# TSGENCO
# AE

## Previous Year Paper
### (Mechanical)
### 14 Jul, 2024 Shift 1

# Telangana State Power Generation Corporation Limited

**Notations :**

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

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|---|---|
| **Question Paper Name :** | Assistant Engineer Mechanical 14th Jul 2024 Shift 1 |
| **Subject Name :** | Assistant Engineer Mechanical |
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## Assistant Engineer Mechanical

| | |
|---|---|
| **Group Number :** | 1 |
| **Group Id :** | 1705272 |
| **Group Maximum Duration :** | 0 |
| **Group Minimum Duration :** | 100 |
| **Show Attended Group? :** | No |
| **Edit Attended Group? :** | No |
| **Break time :** | 0 |
| **Group Marks :** | 100 |

## Section A

| | |
|---|---|
| **Section Id :** | 1705273 |
| **Section Number :** | 1 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |

| | |
|---|---|
| **Number of Questions :** | 80 |
| **Number of Questions to be attempted :** | 80 |
| **Section Marks :** | 80 |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 1705273 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 1 Question Id : 170527101 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

One end of the cord whose length is 'l' is fixed at top and the other end is attached with a weight 'W'. The cord is made to rotate in a horizontal circle about the vertical axis with a constant angular velocity of 'ω' rad/s. The tension in the cord is

**Options :**

1. ✖ $(W/2g) \times \omega^2 l$

2. ✖ $(2W/g) \times \omega^2 l$

3. ✔ $(W/g) \times \omega^2 l$

4. ✖ $(3W/g) \times \omega^2 l$

**Question Number : 2 Question Id : 170527102 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A bullet weighs 1 N and moving with a velocity of 500 m/sec hits centrally a 40 N of wood moving away with 20 m/sec and gets embedded in it. The velocity of the bullet after the impact is

**Options :**

1. ✔ 31.7 m/sec

2. ✖ 33.33 m/sec

3. ✖ 0

4. ✖ 20 m/sec

**Question Number : 3 Question Id : 170527103 Question Type : MCQ Option Shuffling : Yes**

**Correct Marks : 1 Wrong Marks : 0**

A cubical block is resting on an inclined plane has $\mu = 1/\sqrt{3}$. Determine the angle of inclination when the block impends down along the inclined plane?

**Options :**

1. ✖ $45°$

2. ✖ $60°$

3. ✔ $30°$

4. ✖ $90°$

**Question Number : 4 Question Id : 170527104 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A ball has been dropped on a horizontal surface from a vertical height of 25 m. If the coefficient of restitution is 0.8, then the rebounding height of the ball after striking the surface is

**Options :**

1. ✖ 8 m

2. ✖ 10 m

3. ✖ 12 m

4. ✔ 16 m

**Question Number : 5 Question Id : 170527105 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A rubber ball is thrown vertically upward with a velocity 'u', from the top of the building. It strikes the ground with a velocity '5u'. The time taken by the ball to reach the ground is

**Options :**

1. ✖ 5 u/g

2. ✖ 3 u/g

3. ✖ 2 u/g

4. ✔ 6 u/g

**Question Number : 6 Question Id : 170527106 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400MPa on the same planes. The maximum normal stress will be

**Options :**

1. ✖ 400 MPa

2. ✖ 500 MPa

3. ✖ 900 MPa

4. ✔ 1400 MPa

**Question Number : 7 Question Id : 170527107 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The Young's modulus of the material is 210 GPa and Poisson's ratio 0.25. Then the Bulk modulus of the material is

**Options :**

1. ✖ 46 GPa

2. ✔ 140 GPa

3. ✖ 84 GPa

4. ✖ 420 GPa

**Question Number : 8 Question Id : 170527108 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A steel rod of 20 mm diameter and 1 meter long is subjected to a pull of 31400 N. If Modulus of elasticity is $2 \times 10^5 \, \text{N} / \text{mm}^2$, the elongation of the rod will be

**Options :**

1. ✖ 0.05 mm

2. ✖ 5 mm

3. ✔ 0.5 mm

4. ✖ 50 mm

**Question Number : 9 Question Id : 170527109 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A simply supported beam of length 'l' has a gradually varying load of 'w' per unit length at the one end 'A' to zero at other end 'B'. The shear force at 'A' is given by

**Options :**

1. ✔ wl/3

2. ✖ wl/6

3. ✖ wl

4. ✖ 2 wl/3

**Question Number : 10 Question Id : 170527110 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

According to Euler's column theory, the crippling load of a column of length (l), with one end is fixed and the other end is hinged is

