| Exam Name | $:$ AEGCL_Assistant Manager_Mechanical |
| :--- | :--- |
| Total Questions | $: 100$ |
| Description | $:$ |
|  | Important Examination Instructions |

1. Each question will carry 1 (One) Mark for correct answer.
2. There will be a negative marking of 0.25 (one-fourth) marks for wrong answer
3. Do not use the alt-tab, mouse or any other device to shift from examination screen to any other screen or do not try to open any other application while attempting the examination. Doing so may result in discontinuation of examination and your examination will be considered as null and void.Attempting to close the browser repeatedly will lock the exam.

## How to use the system:

1. How to start the test: You can start the test by clicking the Declaration Check box and then 'I am ready to begin button ' .
2. How to change the question: For the move to the next question you have to click on the 'Save And Next' button the same as for move to the back, click on the 'Previous' button.
3. How to answer a question: You can select any answer by clicking on the button displayed just before the answers. You have to finally click the button - Save and Next - to save your answer and move to the next question. In Exam Sections, the Red Circle corresponding to this question turns Green. You can go to any section / any question number by clicking the relevant control.
4. How to skip the question: You can click the " Next Question" control to move on the next question
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- Circle symbols displayed at the bottom of the screen:
-Red Color: Current Question.
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| Q. 1 | If compressive yield stress and tensile yield stress are equivalent, then region of safety from maximum <br> principal stress theory is of which shape? |  |  |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
| Marks 1 | Question ID: <br> 1406 |  |  |
| No |  | Options Details | Correct Option |
| 1 | Rectangle |  |  |
| 2 | Square |  |  |
| 3 | Circle |  |  |
| 4 | Ellipse |  |  |


| Marks |  | Question ID: <br> 1407 |
| :---: | :---: | :---: |
| No |  | Correct Option |
| 1 | Proof resilience | $\checkmark$ |
| 2 | Modulus of resilience |  |
| 3 | Impact toughness |  |
| 4 | Endurance strength |  |

Q. 3

## The Equation of Goodman line is given by

(A) $\frac{\sigma_{m}}{\sigma_{u l t}}+\frac{\sigma_{a}}{\sigma_{e}}=1$
(B) $\frac{\sigma_{m}}{\sigma_{y}}+\frac{\sigma_{a}}{\sigma_{e}}=1$
(C) $\frac{\sigma_{e}}{\sigma_{u l t}}+\frac{\sigma_{m}}{\sigma_{e}}=1$
(D) $\frac{\sigma_{m}}{\sigma_{u l t}}+\frac{\sigma_{a}}{\sigma_{y}}=1$

| Marks 1 | Question ID: <br> 1408 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A | $\checkmark$ |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 4

## The angle of twist of shaft is (Where " d " is the shaft diameter)

(A) Directly proportional to (d) ${ }^{2}$
(B) Directly proportional
(C) Inversely proportional to (d) ${ }^{2}$
(D) Inversely proportiona

| Marks 1 | Question ID: <br> 1409 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |

Q. 5

Two identical ball bearings $P$ and $Q$ are operating at loads 30 kN and 70 kN respectively. The ratio of the life of bearing $P$ to the life of bearing $Q$ is

| Marks 1 |  | Question ID: <br> 1410 |  |
| :---: | :--- | :--- | :--- |
| No | Options Details | Correct Option |  |
| 1 | $7 / 3$ |  |  |
| 2 | $3 / 7$ |  |  |
| 3 | $34 / 27$ | $343 / 27$ |  |
| 4 |  |  |  |

Q. 6 The helix angle is very small about $2^{\circ}$. The spring is

| Marks |  | Question ID: <br> 1411 |
| :---: | :--- | :--- |
| No | Options Details | Correct Option |
| 1 | Open coiled spring |  |
| 2 | Closed coiled spring | $\checkmark$ |
| 3 | That small angle isn't possible |  |
| 4 | Open coiled with square cross section wire |  |

Q. 7

An oil cooler in a high performance engine has an outside su $150000 \mathrm{~mm}^{2}$ and a surface temperature of 50 degree Celsius. At any in time air moves over the surface of the cooler at a temperature of Celsius and gives rise to a surface coefficient equal to $50 \mathrm{~W} / \mathrm{m}^{2} \mathrm{~K}$. F heat transfer rate?
(A) 75 W
(B) $75 \times 10^{6} \mathrm{~W}$
(C) $75 \times 10^{4} \mathrm{~W}$
(D) Zero W

| Marks 1 |  | Question ID: <br> 1412 |
| :---: | :---: | :---: |
| No |  | Options Details |
| 1 | A | Correct Option |
| 2 | B | $\checkmark$ |
| 3 | C |  |
| 4 | D |  |


