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ISRO IPRC Tech Asst. (Mechanical)
20 Sep 2023 Shift -1

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ISRO PROPULSION COMPLEX

Participant ID	
Participant Name	
Test Center Name	
Test Date	20/09/2023
Test Time	8:30 AM - 10:30 AM
Subject	Technical Assistant Mechanical

Section : **Technical Assistant Mechanical**

Q.1 Equal quantities of salt are dissolved in two identical vessels (V1, V2) filled with water. In one case the salt is one large crystal (V1) and in the other is powder (V2). In which case or vessel the temperature of the solution be higher after the salt is completely dissolved, if in both cases the salt and the water originally had the same temperatures

(A) V1

(B)V2

(C) No change in temperature

(D) Temperature drops in V2

Ans ✗ 1. (a)

✓ 2. (b)

✗ 3. (c)

✗ 4. (d)

Question ID : **9941601123**
Option 1 ID : **9941604489**
Option 2 ID : **9941604490**
Option 3 ID : **9941604491**
Option 4 ID : **9941604492**
Status : **Answered**
Chosen Option : **1**

Q.2 _____ is a drawing giving details about size tolerance, heat treatment, etc.,

(A) Exploded drawing, (B) Production drawing (C) Assembly drawing (D) Machine drawing

Ans ✗ 1. (a)

✓ 2. (b)

✗ 3. (c)

✗ 4. (d)

Question ID : **9941601146**
Option 1 ID : **9941604581**
Option 2 ID : **9941604582**
Option 3 ID : **9941604583**
Option 4 ID : **9941604584**
Status : **Answered**
Chosen Option : **2**

Q.3 Solution of differential equation x.dy - y.dx = Q represents:

(A) A rectangular hyperbola

(B) Parabola whose vertex is at the origin

(C) Straight line passing through the origin

(D) A circle whose center is at the origin

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601156**
Option 1 ID : **9941604621**
Option 2 ID : **9941604622**
Option 3 ID : **9941604623**
Option 4 ID : **9941604624**
Status : **Answered**
Chosen Option : **3**

Q.4 For the design of a cast iron member, the most appropriate theory of failure is,

(A) Mohr's theory

(B) Rankine's theory

(C) Maximum strain theory

(D) Maximum shear energy theory

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601081**
Option 1 ID : **9941604321**
Option 2 ID : **9941604322**
Option 3 ID : **9941604323**
Option 4 ID : **9941604324**
Status : **Answered**
Chosen Option : **2**

Q.5 A steel bar 2m long, 20mm wide and 10mm thick is subjected to a pull of 2kN. If the same bar is subjected to a pull of 2kN, the Poisson's ratio of the bars in tension will be

(A) Equal to, (B) Less than, (C) Greater than,(D) Doubled

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601087**
Option 1 ID : **9941604345**
Option 2 ID : **9941604346**
Option 3 ID : **9941604347**
Option 4 ID : **9941604348**
Status : **Answered**
Chosen Option : **1**

Q.6 The value of (tan 1 ° tan 2° tan 3° ... tan 89°) is

(A) 0

(B) 1

(C) 2

(D) 1/2

Ans
✘ 1. (a)
✔ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601153**
Option 1 ID : **9941604609**
Option 2 ID : **9941604610**
Option 3 ID : **9941604611**
Option 4 ID : **9941604612**
Status : **Answered**
Chosen Option : **2**

Q.7 A cycle consisting of _____and two isothermal processes is known as Stirling cycle.

(A) Two isentropic, (B) One constant pressure, one constant volume (C) Two constant volumes

(D) Two constant pressures

Ans
✘ 1. (a)
✘ 2. (b)
✔ 3. (c)
✘ 4. (d)

Question ID : **9941601113**
Option 1 ID : **9941604449**
Option 2 ID : **9941604450**
Option 3 ID : **9941604451**
Option 4 ID : **9941604452**
Status : **Answered**
Chosen Option : **2**

Q.8 According to which law, all perfect gases change in volume by 1/273th of their original volume at 0°C for every 1°C change in temperature when pressure remains constant

(A) Joule's law (B) Boyle's law (C) Gay Lussac's law (D) Charle's law

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601121**
Option 1 ID : **9941604481**
Option 2 ID : **9941604482**
Option 3 ID : **9941604483**
Option 4 ID : **9941604484**
Status : **Answered**
Chosen Option : **4**

Q.9 An increase in the movement of the molecules within a solid, liquid or gas corresponds to

(A) A drop in temperature, (B) No change in temperature (C) Latent heat addition or removal (D) A rise in temperature

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601127**
Option 1 ID : **9941604505**
Option 2 ID : **9941604506**
Option 3 ID : **9941604507**
Option 4 ID : **9941604508**
Status : **Answered**
Chosen Option : **4**