**Options :**

1. ✖ $\pi^2 E I / l^2$

2. ✖ $\pi^2 E I / 4 l^2$

3. ✔ $2\pi^2 E I / l^2$

4. ✖ $4 \pi^2 E I / l^2$

**Question Number : 11 Question Id : 170527111 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The instantaneous centre of a body rolling with sliding on a stationary curved surface lies

**Options :**

1. ✖ at the point of contact

2. ✔ on the common normal at the point of contact

3. ✖ on the common tangent at the point of contact

4. ✖ on the centre of curvature of the stationary surface

**Question Number : 12 Question Id : 170527112 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In a four-bar chain mechanism, 'L' is the length of the longest link, 'S' is the length of the shortest link, 'P' and 'Q' are the lengths of other two links. At least one of the three moving links will rotate by 360°, if

**Options :**

1. ✔ $L + S \leq P + Q$

2. ✖ $L + S > P + Q$

3. ✖ $S + P \leq L + Q$

4. ✖ $P + S > L + Q$

**Question Number : 13 Question Id : 170527113 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Generally for the cam motion, which of the following type of motion may be considered as a constant acceleration cam?

**Options :**

1. ✖ Circular arc

2. ✖ Polynomial

3. ✖ Simple Harmonic

4. ✔ Parabolic

**Question Number : 14 Question Id : 170527114 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Identify the correct statement related to the function of flywheel

**Options :**

1. ✖ The flywheel controls the mean speed of the prime mover

2. ✖ The flywheel influences the mean torque developed by prime mover

3. ✖ The flywheel influences the variation of load demand for prime mover

4. ✔ The flywheel smoothens the cyclic variations of power output from the prime mover

**Question Number : 15 Question Id : 170527115 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

There are six gears M, N, O, P, Q and R, connected to form a compound gear train. The corresponding teeth of the gear are 20,60,30,80,25 and 75 respectively. The ratio of angular speed of driven shaft (R) to the driver shaft (M) of the compound drive is

**Options :**

1. ✖ 1/12

2. ✔ 1/24

3. ✖ 1/8

4. ✖ 4/15

**Question Number : 16 Question Id : 170527116 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The controlling force 'F' represented in the form F = P + Qr, where 'r' is the radius of balls, 'P' and 'Q' are constants of the Hartnell governing mechanism. If the governor becomes isochronous, then

**Options :**

1. ✖ 'P' is positive and 'Q' is zero

2. ✔ 'P' is Zero and 'Q' is positive

3. ✖ 'P' is negative and 'Q' is positive

4. ✖ 'P' is positive and 'Q' is negative

**Question Number : 17 Question Id : 170527117 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A mass of 100 kg is held between two springs having the stiffness as 20 kN/m each.
Then the natural frequency of the system is

**Options :**

1. ✖ $\dfrac{1}{2\pi}$ Hz

2. ✖ $\dfrac{5}{\pi}$ Hz

3. ✔ $\dfrac{10}{\pi}$ Hz

4. ✖ $\dfrac{20}{\pi}$ Hz

**Question Number : 18 Question Id : 170527118 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

For the damped vibrations, two successive amplitudes are given by '$x_1$' and '$x_2$', then
the logarithmic decrement of the corresponding vibrations is given by

**Options :**

1. ✖ $\ln\{(x_2 - x_1)/x_1\}$

2. ✖ $\ln\{(x_1 - x_2)/x_1\}$

3. ✔ $\ln\{x_1/x_2\}$

4. ✖ $\ln\{x_2/x_1\}$

**Question Number : 19 Question Id : 170527119 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Generally in over-damped vibration system, the amplitude of vibration with respect to
the time

**Options :**

1. ✖ increases exponentially

2. ✔ decreases exponentially

3. ✖ increases linearly

4. ✖ decreases linearly

**Question Number : 20 Question Id : 170527120 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In a combined thermodynamic cycle, both the cycles are being connected in series. If the topping cycle has the efficiency of 25% and the bottoming cycle has 40%, then overall efficiency of the combined cycle is

**Options :**

1. ✔ 55 %

2. ✖ 15 %

3. ✖ 65 %

4. ✖ 40 %

**Question Number : 21 Question Id : 170527121 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The intersecting point of the saturation liquid line and saturated vapour line on thermodynamic chart is known as

**Options :**

1. ✖ Triple point

2. ✔ Critical point

3. ✖ Steam point

4. ✖ Ice point

**Question Number : 22 Question Id : 170527122 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A steam turbine receives steam from boiler with an enthalpy of 2500 kJ/kg and discharges with an enthalpy of 2200 kJ/kg. If the work output of the turbine is 250 kJ/kg, then the heat transfer to the surroundings is given by

**Options :**

1. ✖ 100 kJ/kg

2. ✖ -100 kJ/kg

3. ✖ 50 kJ/kg

4. ✔ -50 kJ/kg

**Question Number : 23 Question Id : 170527123 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A thermodynamic cycle for the operation of gas turbine is designed with an infinite number of stages during compression and expansion, then the cycle leads to _____.