Q. 9 In shell and tube heat exchanger, baffles are mainly used to

| Marks 1 |  | Question ID: <br> 1414 |
| :---: | :--- | :---: |
| No |  | Options Details |
| 1 | increase the mixing of fluid | Correct Option |
| 2 | increase the heat transfer area |  |
| 3 | deflect the flow in desired direction |  |
| 4 | reduce fouling of the tube surface | $\checkmark$ |

Q. 10

For the same temperature difference, the rate of heat transfer throug cylinder of inner and outer radii $r_{1}$ and $r_{2}$ respectively, increases a ( $r_{2} / r_{1}$ )
(A) Increases
(B) Decreases
(C) Constant
(D) None of the mentioned

| Marks 1 | Question ID: <br> 1415 |
| :---: | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B | $\checkmark$ |
| 3 | C |  |
| 4 | D |  |

Q. 11 Critical radius of a hollow cylinder is defined as

| Marks 1 | Question ID: <br> 1416 |
| :---: | :---: |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Inner radius which would give maximum heat <br> flow |  |
| 2 | Outer radius which would give minimum heat <br> flow |  |
| 3 | Outer radius which would give maximum heat <br> flow | $\checkmark$ |
| 4 | No heat exchange |  |

Q. 12 | A cycle consisting of one constant pressure, one constant volume and two isentropic processes is |
| :--- |
| known as |

Marks 10 | Question ID: |
| :--- |
| 1417 |

| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Carnot cycle |  |
| 2 | Stirling cycle |  |
| 3 | Otto cycle |  |
| 4 | Diesel cycle | $\checkmark$ |

Q. 13 A heat engine receives heat at the rate $3600 \mathrm{KJ} / \mathrm{min}$ and gives an output of 12 kW . Its thermal efficiency is

| Marks 1 |  | Question ID: <br> 1418 |
| :---: | :---: | :---: |
| No |  | Options Details |
| 1 | $20 \%$ | Correct Option |
| 2 | $25 \%$ | $\checkmark$ |
| 3 | $30 \%$ |  |
| 4 | $35 \%$ |  |


Q. 15

The value of the product of molecular weight and the gas characterist for all the gases in M.K.S. unit is
(A) $8314 \mathrm{kgfm} / \mathrm{mol}{ }^{\circ} \mathrm{K}$
(B) $735 \mathrm{kgfm} / \mathrm{mol}^{\circ} \mathrm{K}$
(C) $427 \mathrm{kgfm} / \mathrm{mol}^{\circ} \mathrm{K}$
(D) $848 \mathrm{kgfm} / \mathrm{mol}^{\circ} \mathrm{K}$

| Marks 1 |  | Question ID: <br> 1420 |
| :---: | :---: | :---: |
| No |  | Options Details |
| 1 | A | Correct Option |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 16 The cycle in which heat is supplied at constant volume and rejected at constant pressure is known as

| Marks 1 |  | Question ID: <br> 1421 |  |
| :---: | :--- | :--- | :--- |
| No | Options Details | Correct Option |  |
| 1 | Dual combustion cycle |  |  |
| 2 | Rankine cycle |  |  |
| 3 | Atkinson cycle |  |  |
| 4 | Stirling cycle |  |  |

Q. 17

The humidity ratio in terms of specific volume of dry air ( $\mathrm{v}_{\mathrm{a}}$ ) and of water vapour $\left(\mathrm{v}_{\mathrm{s}}\right)$ is given by
(A) $\mathrm{v}_{\mathrm{s}} / \mathrm{v}_{\mathrm{a}}$
(B) $\mathrm{v}_{\mathrm{s}} /\left(\mathrm{v}_{\mathrm{s}}+\mathrm{v}_{\mathrm{a}}\right)$
(C) $\mathrm{v}_{\mathrm{a}} / \mathrm{v}_{\mathrm{s}}$
(D) $\mathrm{v}_{\mathrm{a}} /\left(\mathrm{v}_{\mathrm{s}}+\mathrm{v}_{\mathrm{a}}\right)$

| Marks 1 | Question ID: <br> 1422 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C | $\checkmark$ |
| 4 | D |  |

Q. 18 A gas follows the law $p V n=C$. if the value of $n=1$, the process is known as

| Marks 1 |  | Question ID: <br> 1423 |
| :---: | :--- | :---: |
| No |  | Options Details |
| 1 | Adiabatic | Correct Option |
| 2 | Isothermal |  |
| 3 | Isentropic | $\checkmark$ |
| 4 | Polytrophic |  |

Q. 19 In sensible cooling of air, the relative humidity

| Marks |  | Question ID: <br> 1424 |  |  |
| :---: | :--- | :---: | :---: | :---: |
| No |  |  |  |  |
| 1 | is constant | Options Details |  |  |
| 2 | decreases | Correct Option |  |  |
| 3 | increases |  |  |  |
| 4 | first increases and then decreases |  |  |  |


| Q. 20 | Yield point in fatigue loading as compared to static loading is |  |
| :--- | :--- | :--- |
|  |  |  |
| Marks |  |  |
| No |  | Question ID: <br> 1425 |
| 1 | Higher | Options Details |
| 2 | Lower | Correct Option |
| 3 | Same |  |
| 4 | Increases |  |