Q.10 For laminar flow in circular pipes, the Daray's friction factor f is equal to (Re-Reynolds number)

(A) 16/Re, (B) 32/Re, (C)64/Re, (D) None of the above

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601101**
Option 1 ID : **9941604401**
Option 2 ID : **9941604402**
Option 3 ID : **9941604403**
Option 4 ID : **9941604404**
Status : **Answered**
Chosen Option : **1**

Q.11 A steel rod of cross sectional area equal to 1000mm^2 is 5m long. If a pull of 100kN is suddenly applied to it, then the maximum stress intensity will be,

(A) 50N/mm^2
(B) 100N/mm^2
(C) 200N/mm^2
(D) 400N/mm^2

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601092**
Option 1 ID : **9941604365**
Option 2 ID : **9941604366**
Option 3 ID : **9941604367**
Option 4 ID : **9941604368**
Status : **Answered**
Chosen Option : **3**

Q.12 A rectangular tank is moving horizontally in the direction of its length with a constant acceleration of 4.5m/s^2. The size of the tank is 3m X 2.5m (width & depth respectively). If the tank is open at the top, then calculate the total force due to water acting on the tank's higher pressure end

(A) 2.14MN, (B) 1.07MN, (C) 1.27MN, (D) 4.28MN

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601103**
Option 1 ID : **9941604409**
Option 2 ID : **9941604410**
Option 3 ID : **9941604411**
Option 4 ID : **9941604412**
Status : **Not Answered**
Chosen Option : **--**

Q.13 The absolute zero pressure will be

(A) When molecular momentum of the system becomes zero, (B) At sea level (C) At the temperature of -273K (D) At the centre of the earth

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601118**
Option 1 ID : **9941604469**
Option 2 ID : **9941604470**
Option 3 ID : **9941604471**
Option 4 ID : **9941604472**
Status : **Answered**
Chosen Option : **1**

Q.14 The torque required to overcome viscous resistance of a foot step bearing is

(A) $\mu\pi^2NR/60t$, (B) $\mu\pi^2NR^2/60t$, (C) $\mu\pi^2NR^3/60t$, (D) $\mu\pi^2NR^4/60t$

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601112**
Option 1 ID : **9941604445**
Option 2 ID : **9941604446**
Option 3 ID : **9941604447**
Option 4 ID : **9941604448**
Status : **Not Answered**
Chosen Option : **--**

Q.15 The helix angle of closed coil spring

(A) ~2° (B) ~15° (C) ~50° (D) ~40°

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601141**
Option 1 ID : **9941604561**
Option 2 ID : **9941604562**
Option 3 ID : **9941604563**
Option 4 ID : **9941604564**
Status : **Answered**
Chosen Option : **2**

Q.16 A Carnot refrigerator operated between 300.3K and 273K. The fraction of cooling effect required as

(A) 20% (B) 10% (C) 50% (D) None of the above

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601129**
Option 1 ID : **9941604513**
Option 2 ID : **9941604514**
Option 3 ID : **9941604515**
Option 4 ID : **9941604516**
Status : **Not Answered**
Chosen Option : **--**

Q.17 White ice is

(A) Sub-cooled water (B) Fast cooled water (C) Due to dissolved air, gasses and impurities

(D) Produced by blowing air during freezing

Ans

✗ 1. (a)

✗ 2. (b)

✓ 3. (c)

✗ 4. (d)

Question ID : **9941601128**
Option 1 ID : **9941604509**
Option 2 ID : **9941604510**
Option 3 ID : **9941604511**
Option 4 ID : **9941604512**
Status : **Answered**
Chosen Option : **3**

Q.18 Which of the following is not an example of forced vortex flow?

(A) The flow of liquid inside the impeller of a centrifugal pump,

(B) The liquid contained in the cylinder rotated about its axis,

(C) The flow of fluid around a circular bend in a pipe,

(D) The flow of water through the runner of a turbine

Ans

✗ 1. (a)

✗ 2. (b)

✓ 3. (c)

✗ 4. (d)

Question ID : **9941601107**
Option 1 ID : **9941604425**
Option 2 ID : **9941604426**
Option 3 ID : **9941604427**
Option 4 ID : **9941604428**
Status : **Answered**
Chosen Option : **3**

Q.19 Which oblique angle provides less distortion of the drawing

(A) 60°

(B) 45°

(C) 30°

(D) 90°

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601148**
Option 1 ID : **9941604589**
Option 2 ID : **9941604590**
Option 3 ID : **9941604591**
Option 4 ID : **9941604592**
Status : **Answered**
Chosen Option : **4**

Q.20 If the number of coils are 8 and wire diameter of spring is 3mm. Then the solid length is given by

