of coverage by the farm machine, based upon total field time is called _____.

Options :

✖ effective operating time

✖ theoretical field capacity

✖ field efficiency

✔ effective field capacity

Question Number : 130 Question Id : 630680253533 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

An assemblage of one or more winding drums mounted on a frame of a crane is called _____.

Options :

✖ Main clutch

✔ Winch

✖ Boom

✖ Flange

Question Number : 131 Question Id : 630680253534 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

A fluid in which shear stress is more than the yield value and shear stress is proportional to the rate of shear strain is called _____.

Options :

✖ Newtonian fluid

✖ Ideal fluid

✔ Ideal plastic fluid

✖ Real fluid

Question Number : 132 Question Id : 630680253535 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

What is the ratio of dynamic viscosity to the density of the fluid?

Options :

✖ Mass

✔ Kinematic viscosity

✖ Specific gravity

✖ Specific volume

Question Number : 133 Question Id : 630680253536 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of weight lifted to the force applied on the plunger of a hydraulic press is called _____.

Options :

✖ Volumetric efficiency

✔ Mechanical advantage

✖ Rankine efficiency

✖ Effort

Question Number : 134 Question Id : 630680253537 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The ratio of power given by water to the runner of a turbine to the power supplied by the water at the inlet of the turbine is called _____.

Options :

✖ Overall efficiency

✖ Mechanical efficiency

✔ Hydraulic efficiency

✖ Volumetric efficiency

Question Number : 135 Question Id : 630680253538 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The axial flow reaction turbine which vanes on the hub are adjustable is called _____.

Options :

✖ Propeller turbine

✖ Francis turbine

✖ Pelton turbine

✔ Kaplan turbine

Question Number : 136 Question Id : 630680253539 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

The flow in which the velocity at any given time changes with respect to space are called _____.

Options :

✔ Non-uniform flow

✖ Steady flow

✖ Uniform flow

✖ Unsteady flow

Question Number : 137 Question Id : 630680253540 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following vehicle have rotating beam attached to a vertical mast and supporting a hoist?

Options :

✖ Bulldozer

✖ Fork lift truck

✖ Loaders

✔ Jib Crane

Question Number : 138 Question Id : 630680253541 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following vehicle designed for transporting large quantities of bulk material like gravel over short distance?

Options :

✖ Fork lift truck

✖ Loaders

✔ Dumpers

✖ Bulldozer

Question Number : 139 Question Id : 630680253542 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the Francis turbine?

I. It is an inward flow reaction turbine having radial discharge at outlet.

II. The work done by water on the runner per second is $\rho Q(V_{w1}u_1)$. (where Q is discharge, V_{w1} = Whirl velocity at inlet, u_1 is blade velocity of wheel at inlet, ρ = density of fluid)

Options :

✖ Only I

✖ Only II

✔ Both I and II

✖ Neither I nor II

Question Number : 140 Question Id : 630680253543 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding the surface tension?

I. The pressure intensity of soap bubble is twice of a liquid droplet for same diameter and surface tension.
II. Surface tension is a shear force acting on the surface of a liquid.

Options :

✔ Only I

✖ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 141 Question Id : 630680253544 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following turbines with their classification based on the direction of flow through runner.

	Turbine		Direction of flow
I	Pelton	1	Axial flow reaction turbine
II	Francis	2	Tangential flow turbine
III	Kaplan	3	Inward flow reaction turbine

Options :

✖ I-1, II-2, III-3

✖ I-3, II-1, III-2

✖ I-3, II-2, III-1

✔ I-2, II-3, III-1

Question Number : 142 Question Id : 630680253545 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Arrange the following in an increasing order of shear stress.

I. Shear stress of oil with oil viscosity 12 poise, velocity of 2.5 m/s and clearance of 1.25 cm.

II. Shear stress of oil having dynamic viscosity 0.1 Ns/m^2, clearance of 2 mm and velocity 2500 mm/s^{-1}.

III. Shear stress of oil on an inclined plane having viscosity 2 poise, velocity 1.5 m/s and clearance of 3 cm.

Options :

✖ II, III, I

✖ I, II, III

✖ III, I, II

✔ III, II, I

Question Number : 143 Question Id : 630680253546 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct about flow of fluids through pipes?

I. Hydraulic gradient line gives the sum of pressure head and kinetic head.

II. Total energy line gives the sum of pressure head, kinetic head and datum head.

III. The Chezy's formula for loss of head due to friction in pipes is $h_f = \frac{4.f.L.V^2}{d2g}$

(where f = co-efficient of friction, L = length of pipe, V = mean velocity of flow, d = diameter of pipe)

Options :

✖ I and II

✔ Only II

✖ II and III

✖ I and III

Question Number : 144 Question Id : 630680253547 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correctly matched?

	Types of turbine		Specific speed in MKS units
I	Francis turbine	:	300 to 600
II	Pelton wheel with single jet	:	10 to 35
III	Pelton wheel with two or more jets	:	100 to 800
IV	Kalpan Propeller turbine	:	300 to 1000

Options :

✖ Only I and II

✖ Only I, II and III

✔ Only II and IV

✖ Only III and IV

Question Number : 145 Question Id : 630680253548 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

A registration code of a vehicle is given as:
UP 26 B 9126.
What does the value 26 represents?

Options :

✖ Series

✖ State code

✔ District or town code

✖ Village code

Question Number : 146 Question Id : 630680253549 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Section 3 of The Motor Vehicles Act, 1988 deals with _____.

Options :

✖ Grant of learner's licence

✖ Grant of driving licence

✖ Endorsement

✔ Necessity for driving licence

Question Number : 147 Question Id : 630680253550 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding continuous flow production model?
I. In this model, facility should be flexible to handle a wide variety of products.
II. In this model a standard set of processes and sequence of processes can be adopted.

Options :

✖ Only I

✔ Only II

✖ Both I and II

✖ Neither I nor II

Question Number : 148 Question Id : 630680253551 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is correct regarding principle for personnel management?

I. People are to be dealt with as a complete individual.
II. There should be fairness in dealing with the employees to win their confidence.
III. All the employees doing the same type of work are not needed to pay the same.

Options :

✖ Only I

✔ I and II only

✖ II and III only
✖ III and I only

Question Number : 149 Question Id : 630680253552 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Which of the following is a correct pair regarding the types of communication in an organization?

I. Downward communication : The transmission of feedback, orientation, complaints, suggestions for improvements etc. from lowest grade employee to top executive
II. Horizontal communication : Transmission of information between persons having the same level of authority in the organization
III. Upward communication : The transmission of instructions and information from top executive downwards to the lowest grade employee.

Options :

✖ Only I
✔ Only II
✖ II and III only
✖ I and III only

Question Number : 150 Question Id : 630680253553 Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Match the following.

	Signs		Symbols
I	Railway crossing (Guarded)	1	
II	Narrow bridge	2	
III	Cross roads	3	
IV	Steep hills	4	

Options :

✖ I-1, II-2, III-4, IV-3
✔ I-2, II-3, III-1, IV-4
✖ I-2, II-4, III-1, IV-3
✖ I-3, II-1, III-2, IV-4