**Options :**

1. ✖ Stirling cycle

2. ✖ Atkinson Cycle

3. ✔ Ericsson cycle

4. ✖ Brayton cycle

**Question Number : 24 Question Id : 170527124 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

An energy source is available at 1000 K and transferred heat of 100 kJ to a system with a sink temperature of 500 K. If the ambient temperature is 300 K, then the loss of available energy is

**Options :**

1. ✖ 50 kJ

2. ✔ 30 kJ

3. ✖ 20 kJ

4. ✖ 10 kJ

**Question Number : 25 Question Id : 170527125 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

For stability of floating body, if 'M' is the metacenter and 'C' is the centre of gravity and 'B' is the centre of Buoyancy, then

**Options :**

1. ✖ 'M' should lie between 'C' and 'B'

2. ✔ 'M' should be above 'B' and 'C'

3. ✖ 'M' should be below 'B' and 'C'

4. ✖ 'M' should coincide with 'B' and 'C'

**Question Number : 26 Question Id : 170527126 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Due to surface tension, the liquid level in the capillary tube changes. When the contact angle is zero, the rise or fall of the liquid level in the tube having the diameter 'd', surface tension 'σ' and the specific weight 'w' is given by the equation

**Options :**

1. ✔ 4σ/wd

2. ✖ 4σd/w

3. ✖ 4d/σw

4. ✖ 4w/σd

**Question Number : 27 Question Id : 170527127 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following equation represents the equilibrium of a static fluid?

**Options :**

1. ✖ dp/dz = -ρ/g

2. ✖ dp/g = - dz/ρ

3. ✔ $dp/\rho = -gdz$

4. ✖ $\rho dp = -dz/g$

**Question Number : 28 Question Id : 170527128 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

For steady, ideal and incompressible fluids, the total energy at any point of the fluid is always constant. This statement is represented by which of the following equations?

**Options :**

1. ✖ Euler's equation

2. ✖ Navier - stokes equation

3. ✖ Continuity equation

4. ✔ Bernoulli's theorem

**Question Number : 29 Question Id : 170527129 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The velocity of flow of water through a short pipe is 2 m/s. Then the head loss due to sudden contraction is

**Options :**

1. ✖ 0.2 m

2. ✔ 0.1 m

3. ✖ 1 m

4. ✖ 2 m

**Question Number : 30 Question Id : 170527130 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A fluid is flowing over a stationary plate and the velocity at a distance of 50 mm above from the boundary surface is 1 m/s. If the absolute viscosity of the fluid is 0.05 Pa-s, then the shear stress on the boundary is

**Options :**

1. ✔ $1.0 \text{ N/m}^2$

2. ✘ $2.5 \text{ N/m}^2$

3. ✘ $5.0 \text{ N/m}^2$

4. ✘ $4.25 \text{ N/m}^2$

**Question Number : 31 Question Id : 170527131 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The sonic velocity of compressible fluid having the ratio of specific heat as 'γ' and gas constant 'R' and absolute temperature, T is

**Options :**

1. ✘ $(\gamma RT)^{1.5}$

2. ✔ $(\gamma RT)^{0.5}$

3. ✘ $(\gamma RT)^{0.286}$

4. ✘ $(\gamma RT)^{2.5}$

**Question Number : 32 Question Id : 170527132 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Some surfaces are modeled as being adiabatic since their back sides are well insulated and the net heat transfer through them is zero are called

**Options :**

1. ✘ Opaque surface

2. ✘ Gray surface

3. ✘ Surface resistance

4. ✔ Reradiating surface

**Question Number : 33 Question Id : 170527133 Question Type : MCQ Option Shuffling : Yes**

**Correct Marks : 1 Wrong Marks : 0**

In heat conduction, the thermal diffusivity of the material is

**Options :**

1. ✖ inversely proportional to thermal conductivity

2. ✖ proportional to square of thermal conductivity

3. ✖ inversely proportional to square of thermal conductivity

4. ✔ proportional to thermal conductivity

**Question Number : 34 Question Id : 170527134 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The absolute viscosity of a fluid is 0.005 Pa-s. The heat capacity ($C_p$) of the fluid is 2 kJ/kg-K. The thermal conductivity of the fluid is 0.5 W/m-K. What is the Prandtl number (Pr) of the fluid?