(A) 27mm (B) 24mm (C) 21mm (D) 25mm

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601143**
Option 1 ID : **9941604569**
Option 2 ID : **9941604570**
Option 3 ID : **9941604571**
Option 4 ID : **9941604572**
Status : **Answered**
Chosen Option : **2**

Q.21 The limit of eccentricity for no tensile condition for a column of circular section of diameter d is,

(A) *d/4*, (B) *d/8*, (C) *d/12*, (D) *d/16*

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601089**
Option 1 ID : **9941604353**
Option 2 ID : **9941604354**
Option 3 ID : **9941604355**
Option 4 ID : **9941604356**
Status : **Answered**
Chosen Option : **2**

Q.22 The horse power per ton of refrigerating effect when ammonia is used as a refrigerant will be nearly,

(A) 0.5 (B) 2 (C) 0.1 (D) 1

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601131**
Option 1 ID : **9941604521**
Option 2 ID : **9941604522**
Option 3 ID : **9941604523**
Option 4 ID : **9941604524**
Status : **Not Answered**
Chosen Option : **--**

Q.23 For similarity, in addition to models being geometrically similar to prototype, the following in both the cases also be equal,

(A) Ratio of inertial force to force due to viscosity, (B) Ratio of inertial force to force due to gravitation, (C) Ratio of inertial force to force due to surface tension, (D) All the four ratios of inertial force due to viscosity, gravitation, surface tension and elasticity

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601105**
Option 1 ID : **9941604417**
Option 2 ID : **9941604418**
Option 3 ID : **9941604419**
Option 4 ID : **9941604420**
Status : **Answered**
Chosen Option : **4**

Q.24 The tensile stress in the flywheel rim due to the centrifugal force acting on the rim is given by

(A) $PV^2/4$, (B) $PV^2/2$, (C) $3PV^2/4$, (D) PV^2

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601135**
Option 1 ID : **9941604537**
Option 2 ID : **9941604538**
Option 3 ID : **9941604539**
Option 4 ID : **9941604540**
Status : **Answered**
Chosen Option : **2**

Q.25 Which of the following property is the fine grained structure?

(A) Corrosion resistance (B) Ductility (C) Hardness (D) Creep resistance

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601095**
Option 1 ID : **9941604377**
Option 2 ID : **9941604378**
Option 3 ID : **9941604379**
Option 4 ID : **9941604380**
Status : **Answered**
Chosen Option : **3**

Q.26 Pitch angle of crown gears

(A) Equal to 90° (B) Greater than 90° (C) Less than 90° (D) Equal to 45°

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601137**
Option 1 ID : **9941604545**
Option 2 ID : **9941604546**
Option 3 ID : **9941604547**
Option 4 ID : **9941604548**
Status : **Answered**
Chosen Option : **1**

Q.27 Which of the following can be the factor of safety for a dead load?

(A) 6 (B) 2 (C) 4 (D) 7

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601140**
Option 1 ID : **9941604557**
Option 2 ID : **9941604558**
Option 3 ID : **9941604559**
Option 4 ID : **9941604560**
Status : **Answered**
Chosen Option : **1**

Q.28 Thickness of chip is _____ in the initial stages and _____ at the end of the cut in _____ milling process

(A) Maximum, Minimum, Climb (B) Minimum, Maximum, Climb (C) Minimum, Maximum, Conventional (D) Maximum, Minimum, Conventional

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601099**
Option 1 ID : **9941604393**
Option 2 ID : **9941604394**
Option 3 ID : **9941604395**
Option 4 ID : **9941604396**
Status : **Answered**
Chosen Option : **2**

Q.29 The pressure at a point in a fluid will not be same in all the directions when the fluid is,

(A) Moving, (B) Viscous, (C) Inviscous and moving, (D) Viscous and moving

Ans
✘ 1. (a)
✘ 2. (b)
✘ 3. (c)
✔ 4. (d)

Question ID : **9941601102**
Option 1 ID : **9941604405**
Option 2 ID : **9941604406**
Option 3 ID : **9941604407**
Option 4 ID : **9941604408**
Status : **Answered**
Chosen Option : **4**

Q.30 A Carnot refrigerator extracts 100 kcal of heat per minute from a cold room which is maintained at -15°C and it is discharged to atmosphere at 30°C. The horse power required to run the unit could be,

(A) >6 (B) 2 to 5 (C) 5 to 6 (D) 1.5 to 2

Ans
✘ 1. (a)
✘ 2. (b)
✘ 3. (c)
✔ 4. (d)

Question ID : **9941601134**
Option 1 ID : **9941604533**
Option 2 ID : **9941604534**
Option 3 ID : **9941604535**
Option 4 ID : **9941604536**
Status : **Answered**
Chosen Option : **4**

Q.31 Bose condensation occurs in liquid Helium kept at ambient pressure and at 2.17K. At which temperature will Bose condensation occur in Helium in gaseous state, the density of which is 1000 times smaller than that of liquid Helium

(A)217mK (B) 21.7mK (C) 2.17mK (D) 0.217mK

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601119**
Option 1 ID : **9941604473**
Option 2 ID : **9941604474**
Option 3 ID : **9941604475**
Option 4 ID : **9941604476**
Status : **Not Answered**
Chosen Option : **--**

Q.32 What happens to the buoyant force acting on the airship as it rises in air?