Q. 21

The bevel factor in terms of cone distance (L) and face width (b) of a be given by
(A) $L / b$
(B) $(L-b) / L$
(C) $(L-b) / b$
(D) $\quad b / L$

| Marks |  | Question ID: <br> 1426 |  |
| :---: | :--- | :--- | :--- |
| No |  | Options Details | Correct Option |
| 1 | A |  |  |
| 2 | B |  |  |
| 3 | C |  |  |
| 4 | D |  |  |

Q. 22 The behavior of metals in which strength of a metal is increased and the ductility is decreased on heating at a relatively low temperature after cold working is known as

| Marks 1 |  | Question ID: <br> 1427 |  |
| :---: | :--- | :--- | :--- |
| No |  |  |  |
| 1 | Clustering | Options Details | Correct Option |
| 2 | Solid Solution Hardening |  |  |
| 3 | Strain Aging |  |  |
| 4 | Screw Dislocation |  |  |


| Q. 23 |  | Eutectic product in $\mathrm{Fe}-\mathrm{C}$ system is called |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Marks |  | 1 |  | Question ID: <br> 1428 |
| No |  |  | Options Details | Correct Option |
| 1 |  |  |  |  |
| 2 | Bai |  |  |  |
| 3 |  | rite |  | $\checkmark$ |
| 4 |  | dite |  |  |

Q. 24 The stress-strain curve for mild steel is straight line up to

| Marks 1 |  | Question ID: <br> 1429 |
| :---: | :--- | :---: |
| No |  | Options Details |
| 1 | Yield point | Correct Option |
| 2 | Proportional limit |  |
| 3 | Elastic limit | $\boxed{ }$ |
| 4 | Ultimate Point |  |

Q. 25 A solid cylinder of diameter 100 mm and height 50 mm is forged between two frictionless flat dies to a
height of 25 mm . The percentage change in diameter is

| Marks |  | Question ID: <br> 1430 |  |
| :---: | :--- | :--- | :--- |
| No |  | Options Details | Correct Option |
| 1 | $0 \%$ |  |  |
| 2 | $2.07 \%$ |  |  |
| 3 | $20.70 \%$ | $41.40 \%$ |  |
| 4 |  | $\checkmark$ |  |



| Q. 27 | Keeping all other parameters unchanged, the tool wear in electrical discharge machining (EDM) would <br> be less if the tool material has |  |
| :---: | :--- | :--- |
| Marks | Question ID: <br> 1432 |  |
| No | Options Details | Correct Option |
| 1 | High thermal conductivity and high specific <br> heat |  |
| 2 | High thermal conductivity and low specific <br> heat | Low thermal conductivity and low specific <br> heat |
| 4 | Low thermal conductivity and high specific <br> heat |  |


| Q. 28 Which of the following statement is wrong? |  |  |
| :---: | :---: | :---: |
| Marks |  | Question ID: 1433 |
| No | Options Details | Correct Option |
| 1 | The diamond is the hardest tool material and can run at cutting speeds about 50 times that of high-speed steel tool |  |
| 2 | The ceramic tools can be used at cutting speeds 40 times that of high-speed steel tools |  |
| 3 | The cemented carbide tools can be used at cutting speeds 10 times that of high-speed steel tools |  |
| 4 | The ceramic tools can withstand temperature up to $600^{\circ} \mathrm{C}$ only | $\checkmark$ |



| Q. 30 |  | Which of the following instruments is used to measure base pitch of a gear in base tangent method? |  |
| :---: | :---: | :---: | :---: |
| Marks |  | 1 | Question ID: <br> 1435 |
| No |  | Options Details | Correct Option |
| 1 |  | th vernier caliper |  |
| 2 |  | rown tangent caliper |  |
| 3 |  | rown tangent comparator | $\checkmark$ |
| 4 |  | rown tangent micrometer |  |




Q. 34 Which of the statements is/are true regarding the flexible manufacturing cell (FMC)?

| Marks 1 |  | Question ID: <br> 1439 |
| :---: | :--- | :--- |
| No | Options Details | Correct Option |
| 1 | (A) Does not have a computer-controlled <br> materials handling system |  |
| 2 | (B) Employs workers as substitutes for <br> scaled-down FMS operations |  |
| 3 | (C) Scaled-down version of an FMS |  |
| 4 | (D) Both (A) and (C) |  |


| Q. 35 |  | $\qquad$ is the process of multiplying the requirements by the usage quantity and recording the appropriate requirements throughout the product tree. |  |
| :---: | :---: | :---: | :---: |
|  |  | 1 | Question ID: 1440 |
| No |  | Options Details | Correct Option |
| 1 |  |  |  |
| 2 |  |  | $\checkmark$ |
| 3 |  | orders |  |
| 4 |  |  |  |