**Options :**

1. ✔ 20

2. ✖ 200

3. ✖ 10

4. ✖ 100

**Question Number : 35 Question Id : 170527135 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The lumped system analysis is to be applicable, to which of the following bodies especially when they are in a medium that is a poor conductor of heat

**Options :**

1. ✔ Small bodies with high thermal conductivity

2. ✖ Small bodies with low thermal conductivity

3. ✖ Large bodies with low thermal conductivity

4. ✖ Large bodies with high thermal conductivity

**Question Number : 36 Question Id : 170527136 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Which of the following alloying element is to be added in order to reduce the formation of iron sulphide in steel?

**Options :**

1. ✔ Manganese

2. ✖ Vanadium

3. ✖ Nickel

4. ✖ Chromium

**Question Number : 37 Question Id : 170527137 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

If the steel is being extracted from the phosphate iron, then the following mechanical property in the steel is increased

**Options :**

1. ✖ Ductility

2. ✖ Malleability

3. ✔ Hardness

4. ✖ Toughness

**Question Number : 38 Question Id : 170527138 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The heat treatment process required for conversion of mild steel into high carbon steel is

**Options :**

1. ✖ Annealing

2. ✖ Normalising

3. ✖ Nitriding

4. ✔ Carburizing

**Question Number : 39 Question Id : 170527139 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The point at which two liquidus lines meet in the phase diagram is known as _____

**Options :**

1. ✔ Eutectic point

2. ✖ Isothermal point

3. ✖ Solvus point

4. ✖ Peritectic point

**Question Number : 40 Question Id : 170527140 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The thermoset materials are

**Options :**

1. ✖ Less heat resistant than thermoplastics

2. ✔ Maintain chemical structure

3. ✖ Susceptible to heat and pressure

4. ✖ Can be heated and remoulded

**Question Number : 41 Question Id : 170527141 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Select the material for which the highest shrinkage allowance has to be provided while making the pattern for casting process.

**Options :**

1. ✖ Brass

2. ✖ Cast Iron

3. ✗ Plain carbon steel

4. ✓ Aluminium

**Question Number : 42 Question Id : 170527142 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In order to generate the internal cavities in the casting, which of the following is used?

**Options :**

1. ✗ Pattern

2. ✓ Core

3. ✗ Chaplet

4. ✗ Riser

**Question Number : 43 Question Id : 170527143 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The part of gating system, which regulates the flow of pouring metal is generally called as

**Options :**

1. ✓ Choke

2. ✗ Ingate

3. ✗ Runner

4. ✗ Pouring basin

**Question Number : 44 Question Id : 170527144 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The metal forming process in which the material is pulled through the die in order to reduce the cross-sectional area is called as

**Options :**

1. ✗ Forging

2. ✗ Extrusion

3. ✖ Rolling

4. ✔ Drawing

**Question Number : 45 Question Id : 170527145 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In a rolling operation, a sheet of 100 mm wide and 5 mm thick is reduced by 0.5 mm thickness with the roll of 400 mm diameter. If the roll pressure is 200 MPa, then the roll separating force is calculated as

**Options :**

1. ✖ 100 kN

2. ✔ 200 kN

3. ✖ 300 kN

4. ✖ 400 kN

**Question Number : 46 Question Id : 170527146 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The welding of thick sheets of Aluminium alloys is done by the following method.

**Options :**

1. ✖ Submerged arc welding

2. ✖ Electroslag welding

3. ✔ Gas metal arc welding

4. ✖ Thermit welding

**Question Number : 47 Question Id : 170527147 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Under optimal conditions of the process, the temperature experienced by a copper work piece in fusion welding, brazing and soldering is such that

**Options :**

1. ✖ $T_{welding} > T_{soldering} > T_{brazing}$

2. ✖ $T_{soldering} > T_{welding} > T_{brazing}$

3. ✔ $T_{welding} > T_{brazing} > T_{soldering}$

4. ✖ $T_{brazing} > T_{soldering} > T_{welding}$

**Question Number : 48 Question Id : 170527148 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following angle on a single point cutting tool can cut without rubbing on the work piece surface?