(A) Decreases, (B) Increases, (C) First increases and then decreases, (D) Remains constant

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601106**
Option 1 ID : **9941604421**
Option 2 ID : **9941604422**
Option 3 ID : **9941604423**
Option 4 ID : **9941604424**
Status : **Answered**
Chosen Option : **1**

Q.33 The explosion of crankcase of refrigeration compressor occur due to,

(A) Ignition of vapors in compressor crankcase (B) Too high load (C) Ignition of refrigerant due to high temperature (D) All of the above

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601133**
Option 1 ID : **9941604529**
Option 2 ID : **9941604530**
Option 3 ID : **9941604531**
Option 4 ID : **9941604532**
Status : **Answered**
Chosen Option : **4**

Q.34 A wall consists of two adjoining panels made of different materials. The coefficients of thermal conductivity and the thicknesses of panels are λ_1, d_1 and λ_2, d_2 respectively. The temperatures of the external surfaces of the wall are T_1 and T_o. where $T_o > T_1$ and are kept constant. Find the coefficient of thermal conductivity of the wall.

(A) $2\lambda_1\lambda_2/\lambda_1+\lambda_2$

(B) $\lambda_1+\lambda_2/2\ \lambda_1\lambda_2$

(C) $\lambda_1+\lambda_2$

(D) $2\ \lambda_1\lambda_2$

Ans ✔ 1. (a)

✘ 2. (b)

✘ 3. (c)

✘ 4. (d)

Question ID : **9941601125**
Option 1 ID : **9941604497**
Option 2 ID : **9941604498**
Option 3 ID : **9941604499**
Option 4 ID : **9941604500**
Status : **Answered**
Chosen Option : **1**

Q.35 What is the locus of a point on the circumference of a circle as the circle rolls, without Slipping, along a straight line?

(A) Parabola

(B) Hyperbola

(C) Ellipse

(D) Cycloid

Ans ✘ 1. (a)

✘ 2. (b)

✘ 3. (c)

✔ 4. (d)

Question ID : **9941601150**
Option 1 ID : **9941604597**
Option 2 ID : **9941604598**
Option 3 ID : **9941604599**
Option 4 ID : **9941604600**
Status : **Answered**
Chosen Option : **4**

Q.36 100g of ice at a temperature of 0°C are placed into a heat impermeable envelope and compressed to 1200atm. Find the mass of the melted part of ice if the melting point decreases in direct proportion to the pressure, and if it lowers by 1°C when the pressure is increased by 138atm.

(A) 6.5g

(B)4.5g

(C)3.5g

(D)5.6g

Ans

✗ 1. (a)

✗ 2. (b)

✗ 3. (c)

✓ 4. (d)

Question ID : **9941601122**
Option 1 ID : **9941604485**
Option 2 ID : **9941604486**
Option 3 ID : **9941604487**
Option 4 ID : **9941604488**
Status : **Not Answered**
Chosen Option : **--**

Q.37 An authorized document to produce a part in the workshop is_____

(A) Exploded drawing, (B) Production drawing (C) Assembly drawing (D) Part drawing

Ans

✗ 1. (a)

✓ 2. (b)

✗ 3. (c)

✗ 4. (d)

Question ID : **9941601144**
Option 1 ID : **9941604573**
Option 2 ID : **9941604574**
Option 3 ID : **9941604575**
Option 4 ID : **9941604576**
Status : **Answered**
Chosen Option : **4**

Q.38 It is known that if water is heated or cooled with certain care it can retain its liquid state at temperatures below 0°C and higher than +100°C. A calorimeter with a heat capacity of q=400cal/deg. Contains m_1=1 kg of water cooled to t_1= - 10°C. Next m_2=100g of water overheated to t_2=+120°C is added to it. What is the temperature in the calorimeter?