Q. 36 Delphi method is used for

| Marks 1 | Question ID: <br> 1441 |
| :--- | :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Judgemental forecast | $\checkmark$ |
| 2 | Time series forecast |  |
| 3 | Associative model |  |
| 4 | Time horizon model |  |

Q. 37

Four jobs to be processed on a machine as per data listed in the table

| Job | 1 | 2 | 3 | 4 |
| :--- | :--- | :--- | :--- | :--- |
| Processing Time (In days) | 4 | 7 | 2 | 8 |
| Due Date | 6 | 9 | 19 | 17 |

If the Earliest due date (EDD) rule is used to sequence the jobs, jobs delayed is
(A) 1
(B) 2
(C) 3
(D) 4

| Marks 1 | Question ID: <br> 1442 |
| :---: | :---: |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C | $\checkmark$ |
| 4 | D | $\checkmark$ |


| Q. 38 | Reeves Company is taking a physical inventory on March 31, the last day of its fiscal year. Which of <br> the following must be included in this inventory count? |  |
| :---: | :--- | :--- |
| Marks |  |  |
| No |  | Question ID: <br> 1443 |
| 1 | Goods in transit to Reeves, FOB destination | Correct Option |
| 2 | Goods that Reeves is holding on <br> consignment for Parker Company |  |
| 3 | Goods in transit that Reeves has sold to <br> Smith Company, FOB shipping point |  |
| 4 | Goods that Reeves is holding in inventory on <br> March 31 for which the related Accounts <br> Payable is 15 days past due |  |


| Q. 39 |  | The maximum level of inventory of an item 100 and it is achieved with infinite replenishment rate. The inventory becomes zero over one and half month due to consumption at a uniform rate. This cycle continues throughout the year. Ordering cost Rs. 100 per order and inventory carrying cost is Rs. 10 per item per month. Annual cost (in Rs.) of the plan, neglecting material cost, is |  |
| :---: | :---: | :---: | :---: |
|  | ks | 1 | Question ID: <br> 1444 |
| No |  | Options Details | Correct Option |
| 1 | 800 |  |  |
| 2 | 2800 |  |  |
| 3 | 4800 |  |  |
| 4 | 6800 |  | $\checkmark$ |

Q. 40 In simplex method, the feasible basic solution must satisfy the

| Marks 1 | Question ID: <br> 1445 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Non-negativity constraint | $\checkmark$ |
| 2 | Negativity constraint |  |
| 3 | Basic constraint |  |
| 4 | Common constraint |  |

Crashing a project in terms of its duration would result in

1. An increase in the indirect cost
2. A decrease in the indirect cost
3. A decrease in the direct cost
4. An increase in the direct cost

Of these statements which are correct?
(A) 1 and 4 are correct
(B) 2 and 3 are correct
(C) 1 and 3 are correct
(D) 2 and 4 are correct

| Marks |  | Question ID: <br> 1446 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

The bellow figure shows the three coplanar forces $P, Q$ and $R$ acting at a point $O$. If these forces are in equilibrium, then

(A) $P / \sin \beta=Q / \sin \alpha=R / \sin \gamma$
(B) $P / \sin \alpha=Q / \sin \beta=R / \sin \gamma$
(C) $P / \sin \gamma=Q / \sin \alpha=R / \sin \beta$
(D) $P / \sin \alpha=Q / \sin \gamma=R / \sin \beta$

| Marks |  | - 1 | Question ID: <br> 1447 |
| :---: | :---: | :---: | :---: |
| No |  | Options Details | Correct Option |
| 1 | A |  |  |
| 2 | B |  | $\checkmark$ |
| 3 | C |  |  |
| 4 | D |  |  |

Q. 43

Two balls of equal mass and of perfectly elastic material are lying on the flopr. One of the balls with velocity ' $v$ ' is made to strike the second ball. Both the balls after impact will move with a velocity
(A) $v$
(B) $\quad v / 2$
(C) $v / 4$
(D) $v / 8$

| Marks 1 |  | Question ID: <br> 1448 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B | $\checkmark$ |
| 3 | C |  |
| 4 | D |  |