**Options :**

1. ✖ Back Rake angle

2. ✖ Side Clearance angle

3. ✔ End relief angle

4. ✖ Side relief angle

**Question Number : 49 Question Id : 170527149 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Magnetostrictive principle is used in one of the following process

**Options :**

1. ✖ Laser Beam Machining

2. ✖ Electric Discharge Machining

3. ✖ Electron Beam Machining

4. ✔ Ultrasonic Machining

**Question Number : 50 Question Id : 170527150 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The angle formed by the two sides of tapering of a point for the twist drill for standard conditions is

**Options :**

1. ✔ 118°

2. ✖ 98°

3. ✖ 138°

4. ✖ 88°

**Question Number : 51 Question Id : 170527151 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

What is the name of the gauge used to measure the clearance between two mating parts?

**Options :**

1. ✖ Slip gauge

2. ✖ Dial gauge

3. ✔ Feeler gauge

4. ✖ Screw gauge

**Question Number : 52 Question Id : 170527152 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The basic shaft and basic hole are those whose upper deviation and lower deviation respectively are

**Options :**

1. ✖ positive, negative

2. ✖ minimum, minimum

3. ✖ maximum, maximum

4. ✔ zero, zero

**Question Number : 53 Question Id : 170527153 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Clinometer is an instrument used for the accurate measurement of

**Options :**

1. ✖ temperature

2. ✖ roundness

3. ✔ angle

4. ✖ flatness

**Question Number : 54 Question Id : 170527154 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The minimum number of control points required for formation of cubic B-spline curve is

**Options :**

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖ 6

**Question Number : 55 Question Id : 170527155 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The sequence of processes to be followed for the implementation of production planning and control is

**Options :**

1. ✖ Scheduling, Routing, Dispatching, Follow up

2. ✔ Routing, Scheduling, Dispatching, Follow up

3. ✖ Dispatching, Routing, Scheduling, Follow up

4. ✖ Routing, Dispatching, Scheduling, Follow up

**Question Number : 56 Question Id : 170527156 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

For the inventory control principle, if the volume of the inventory increases, which of the following cost will increase?

**Options :**

1. ✖ Ordering cost

2. ✖ Shortage cost

3. ✖ Stock out cost

4. ✔ Inventory Carrying cost

**Question Number : 57 Question Id : 170527157 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In a transportation problem, when the number of allocated cells is less than (the number of rows + the number of columns – 1), it may be said that the solution is:

**Options :**

1. ✖ Unbalanced

2. ✖ Optimal

3. ✖ Impossible

4. ✔ Degenerate

**Question Number : 58 Question Id : 170527158 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which technique is used in finding a solution for optimizing a given objective such as profit maximization or cost reduction under certain constraints?

**Options :**

1. ✔ Linear programming

2. ✖ Game theory

3. ✖ Simulation programming

4. ✖ Queuing theory

**Question Number : 59 Question Id : 170527159 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The Cetane number of diesel is defined as the percentage by volume of the mixture of the following components

**Options :**

1. ✔ Cetane and α – methylnaphthalene

2. ✖ Cetane and Octane

3. ✖ Cetane and normal Heptane

4. ✖ Cetane and Tetraethyl Lead

**Question Number : 60 Question Id : 170527160 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

An automobile engine at the following condition, possess the maximum quantity of hydrocarbons in the exhaust

**Options :**

1. ✖ Cruising

2. ✔ Idling

3. ✖ Accelerating

4. ✖ At high speeds

**Question Number : 61 Question Id : 170527161 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which of the following emissions are effectively reduced using Exhaust Gas Recirculation (EGR) in the internal combustion engine?

**Options :**

1. ✖ CO

2. ✖ SO$_x$

3. ✔ NO$_x$

4. ✖ HC

**Question Number : 62 Question Id : 170527162 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In aqua-ammonia absorption refrigeration system, the condition of refrigerant at the exit of the evaporator is

**Options :**

1. ✖ High pressure strong vapour mixture of ammonia and water

2. ✖ Low pressure strong vapour mixture of ammonia and water

3. ✖ High pressure ammonia vapour

4. ✔ Low pressure ammonia vapour

**Question Number : 63 Question Id : 170527163 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

A Carnot refrigeration system is operating between the temperature limits of 27°C and –23°C. Then the COP of the system is

**Options :**

1. ✖ 0.2

2. ✖ 1.2

3. ✔ 5.0

4. ✖ 6.0

**Question Number : 64 Question Id : 170527164 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The air conditioning system designed for the indoor condition as 18°C DBT and 50 % RH. If the ambient condition is 35°C and 75% RH, then the processes required in the air conditioning system are

**Options :**

1. ✖ Cooling and humidification

2. ✖ Heating and humidification

3. ✖ Heating and dehumidification

4. ✔ Cooling and dehumidification

**Question Number : 65 Question Id : 170527165 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In an auditorium, the latent heat load on the air conditioning is 25 % of the sensible load, then the value of sensible heat factor (SHF) is

**Options :**

1. ✔ 0.8

2. ✖ 0.75

3. ✖ 0.25

4. ✖ 0.2

**Question Number : 66 Question Id : 170527166 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Which of the following type of boiler is used in the supercritical thermal power station?