(A)-40°C

(B)-20°C

(C)-4°C

(D)-12°C

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601124**
Option 1 ID : **9941604493**
Option 2 ID : **9941604494**
Option 3 ID : **9941604495**
Option 4 ID : **9941604496**
Status : **Not Answered**
Chosen Option : **--**

Q.39 A thermometer in vapor compression system is installed in the main line close to the compressor,

(A) As it helps the operator to adjust compressor for greatest efficiency

(B) As temperature indicates whether liquid or vapor refrigerant is going to compressor

(C)As temperature helps in calculating the coefficient of performance

(D)As the performance of other units of the cycle can be controlled

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601132**
Option 1 ID : **9941604525**
Option 2 ID : **9941604526**
Option 3 ID : **9941604527**
Option 4 ID : **9941604528**
Status : **Answered**
Chosen Option : **2**

Q.40 If y'+ytanx-cosx, y(O)=O, then y(π)=

(A) π

(B)2π

(C)-2π

(D)-π

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601154**
Option 1 ID : **9941604613**
Option 2 ID : **9941604614**
Option 3 ID : **9941604615**
Option 4 ID : **9941604616**
Status : **Not Answered**
Chosen Option : **--**

Q.41 The value of 1 + i2 + i4 + i6 + ... + i2n is

(A) positive

(B) negative

(C) 0

(D) cannot be evaluated

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601157**
Option 1 ID : **9941604625**
Option 2 ID : **9941604626**
Option 3 ID : **9941604627**
Option 4 ID : **9941604628**
Status : **Answered**
Chosen Option : **2**

Q.42 Which of the following reaction does not exist a mushy zone in Iron-Carbon phase diagram

(A) Peritectic reaction (B) Eutectic reaction (C) Peritectiod reaction (D) Eutectiod reaction

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601098**
Option 1 ID : **9941604389**
Option 2 ID : **9941604390**
Option 3 ID : **9941604391**
Option 4 ID : **9941604392**
Status : **Answered**
Chosen Option : **3**

Q.43 The entropy of a system is given by $S(E)=aE(E_o-E)$, where "a" and "E_o "are positive constants. The temperature of the system is

(A) Increases monotonically with energy (B) Negative at some energies (C) Decrease monotonically with energies (D) Zero

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601120**
Option 1 ID : **9941604477**
Option 2 ID : **9941604478**
Option 3 ID : **9941604479**
Option 4 ID : **9941604480**
Status : **Answered**
Chosen Option : **1**

Q.44 Find the oblique length with respect to the true length, if oblique angle is 60°

(A) 1/3

(B) 1/4

(C) 1/2

(D)2/3

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601147**
Option 1 ID : **9941604585**
Option 2 ID : **9941604586**
Option 3 ID : **9941604587**
Option 4 ID : **9941604588**
Status : **Answered**
Chosen Option : **3**

Q.45 The locus of a point which moves in a such a way that it is always a fixed distance from another stationary point is called,

(A) Hexagon

(B) Square

(C) Circle

(D) Rectangle

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601152**
Option 1 ID : **9941604605**
Option 2 ID : **9941604606**
Option 3 ID : **9941604607**
Option 4 ID : **9941604608**
Status : **Answered**
Chosen Option : **3**

Q.46 A vessel whose bottom has round holes with a diameter of 0.1 mm is filled with water. Find the maximum height of the water level at which the water does not flow out. The water does not wet the bottom of the vessel.

(A) 10cm

(B) 15cm

(C)20cm

(D)30cm

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601111**
Option 1 ID : **9941604441**
Option 2 ID : **9941604442**
Option 3 ID : **9941604443**
Option 4 ID : **9941604444**
Status : **Not Answered**
Chosen Option : **--**

Q.47 If all dimensions of a prismatic bar are doubled, then the maximum stress produced in the bar by self weight will,

(A)Increase, (B) Remain unchanged, (C) Increase to two times, (D) Increase to four times

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601083**
Option 1 ID : **9941604329**
Option 2 ID : **9941604330**
Option 3 ID : **9941604331**
Option 4 ID : **9941604332**
Status : **Answered**
Chosen Option : **2**

Q.48 The difference of pressure between the inside and outside of a liquid drop is

(A) p=Txr (B) p=T/r (C) p=T/2r (D) p=2T/r

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601104**
Option 1 ID : **9941604413**
Option 2 ID : **9941604414**
Option 3 ID : **9941604415**
Option 4 ID : **9941604416**
Status : **Answered**
Chosen Option : **3**

Q.49 A barometer give wrong readings because some air is present above the mercury column. At a pressure of 755mm of Hg, the barometer shows 748mm of Hg and at a pressure of 740mm of Hg, it shows 736mm of Hg. Find the length of the barometer tube.