Q. 44

The linear acceleration (a) of the body rotating along a circular path of radius ( $r$ ) with an angular acceleration of $\alpha \mathrm{rad} / \mathrm{s}^{2}$, is
(A) $A=\alpha / r$
(B) $A=\alpha r$
(C) $A=r / \alpha$
(D) $A=2 r / \alpha$

| Marks |  | Question ID: <br> 1449 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 45 Work done by an engine in 6 sec is 1000 joules. What is the power generated by the engine in watt

| Marks | 1 | Question ID: <br> 1450 |
| :--- | :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | 6000 watt |  |
| 2 | 600 watt |  |
| 3 | 166 watt | $\checkmark$ |
| 4 | 900 watt |  |


| Marks 1 |  | Question ID: <br> 1451 |
| :---: | :--- | :--- |
| No |  |  |
| 1 | Flexural rigidity | Options Details |
| 2 | Section modulus | Correct Option |
| 3 | Polar modulus | $\checkmark$ |
| 4 | Modulus of rupture |  |


| Q. 47 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | A <br> (c <br> 2. <br> (A) <br> (C) | A square steel rod $20 \mathrm{~mm} \times 20 \mathrm{~mm}$ in section is to carry an axial (compression) of 100 kN . Calculate the shortening in length of 50 $2.14 \times 10^{8} \mathrm{kN} / \mathrm{m}^{2}$ |  |  |  |
|  |  | 1 |  |  |  | $\begin{aligned} & \text { Question ID: } \\ & 1452 \end{aligned}$ |
| No |  |  |  |  |  | Correct Option |
| 1 | A |  |  |  |  | $\checkmark$ |
| 2 | B |  |  |  |  |  |
| 3 | C |  |  |  |  |  |
| 4 | D |  |  |  |  |  |

Q. 48

A simply supported beam of span $l$ is carrying a point load $W$ at the mid span. What is the deflection at the centre of the beam?
(A) $\frac{\mathrm{Wl}^{2}}{48 \mathrm{EI}}$
(B) $\frac{\mathrm{Wl}^{3}}{48 \mathrm{EI}}$
(C) $\frac{5 \mathrm{Wl}^{3}}{384 \mathrm{EI}}$
(D) $\frac{11 \mathrm{Wl}^{3}}{120 \mathrm{EI}}$

| Marks 1 |  | Question ID: <br> 1453 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 49

The temperature stress is a function of

1. Coefficient of linear expansion
2. Temperature rise
3. Modulus of elasticity

The correct answer is
(A) 1 and 2 only
(B) 1 and 3 only
(C) 2 and 3 only
(D) 1,2 and 3 only

| Marks 1 | Question ID: <br> 1454 |
| :---: | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |


| Q. 50 |  | In rectangular bar subjected to torsion, the maximum shear stress will occur at the |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Marks |  | 1 |  | $\begin{aligned} & \text { Question ID: } \\ & 1455 \end{aligned}$ |
| No |  |  | Options Details | Correct Option |
| 1 | Cor |  |  |  |
| 2 | Cen |  |  |  |
| 3 | Mid | f the longer side |  | $\checkmark$ |
| 4 |  | ctable |  |  |

Q. 51

For a strain gauge (gage factor 2.1 and resistance $=20 \Omega$ ), subjected to a maximum strain of 0.001 , the maximum change in resistance is
(A) $0.084 \Omega$
(B) $0.105 \Omega$
(C) $0.135 \Omega$
(D) $0.156 \Omega$

| Marks 1 | Question ID: <br> 1456 |
| :---: | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |
| 5 | Error in question / Answer options. Grace <br> marks will be awarded. | $\checkmark$ |



For the follower with stroke S , following the cycloid motion, the radius of the rolling circle will be
(A) $S \times 2 \pi$
(B) $\frac{S}{2 \pi}$
(C) $\frac{2 \pi}{S}$
(D) $S+2 \pi$

| Marks |  | Question ID: <br> 1458 |
| :---: | :---: | :---: |
| No |  | Options Details |
| 1 | A | Correct Option |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |



## Q. 55 <br> The maximum velocity of a particle moving with simple harmonic motion is

(A) $\omega$
(B) $\omega r$
(C) $\omega^{2} r$
(D) $\frac{\omega}{r}$

| Marks |  | Question ID: <br> 1460 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| No | Options Details | Correct Option |  |  |  |
| 1 | A |  |  |  |  |
| 2 | B |  |  |  |  |
| 3 | C |  |  |  |  |
| 4 | D |  |  |  |  |


| Q. 56 |  | To avoid correction for capillary action in manometers used for measuring pressures, minimum diameter of the tube should be |  |
| :---: | :---: | :---: | :---: |
| Ma | ks | 1 | Question ID: 1461 |
| No |  | Options Details | Correct Option |
| 1 | 2.5 mm |  |  |
| 2 | 10 mm |  |  |
| 3 | 50 mm |  |  |
| 4 | 6 mm |  | $\checkmark$ |

Q. 57 In a venturimeter, the approximate value of constant or co-efficient discharge for fluids having low viscosity should be

| Marks 1 |  | Question ID: <br> 1462 |  |
| :---: | :--- | :--- | :--- |
| No |  | Options Details | Correct Option |
| 1 | 1 |  |  |
| 2 | 1.5 |  |  |
| 3 | 0.95 |  | $\checkmark$ |
| 4 | 0.62 |  |  |