**Options :**

1. ✖ Forced circulation boiler with drum

2. ✔ Once through boiler

3. ✖ Natural circulation boiler

4. ✖ Larger size drum boiler

**Question Number : 67 Question Id : 170527167 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In nuclear power reactors, the material generally used for the manufacture of the control rods is

**Options :**

1. ✖ Graphite

2. ✖ Copper

3. ✔ Cadmium

4. ✖ Bronze

**Question Number : 68 Question Id : 170527168 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Load curve in the power plant is drawn by plotting the fluctuating load vs time. The area under the load curve represents

**Options :**

1. ✔ number of units generated

2. ✖ average load

3. ✖ maximum demand

4. ✖ load factor

**Question Number : 69 Question Id : 170527169 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In a fatigue testing machine, the experiment is conducted and the S-N curve, is drawn. This curve basically indicates

**Options :**

1. ✖ Fatigue Stress versus the strain of the specimen

2. ✔ Fatigue Strength versus the life of the specimen

3. ✖ Safety factor versus life of the specimen

4. ✖ Fatigue strain versus the stress of the specimen

**Question Number : 70 Question Id : 170527170 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The shear stress at throat area of welded lap joint of length 'L' and weld leg 'h' subjected to parallel load 'P' is calculated as

**Options :**

1. ✔ 1.414 P/Lh

2. ✖ 2 P/Lh

3. ✖ 2.828 P/Lh

4. ✖ 0.707 P/Lh

**Question Number : 71 Question Id : 170527171 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In design of a plate clutch, the following consideration is used for better and safer design

**Options :**

1. ✖ Uniform temperature

2. ✖ Uniform pressure distribution

3. ✔ Uniform wear

4. ✖ Uniform Young's Modulus

**Question Number : 72 Question Id : 170527172 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

A circular shaft is subjected to a bending moment of 400 kN-m and a twisting moment of 300 kN-m. The direct stress is 'σ' on the basis of principal stress theory and the shear stress is 'τ' according to the maximum shear stress theory, then the ratio of 'σ/τ' is

**Options :**
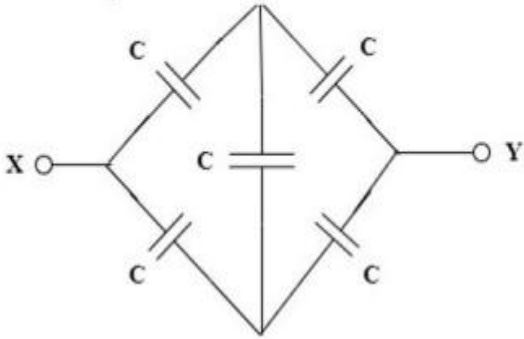
1. ✔ 9/10

2. ✖ 10/9

3. ✖ 5/9

4. ✖ 9/5

**Question Number : 73 Question Id : 170527173 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

What is the equivalent capacitance between the terminals 'X' and 'Y' as shown in below figure. All capacitances are in Farads.



**Options :**

1. ✔ C

2. ✖ 2C

3. ✖ C/2

4. ✖ 4C

**Question Number : 74 Question Id : 170527174 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Which type of D.C Generator is preferred for welding purposes?

**Options :**

1. ✖ Series Generator

2. ✖ Shunt Generator

3. ✖ Cumulatively Compound Generator

4. ✔ Differentially Compound Generator

**Question Number : 75 Question Id : 170527175 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

For a given voltage of 200 V, three heating coils each of resistance 600 Ω will produce maximum heat in a given time when connected

**Options :**

1. ✖ All in series

2. ✖ Two parallel resistances in series with the other

3. ✔ All in parallel

4. ✖ Individually

**Question Number : 76 Question Id : 170527176 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The full load copper loss and iron loss of a single-phase transformer are given as 400 W and 100 W respectively. At Half load, the copper loss and iron loss of the transformer are respectively