(A) 763mm
(B) 765mm
(C)762mm
(D) 764mm

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601109**
Option 1 ID : **9941604433**
Option 2 ID : **9941604434**
Option 3 ID : **9941604435**
Option 4 ID : **9941604436**
Status : **Answered**
Chosen Option : **4**

Q.50 Drawing showing the position of each part with respect to each other is _____

(A) Part drawing, (B) Installation drawing (C) Assembly drawing (D) Machine drawing

Ans

✗ 1. (a)

✗ 2. (b)

✓ 3. (c)

✗ 4. (d)

Question ID : **9941601149**
Option 1 ID : **9941604593**
Option 2 ID : **9941604594**
Option 3 ID : **9941604595**
Option 4 ID : **9941604596**
Status : **Answered**
Chosen Option : **3**

Q.51 If a complex number z lies in the interior or on the boundary of a circle of radius 3 units and centre (- 4, 0), the greatest value of |z +1| is

(A) 4

(B) 6

(C) 3

(D) 10

Ans

✗ 1. (a)

✓ 2. (b)

✗ 3. (c)

✗ 4. (d)

Question ID : **9941601159**
Option 1 ID : **9941604633**
Option 2 ID : **9941604634**
Option 3 ID : **9941604635**
Option 4 ID : **9941604636**
Status : **Not Answered**
Chosen Option : **--**

Q.52 The property of metal which allows it to deform continuously at slow rate without any further increase in stress is known as,

(A) Fatigue
(B) Creep
(C) Plasticity
(D) Resilience

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601084**
Option 1 ID : **9941604333**
Option 2 ID : **9941604334**
Option 3 ID : **9941604335**
Option 4 ID : **9941604336**
Status : **Answered**
Chosen Option : **3**

Q.53 Which of the following is the hardest constituent of steel

(A) Austenite (B) Ledeburite (C) Martensite (D) Bainite

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601096**
Option 1 ID : **9941604381**
Option 2 ID : **9941604382**
Option 3 ID : **9941604383**
Option 4 ID : **9941604384**
Status : **Answered**
Chosen Option : **4**

Q.54 If you plot the locus of a point P that moves so that its distance from two fixed points Rand S, 50mm apart, is always in the ratio 2:1, respectively, the resultant curve will be a,

(A) Circle

(B) Parabola

(C) Hyperbola

(D) Ellipse

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601151**
Option 1 ID : **9941604601**
Option 2 ID : **9941604602**
Option 3 ID : **9941604603**
Option 4 ID : **9941604604**
Status : **Answered**
Chosen Option : **4**

Q.55 Limiting values of poisson's ratio are,
(A)-1 and 0.5, (B) -1 and -0.5, (C) 1 and -0.5, (D) 0 and 0.5

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601082**
Option 1 ID : **9941604325**
Option 2 ID : **9941604326**
Option 3 ID : **9941604327**
Option 4 ID : **9941604328**
Status : **Answered**
Chosen Option : **4**

Q.56 A tank containing water up to a depth of 650mm is stationary. Find the force exerted by the fluid of specific gravity 0.55 on the side of the tank. The width of the tank is 1.5m
(A) 319.4N, (B) 1709.9 N, (C) 1367.75N, (D) 6838.8N

Ans
✘ 1. (a)
✔ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601108**
Option 1 ID : **9941604429**
Option 2 ID : **9941604430**
Option 3 ID : **9941604431**
Option 4 ID : **9941604432**
Status : **Answered**
Chosen Option : **2**

Q.57 If temperature of the source is increased, the efficiency of Carnot engine,

(A) Increases, (B) Decreases (C) Remains constant (D) First increases and then decreases

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601115**
Option 1 ID : **9941604457**
Option 2 ID : **9941604458**
Option 3 ID : **9941604459**
Option 4 ID : **9941604460**
Status : **Answered**
Chosen Option : **1**

Q.58 If A is a square matrix of order 3 and |A| = 5, then the value of

|2A'| is

(A)-10

(B)10

(C)-40

(D)40

Ans
✘ 1. (a)
✘ 2. (b)
✘ 3. (c)
✔ 4. (d)

Question ID : **9941601155**
Option 1 ID : **9941604617**
Option 2 ID : **9941604618**
Option 3 ID : **9941604619**
Option 4 ID : **9941604620**
Status : **Answered**
Chosen Option : **2**

Q.59 In an isothermal process, the internal energy,

(A) Increases (B) Decreases (C) Remains constant (D) First increases and, then decreases

Ans
✘ 1. (a)
✘ 2. (b)
✔ 3. (c)
✘ 4. (d)

Question ID : **9941601114**
Option 1 ID : **9941604453**
Option 2 ID : **9941604454**
Option 3 ID : **9941604455**
Option 4 ID : **9941604456**
Status : **Answered**
Chosen Option : **3**

Q.60 The resulting motion when two hyperboloids are rotated

(A) Sliding (B) Turning (C) Rotary (D) Combination of A&B

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601139**
Option 1 ID : **9941604553**
Option 2 ID : **9941604554**
Option 3 ID : **9941604555**
Option 4 ID : **9941604556**
Status : **Answered**
Chosen Option : **4**

Q.61 Rate of energy increase within the control volume is given by

(A) rate of energy inflow * rate of energy outflow
(B) rate of energy inflow - rate of energy outflow
(C) rate of energy inflow / rate of energy outflow
(D) rate of energy inflow + rate of energy outflow