Q. 58

If $\Phi$ is a potential function in two-dimensional flow, the velocity components $u$ and $v$ are defined as
(A) $u=\frac{\partial \Phi}{\partial y}, v=\frac{-\partial \Phi}{\partial x}$
(B) $u=\frac{-\partial \Phi}{\partial y}, v=\frac{-\partial \Phi}{\partial y}$
(C) $u=\frac{\partial \Phi}{\partial x}, v=\frac{-\partial \Phi}{\partial x}$
(D) $u=\frac{-\partial \Phi}{\partial y}, v=\frac{-\partial \Phi}{\partial x}$

| Marks 1 | Question ID: <br> 1463 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | Error in question / Answer options. Grace <br> marks will be awarded. |

Q. 59 The square root of ratio of Inertia force to viscous force

| Marks 1 | Question ID: <br> 1464 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Reynold's number | $\checkmark$ |
| 2 | Weber number |  |
| 3 | Euler number |  |
| 4 | Froude number |  |



| Q. 61 |  | 1, 6, 15 (-------) 45, 66, 91 |  |
| :---: | :---: | :---: | :---: |
|  |  | 1 | $\begin{aligned} & \text { Question ID: } \\ & 1466 \end{aligned}$ |
| No |  | Options Details | Correct Option |
| 1 | 25 |  |  |
| 2 | 26 |  |  |
| 3 | 27 |  |  |
| 4 | 28 |  | $\checkmark$ |



| Q. 63 |  | 5, 17, 37, 65 (.........) 145 |  |
| :---: | :---: | :---: | :---: |
| Marks |  | 1 | $\begin{aligned} & \text { Question ID: } \\ & 1468 \end{aligned}$ |
| No |  | Options Details | Correct Option |
| 1 | 95 |  |  |
| 2 | 97 |  |  |
| 3 | 99 |  |  |
| 4 | 101 |  | $\checkmark$ |


|  |  | Q. 64 5, 17, 37, 65 (-------) 145. |  |
| :---: | :---: | :---: | :---: |
| Marks |  | - 1 | Question ID: <br> 1469 |
| No |  | Options Details | Correct Option |
| 1 | 115 |  |  |
| 2 | 148 |  |  |
| 3 | 170 |  |  |
| 4 | 181 |  |  |
| 5 | $\begin{aligned} & \text { Errc } \\ & \text { mar } \end{aligned}$ | question / Answer options. Grace ill be awarded. | $\checkmark$ |


| Q. 65 |  | Country: President :: State : ? |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Marks |  | 1 |  | $\begin{aligned} & \text { Question ID: } \\ & 1470 \end{aligned}$ |
| No |  |  | Options Details | Correct Option |
| 1 | Governor |  |  |  |
| 2 | Minister |  |  |  |
| 3 | Chief Minister |  |  | $\checkmark$ |
| 4 |  |  |  |  |


| Q. 66 |  | Court : Justice :: School : ? |  |
| :---: | :---: | :---: | :---: |
| Marks |  | 1 | $\begin{aligned} & \text { Question ID: } \\ & 1471 \end{aligned}$ |
| No |  | Options Details | Correct Option |
| 1 | Teacher |  |  |
| 2 | Student |  |  |
| 3 | Ignorance |  |  |
| 4 | Education |  | $\checkmark$ |

Q. 67 Cricket: Bat :: Hockey : ?

| Marks 1 | Question ID: <br> 1472 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Field |  |
| 2 | Stick | $\checkmark$ |
| 3 | Player |  |
| 4 | Ball |  |


| Q. 68 |  | Accommodation : Rent : J Journey : ? |  |
| :---: | :---: | :---: | :---: |
| Marks |  | 1 | Question ID: <br> 1473 |
| No |  | Options Details | Correct Option |
| 1 | Expensi |  |  |
| 2 | Octroi |  |  |
| 3 | Freight |  |  |
| 4 | Fare |  | $\checkmark$ |



## Q. 70 <br> Choose the word which is least like the other words in the group:

(A) Kanpur
(B) Allahabad
(C) Varanasi
(D) Madhura

| Marks 1 | Question ID: <br> 1475 |
| :--- | :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |

Q. 71

Choose the word which is least like the other words in the group :
(A) Mumbai
(B) Cochin
(C) Kandla
(D) Mysore

| Marks 1 | Question ID: <br> 1476 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |

Choose the word which is least like the other words in the group :
(A) Apple
(B) Mango
(C) Potato
(D) Orange

| Marks |  | Question ID: <br> 1477 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |

Q. 73

Choose missing letter out of the given letter :
U, O, I ? A
(A) E
(B) C
(C) S
(D) G

| Marks 1 |  | Question ID: <br> 1478 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No | Options Details | Correct Option |  |  |  |  |
| 1 | A | $\checkmark$ |  |  |  |  |
| 2 | B |  |  |  |  |  |
| 3 | C |  |  |  |  |  |
| 4 | D |  |  |  |  |  |