**Options :**

1. ✖ 200 W & 50 W

2. ✖ 200 W & 100 W

3. ✔ 100 W & 100 W

4. ✖ 400 W & 25 W

**Question Number : 77 Question Id : 170527177 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

For a 3-phase slip ring Induction motor, if rotor resistance is increased, then

**Options :**

1. ✖ Starting torque decreases but efficiency increases

2. ✖ Both starting torque and efficiency increase

3. ✖ Both starting torque and efficiency decrease

4. ✔ Starting torque increases but efficiency decreases

**Question Number : 78 Question Id : 170527178 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

If the excitation current of 3-phase synchronous motor is increased, then the armature current of the motor (Assume load applied to the motor remains constant)

**Options :**

1. ✖ Increases

2. ✖ Decreases

3. ✖ Remain constant

4. ✔ First decreases to minimum and then increases

**Question Number : 79 Question Id : 170527179 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Identify the correct statements from the following with respect to Moving Iron Instruments?
(i) has uniform scale
(ii) can be used for measuring both A.C and D.C quantities
(iii) relatively cheaper compared to PMMC instruments.

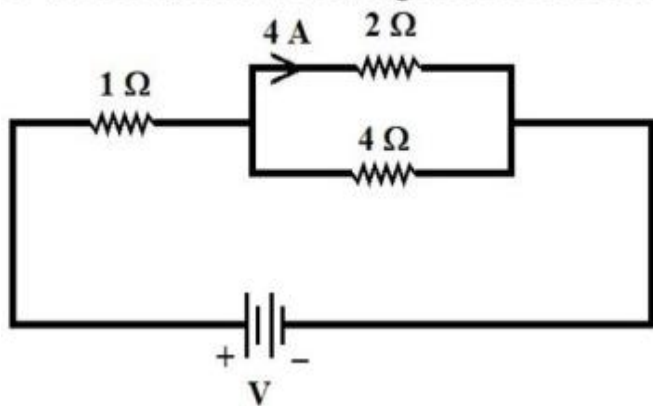**Options :**

1. ✖ (i) and (ii) only

2. ✔ (ii) and (iii) only

3. ✖ (iii) and (i) only

4. ✖ (i), (ii) and (iii)

**Question Number : 80 Question Id : 170527180 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

If 4 A of current is flowing in the 2 Ω resistor, then supply voltage could be



**Options :**

1. ✖ 24 V

2. ✖ 20 V

3. ✔ 14 V

4. ✖ 12 V

# Section B

| | |
|---|---|
| **Section Id :** | 1705274 |
| **Section Number :** | 2 |
| **Section type :** | Online |
| **Mandatory or Optional :** | Mandatory |
| **Number of Questions :** | 20 |
| **Number of Questions to be attempted :** | 20 |
| **Section Marks :** | 20 |
| **Maximum Instruction Time :** | 0 |
| **Sub-Section Number :** | 1 |
| **Sub-Section Id :** | 1705274 |
| **Question Shuffling Allowed :** | Yes |

**Question Number : 81 Question Id : 170527181 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Choose the word that fits in the blank place so that the two words will have the same similar relation as that between first two words

Work : Joule : : Potential : _____

**Options :**

1. ✖ Ohm

2. ✖ Joule

3. ✖ Watt

4. ✔ Volt

**Question Number : 82 Question Id : 170527182 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

The average marks obtained by 125 students in an examination was 36. If the average marks of the students who passed in the examination is 48 and that of those who failed is 18, then the number of students who failed in the examination is

**Options :**

1. ✖ 30

2. ✖ 43

3. ✖ 47

4. ✔ 50

**Question Number : 83 Question Id : 170527183 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

In a certain code language 'ABILITY' is coded as 'CGPWPYA' then in the same language 'SIMILAR' is coded as

**Options :**

1. ✖ TMSSRES

2. ✔ UNTTSFT

3. ✖ VOUUTGU

4. ✖ TMSTSFU

**Question Number : 84 Question Id : 170527184 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

256 : 15 : : 324 : _____ ?

**Options :**

1. ✖ 16

2. ✖ 15

3. ✔ 17

4. ✖ 19

**Question Number : 85 Question Id : 170527185 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The chief election commissioner can be removed from the office before the expiry of his term by

**Options :**

1. ✔ President on recommendation of parliament

2. ✖ President on recommendation of supreme court

3. ✖ President on recommendation of the council of minister

4. ✖ President on recommendation of supreme court and council of minister

**Question Number : 86 Question Id : 170527186 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Who is the Chairperson of the Committee setup to assess the viability of "One Nation One Election" concept.

**Options :**

1. ✔ Ramnath Kovind

2. ✖ Ranjan Gugoi

3. ✖ Gulam Nabi Azad

4. ✖ Amit Shah

**Question Number : 87 Question Id : 170527187 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Nari Shakti Vandan Adhiniyam is legislation passed in Loksabha by which Constitutional Amendment bill?