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601116**
Option 1 ID : **9941604461**
Option 2 ID : **9941604462**
Option 3 ID : **9941604463**
Option 4 ID : **9941604464**
Status : **Answered**
Chosen Option : **2**

Q.62 A simply supported beam A of length l, breadth b, and depth d carries a central point load W. Another beam B has the same length and depth, but the breadth is doubled. The deflection of the beam will be

(A) 1/4, (B) 1/2, (C) Double, (D) 4 times

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601086**
Option 1 ID : **9941604341**
Option 2 ID : **9941604342**
Option 3 ID : **9941604343**
Option 4 ID : **9941604344**
Status : **Answered**
Chosen Option : **3**

Q.63 If a liquid enters a pipe of diameter d with a velocity V. What will be it's velocity at the exit of if the diameter reduces to 0.5d?

(A) 0.5V, (B) V, (C) 4V, (D) 2V

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601110**
Option 1 ID : **9941604437**
Option 2 ID : **9941604438**
Option 3 ID : **9941604439**
Option 4 ID : **9941604440**
Status : **Answered**
Chosen Option : **3**

Q.64 A rectangular block of size 200mmx100mmx50mm is subjected to a shear stress of 100N/mm^2. If modulus of rigidity of material is 1X10^{5}N/mm^2, strain energy stored will be,

(A) 10 Nm (B) 25Nm, (C) 50Nm, (D) 100Nm

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601090**
Option 1 ID : **9941604357**
Option 2 ID : **9941604358**
Option 3 ID : **9941604359**
Option 4 ID : **9941604360**
Status : **Answered**
Chosen Option : **2**

Q.65 What is the expression of bending equation

(A) M/I=σ/y=e/r, (B) M/r=σ/y=e/I, (C) M/y=σ/r=e/I, (D) M/I=σ/r=e/y

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601136**
Option 1 ID : **9941604541**
Option 2 ID : **9941604542**
Option 3 ID : **9941604543**
Option 4 ID : **9941604544**
Status : **Answered**
Chosen Option : **1**

Q.66 Find the cutting ratio of a shaper if the return stroke time is one fourth of forward stroke time.

(A) 2 (B)0.5 (C)4 (D) 0.25

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601100**
Option 1 ID : **9941604397**
Option 2 ID : **9941604398**
Option 3 ID : **9941604399**
Option 4 ID : **9941604400**
Status : **Answered**
Chosen Option : **3**

Q.67 If 1 - i, is a root of the equation $x^2 + ax + b = 0$, where $a, b \in R$

then the value of a - b is

(A) -4

(B) 0

(C) 2

(D) 1

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601160**
Option 1 ID : **9941604637**
Option 2 ID : **9941604638**
Option 3 ID : **9941604639**
Option 4 ID : **9941604640**
Status : **Not Answered**
Chosen Option : **--**

Q.68 At a point in a strained body carrying two unequal unlike principal stresses p1 and p2 (p1>p2). The maximum shear stress is given by

(A) p/2

(B) p2/2

(C) (p1-p2)/2

(D) (p1+p2)/2

Ans

✗ 1. (a)

✓ 2. (b)

✗ 3. (c)

✗ 4. (d)

Question ID : **9941601088**
Option 1 ID : **9941604349**
Option 2 ID : **9941604350**
Option 3 ID : **9941604351**
Option 4 ID : **9941604352**
Status : **Answered**
Chosen Option : **3**

Q.69 sin 2A = 2 sin A is true when A =

(A) 30°

(B) 45°

(C) 0°

(D) 60°

Ans

✗ 1. (a)

✗ 2. (b)

✓ 3. (c)

✗ 4. (d)

Question ID : **9941601158**
Option 1 ID : **9941604629**
Option 2 ID : **9941604630**
Option 3 ID : **9941604631**
Option 4 ID : **9941604632**
Status : **Answered**
Chosen Option : **3**

Q.70 Calculate the shaft diameter on rigidity basis if torsional moment is 196000N-mm, length of the shaft is 1000mm. Permissible angle of twist per meter is 0.5'. G=79300N/mm^2

(A) 41.2mm (B) 35.8mm (C) 38.8mm (D) 41.10mm

Ans
✔ 1. (a)
✘ 2. (b)
✘ 3. (c)
✘ 4. (d)

Question ID : **9941601142**
Option 1 ID : **9941604565**
Option 2 ID : **9941604566**
Option 3 ID : **9941604567**
Option 4 ID : **9941604568**
Status : **Not Answered**
Chosen Option : **--**

Q.71 A wire with a length of 2l is stretched between two posts. A lantern with a mass M is suspended exactly from the middle of the wire. The cross sectional area of wire is A and its modulus of elasticity is E. Determine the angle of sagging of the wire considering it to be small.