Q. 74

Choose missing letter out of the given letter :
$\mathrm{Z}, \mathrm{S}, \mathrm{W}, \mathrm{O}, \mathrm{T}, \mathrm{K}, \mathrm{Q}, \mathrm{G}$ ??
(A) $\mathrm{N}, \mathrm{C}$
(B) N.D
(C) O.C
(D) OD

| Marks 1 |  | Question ID: <br> 1479 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A | $\checkmark$ |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

## Q. 75

$\mathrm{AB}, \mathrm{BA}, \mathrm{ABC}, \mathrm{CBA}, \mathrm{ABCD}$ ?
(A) ABCD
(B) BACD
(C) CABD
(D) DCBA

| Marks 1 |  | Question ID: <br> 1480 |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |




| Q. 78 |  | If 'SWAMINATHAN' is coded as 'NAHTANIMAWS' then how will 'SIRNAME' be coded? |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
|  |  |  |  |  |  |
| Marks | 1 | Question ID: <br> 1483 |  |  |  |
| No |  | Options Details |  |  |  |
| 1 | EMAMSIR | Correct Option |  |  |  |
| 2 | EMARNIS |  |  |  |  |
| 3 | EMNARIS |  |  |  |  |
| 4 | EMANRIS |  |  |  |  |


| Q. 79 | Pre-occupation with a particular type of thought that keeps occurring repetevily is called? |  |
| :--- | :--- | :--- |
|  |  |  |
|  |  |  |
| Marks | Question ID: <br> 1484 |  |
| No |  | Options Details |
| 1 | Stress | Correct Option |
| 2 | Obsessive |  |
| 3 | Opioid |  |
| 4 | ODD |  |


|  |  | Q. 80 Inflexible, maladaptive behaviour, deeply ingrained disorders are related to |  |
| :---: | :---: | :---: | :---: |
| Marks |  | 1 | Question ID: $1485$ |
| No |  | Options Details | Correct Option |
| 1 | Emotion |  |  |
| 2 | Thinking |  |  |
| 3 | Personality |  | $\checkmark$ |
| 4 | Memory |  |  |


| Q. 81 | Atal Tunnel" was started as Highway Tunnel in between |  |
| :--- | :--- | :--- |
| Marks | 1 | Question ID: <br> 1486 |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Jammu and Kolkata |  |
| 2 | Arunachal Pradesh and Assam |  |
| 3 | Himachal Pradesh and Laddakh | $\checkmark$ |
| 4 | Goa and Kerala |  |



|  |  | Q. 83 Expand SEZ |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Marks |  | 1 |  | $\begin{aligned} & \text { Question ID: } \\ & 1488 \\ & \hline \end{aligned}$ |
| No |  |  | Options Details | Correct Option |
| 1 |  | Education Zone |  |  |
| 2 |  | Export Zone |  |  |
| 3 |  | Engineering Zon |  |  |
| 4 |  | Economic Zone |  | $\checkmark$ |

Q. 84

Whose birthday is celebrated as National Youth Day

| Marks |  | $\begin{aligned} & \text { Question ID: } \\ & 1489 \\ & \hline \end{aligned}$ |
| :---: | :---: | :---: |
| No | Options Details | Correct Option |
| 1 | Mahatma Gandhi |  |
| 2 | Swami Vivekananda | $\checkmark$ |
| 3 | Swami Dayanand |  |
| 4 | Kandukuri Veerasalingam |  |

## Q. 85 <br> Mary Kom was given which of this award in 2020

| Marks 1 |  | Question ID: <br> 1490 |
| :---: | :--- | :--- |
| No | Options Details | Correct Option |
| 1 | Padma Vibhushan | $\checkmark$ |
| 2 | Padma Bhushan |  |
| 3 | Padma Shri |  |
| 4 | Arjuna |  |


| Q. 86 | "Religion and Society" was written by |  |
| :--- | :--- | :--- |
| Marks 11 | Question ID: <br> 1491 |  |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Dr. APJ Abdul Kalam |  |
| 2 | Dr. Sarvepalli Radha Krishnan | $\checkmark$ |
| 3 | Sarojini Naidu |  |
| 4 | Rabindranath Tagore |  |


| Q. 87 | Pankaj Advani is related to which sport |  |
| :--- | :--- | :--- |
|  |  |  |
|  |  | Question ID: <br> 1492 |
| Marks | 1 | Correct Option |
| No |  |  |
| 1 | Golf | Options Details |
| 2 | Badminton |  |
| 3 | Chess |  |
| 4 | Snooker |  |



| Q. 89 | Srisailam is on the bank of which river |  |
| :--- | :--- | :--- |
| Marks | 1 | Question ID: <br> 1494 |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | Godavari |  |
| 2 | Penna |  |
| 3 | Tungabhadra |  |
| 4 | Krishna | $\checkmark$ |


|  |  | Q. 90 The term of 'Attorney General of India" is |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Marks |  | 1 |  | Question ID: 1495 |
| No |  |  | Options Details | Correct Option |
| 1 | Life Time |  |  |  |
| 2 | 6 years |  |  |  |
| 3 | As long as President of India wishes |  |  | $\checkmark$ |
| 4 | Till the Parliament has confidence |  |  |  |

Q. 91

Given below a word in capital letters is followed by four words or groups of words.
Select the word or groups of words that is most similar in meaning to the word in capital letters.