**Options :**

1. ✖ 127<sup>th</sup>

2. ✖ 105<sup>th</sup>

3. ✔ 128<sup>th</sup>

4. ✖ 129<sup>th</sup>

**Question Number : 88 Question Id : 170527188 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Youngest challenger ever for the world chess championship is

**Options :**

1. ✖ Viswanathan Anand

2. ✖ Garry Kasparov

3. ✔ D. Gukesh

4. ✖ Fabiano Caruana

**Question Number : 89 Question Id : 170527189 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

From the following pairs of words, select the one which is synonymous:

**Options :**

1. ✖ colloquial-grammatical

2. ✔ amicable-cordial

3. ✖ fair-strong

4. ✖ alert-inactive

**Question Number : 90 Question Id : 170527190 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

The Antonym of "Quiescent" is _____.

**Options :**

1. ✖ Indifferent

2. ✖ Weak

3. ✔ Active

4. ✖ Responsive

**Question Number : 91 Question Id : 170527191 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Choose the meaning of the underlined phrase from the alternatives:
Sampath is always <u>running down</u> his brother Keshav.

**Options :**

1. ✖ Snob

2. ✖ Praise

3. ✖ Hurt physically

4. ✔ Speak ill of

**Question Number : 92 Question Id : 170527192 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Choose the correct sentence from the following sentences.

**Options :**

1. ✖ He is watching a film when I went to his home.

2. ✔ Rama Chandra comes to college regularly.

3. ✖ She has been working here since two years.

4. ✖ I have completed the work yesterday.

**Question Number : 93 Question Id : 170527193 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

Which dynasty ruled over the Telangana region during the medieval period?

**Options :**

1. ✓ Kakatiya dynasty

2. ✗ Chola dynasty

3. ✗ Vijayanagara Empire

4. ✗ Rashtrakuta dynasty

**Question Number : 94 Question Id : 170527194 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Who was the hero who fought with the slogan of Jal, Jangal, Jameen?

**Options :**

1. ✗ Doddi Komarayya

2. ✗ Arutla Ramachandra Reddy

3. ✗ Bheem Reddy Narsimha Reddy

4. ✓ Komaram Bheem.

**Question Number : 95 Question Id : 170527195 Question Type : MCQ Option Shuffling : Yes**
**Correct Marks : 1 Wrong Marks : 0**

Who is considered the pioneer of Telangana literature?

**Options :**

1. ✗ Nannaya Bhattaraka

2. ✗ Bammera Pothana

3. ✗ Suravaram Pratap Reddy

4. ✓ Kaloji Narayana Rao

**Question Number : 96 Question Id : 170527196 Question Type : MCQ Option Shuffling : Yes**

**Correct Marks : 1 Wrong Marks : 0**

By which statute does the Constitution of India refer to the process of formation of new states?

**Options :**

1. ✖ Article-1

2. ✖ Article-2

3. ✔ Article-3

4. ✖ Article-4

**Question Number : 97 Question Id : 170527197 Question Type : MCQ Option Shuffling : Yes**

**Correct Marks : 1 Wrong Marks : 0**

Which tool can be used to generate the following text in MS Word?

HELLO WORLD

**Options :**

1. ✖ Graphic Font

2. ✖ Curved Fonts

3. ✖ Graphics Plug-in

4. ✔ WordArt

**Question Number : 98 Question Id : 170527198 Question Type : MCQ Option Shuffling : Yes**

**Correct Marks : 1 Wrong Marks : 0**

A spreadsheet contains the information of items, where first column is quantity and second column is price as shown below.

| A | B | ... |
|---|---|-----|
| 10 | 15 | |
| 3 | 6 | |
| 5 | 6 | |

Which of the following functions is best suited to find the total price of all the items?

**Options :**

1. ✖ SUMALL()

2. ✖ PRODUCTSUM

3. ✔ SUMPRODUCT()

4. ✖ COMPUTE()

**Question Number : 99 Question Id : 170527199 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

What is the Windows shortcut to lock screen?

**Options :**

1. ✖ Alt + L

2. ✖ Ctrl + L

3. ✔ Windows key + L

4. ✖ NumLock + L

**Question Number : 100 Question Id : 170527200 Question Type : MCQ Option Shuffling : Yes Correct Marks : 1 Wrong Marks : 0**

In MS Word, Bold, Italic, Underline are known as:

**Options :**

1. ✔ Font Styles

2. ✖ Font Effects

3. ✖ Word Art

4. ✖ Text effects