(A) Mg/AE
(B) $(Mg/AE)^{1/2}$
(C) $(Mg/AE)^{1/3}$
(D) $(Mg/AE)^{1/4}$

Ans
✘ 1. (a)
✘ 2. (b)
✔ 3. (c)
✘ 4. (d)

Question ID : **9941601091**
Option 1 ID : **9941604361**
Option 2 ID : **9941604362**
Option 3 ID : **9941604363**
Option 4 ID : **9941604364**
Status : **Not Answered**
Chosen Option : **--**

Q.72 A cylinder/piston contains 1 kg methane gas at 100kPa, 20°C. The gas is compressed reversibly to a pressure of 800kPa. What is the work required if the process is isothermal?

(A) -116.0 kJ
(B) -316.0 kJ
(C) -216.0 kJ
(D) -416.0 kJ

Ans ✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601117**
Option 1 ID : **9941604465**
Option 2 ID : **9941604466**
Option 3 ID : **9941604467**
Option 4 ID : **9941604468**
Status : **Not Answered**
Chosen Option : **--**

Q.73 The diagonal of a polygon is the distance from one corner to the corner furthest away from it. If the polygon has an _____ number of sides, then this distance is the dimension between two diametrically opposed corners.

(A) Even
(B) Odd
(C) Prime
(D) None of the above

Ans ✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601145**
Option 1 ID : **9941604577**
Option 2 ID : **9941604578**
Option 3 ID : **9941604579**
Option 4 ID : **9941604580**
Status : **Answered**
Chosen Option : **1**

Q.74 While designing the shaft on the basis of torsional rigidity, angle of twist is given by

(A) Ml/gd^4 (B) 584M/gd^4 (C) 292Ml/gd^4 (D) None of the above

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601138**
Option 1 ID : **9941604549**
Option 2 ID : **9941604550**
Option 3 ID : **9941604551**
Option 4 ID : **9941604552**
Status : **Answered**
Chosen Option : **1**

Q.75 The function of desuperheating coil in a condenser is

(A) To remove heat from condenser (B) To improve performance of a condenser (C) To discharge the heat exchanged in condenser to the surroundings (D) To remove the heat of superheat of the refrigerant before it enter the condenser

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601126**
Option 1 ID : **9941604501**
Option 2 ID : **9941604502**
Option 3 ID : **9941604503**
Option 4 ID : **9941604504**
Status : **Answered**
Chosen Option : **4**

Q.76 If the depth of a beam of rectangular cross section is reduced to half, strain energy stored in the beam becomes,

(A) One fourth time
(B) One-eighth time
(C) 4 times
(D) 8 times

Ans
✗ 1. (a)
✗ 2. (b)
✗ 3. (c)
✓ 4. (d)

Question ID : **9941601085**
Option 1 ID : **9941604337**
Option 2 ID : **9941604338**
Option 3 ID : **9941604339**
Option 4 ID : **9941604340**
Status : **Answered**
Chosen Option : **2**

Q.77 Which of the following tools is most suitable for very hard and brittle material?

(A) Cast cobalt alloy (B) HSS (C) Carbides (D) None of the above

Ans
✗ 1. (a)
✗ 2. (b)
✓ 3. (c)
✗ 4. (d)

Question ID : **9941601093**
Option 1 ID : **9941604369**
Option 2 ID : **9941604370**
Option 3 ID : **9941604371**
Option 4 ID : **9941604372**
Status : **Answered**
Chosen Option : **3**

Q.78 A factory sealed unit containing motor and compressor is called,

(A) A valve less compressor (B) Hermetic compressor (C) Reciprocating compressor (D) Screw air compressor

Ans
✗ 1. (a)
✓ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601130**
Option 1 ID : **9941604517**
Option 2 ID : **9941604518**
Option 3 ID : **9941604519**
Option 4 ID : **9941604520**
Status : **Answered**
Chosen Option : **2**

Q.79 What is the scale range of Mohr's hardness test

(A) 1-10 (B) 1-1000 (C) 1-3000 (D) 100-200

Ans
✓ 1. (a)
✗ 2. (b)
✗ 3. (c)
✗ 4. (d)

Question ID : **9941601094**
Option 1 ID : **9941604373**
Option 2 ID : **9941604374**
Option 3 ID : **9941604375**
Option 4 ID : **9941604376**
Status : **Not Answered**
Chosen Option : **--**

Q.80 Iron posses BCC crystal structure upto (°C)

(A) 768 (B) 910 (C) 1410 (D) 1539

Ans

✔ 1. (a)

✘ 2. (b)

✘ 3. (c)

✘ 4. (d)

Question ID : **9941601097**
Option 1 ID : **9941604385**
Option 2 ID : **9941604386**
Option 3 ID : **9941604387**
Option 4 ID : **9941604388**
Status : **Answered**
Chosen Option : **2**