## TENEMENT

(A) Tenant
(B) Treatment
(C) Farm land
(D) Flat

| Marks |  | Question ID: <br> 1496 |
| :---: | :---: | :---: |
| No |  | Options Details |
| 1 | A | Correct Option |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 92

Given below a word in capital letters is followed by four words or phrases as [A], [B], [C] and [D]. Select the word or phrase which is nearly opposite to the meaning of the original word and mark the correct response as $[A],[B],[C]$ or $[D]$ as the case may be.

## QUANDARY

(A) Cinch
(B) Bewilderment
(C) Perplexity
(D) Plight
Marks

Marks 1
1497

| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A | $\checkmark$ |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 93

In the given below sentence the parts have been jumbled. These parts have been labelled P, Q, R and S. You are required to re-arrange the jumbled parts of the sentence and mark your response accordingly.
are about to end/look like/ they /these carefree days
P
Q
R
S
(A) RQPS
(B) RPQS
(C) SQRP
(D) SQPR

| Marks | 1 | Question ID: <br> 1498 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C |  |
| 4 | D | $\checkmark$ |

## Q. 94

Complete the given sentence by choosing the most appropriate word/s from the given alternatives.

The water is so crystal clear that one might

- step into it.
(A) inadvertently
(B) certainly
(C) aimlessly
(D) deliberately

| Marks 1 | Question ID: <br> 1499 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A | $\checkmark$ |
| 2 | B |  |
| 3 | C |  |
| 4 | D |  |

Q. 95

Find out the correct meaning of the idiom/ phrase underlined from the options given below.

## They bought the house for a song.

(A) with the money they earned through singing
(B) by paying a lot
(C) at a low price
(D) for singing practice

| Marks 1 | Question ID: <br> 1500 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :---: | :---: |
| 1 | A |  |
| 2 | B |  |
| 3 | C | $\checkmark$ |
| 4 | D |  |

Q. 96 Given are parts of the sentence. One of the parts may have a mistake. Spot the error part.

| Marks |  | Question ID: <br> 1501 |
| :---: | :--- | :---: |
| No |  | Options Details |
| 1 | Can you | Correct Option |
| 2 | Describe about |  |
| 3 | The person who misbehaved | $\checkmark$ |
| 4 | With you? |  |

Q. 97

Improve the given sentence finding the mistake(s) if any.
He congratulated me in winning the prize.

|  | 1 | Question ID: <br> 1502 |
| :--- | :--- | :--- |


| No | Options Details | Correct Option |
| :---: | :--- | :---: |
| 1 | for |  |
| 2 | about |  |
| 3 | at |  |
| 4 | on | $\checkmark$ |



| Q. 99 |  | Comprehension: <br> Read the following passage and answer the <br> Crab spiders are hunters and ambushers. So where they grab visiting insects. Crab spiders prey while paralyzing it with a venomous bite <br> They are camouflaged: several different type the spider. Some species are disguised as bir rain forests all over the world. They get their <br> Question: <br> Why are crab spiders called crab spiders? | k, fruit or leaves and hold onto <br> difficult to see piders live in like small crabs. |
| :---: | :---: | :---: | :---: |
|  |  | 1 | $\begin{aligned} & \text { Question ID: } \\ & 1504 \end{aligned}$ |
| No |  | Options Details | Correct Option |
| 1 |  | k like crabs |  |
| 2 |  | ve around like crabs | $\checkmark$ |
| 3 |  | bs, they use their front legs to grab |  |
| 4 |  | camouflaged like crabs |  |

Q. 100

Comprehension:
Read the following passage and answer the questions that follows it.
Crab spiders are hunters and ambushers. Some species sit on or among flowers, bark, fruit or leaves where they grab visiting insects. Crab spiders use their powerful front legs to grab and hold onto prey while paralyzing it with a venomous bite.

They are camouflaged: several different types are known.[Even at a close range, it is difficult to see the spider. Some species are disguised as birds' droppings resting on a leaf. Crab spiders live in rain forests all over the world. They get their name from the way they scuttle around like small crabs.

Question:
Identify the statement from the below options that is not true about crab spiders

| Marks 1 |  | Question ID: <br> 1505 |
| :---: | :--- | :--- |
| No | Options Details | Correct Option |
| 1 | They are hunters |  |
| 2 | They are ambushers |  |
| 3 | They are found only in the rain forests of <br> South America | $\checkmark$ |
| 4 | They are camouflaged |  |

