SSC JE

Previous Year Paper

(Mechanical) Paper-II

04 Dec, 2023 Shift 1

Junior Engineer Civil Mechanical and Electrical Examination 2023 Paper II

Roll Number	
Candidate Name	
Venue Name	
Exam Date	04/12/2023
Exam Time	9:00 AM - 11:00 AM
Subject	Junior Engineer 2023 Paper II Mechanical

Section : **General Engineering Mechanical**

Q.1 Which of the following points correctly pairs boiler mountings with primary functions of boilers?

(i) **Manhole -** Melts and releases steam if the water level in the boiler drops too down,

(ii) **Feed check valve -** Prevents backflow of water into the feed pump,

(iii) **Safety valve-** Releases excess steam from the boiler to prevent overpressure,

(iv) **Fusible plug -** Allows the boiler to be drained for inspection and maintenance

Ans

✗ 1. (iii)

✗ 2. (iv)

✓ 3. (ii)

✗ 4. (i)

Question ID : **264330184732**
Option 1 ID : **264330723629**
Option 2 ID : **264330723628**
Option 3 ID : **264330723630**
Option 4 ID : **264330723631**
Status : **Answered**
Chosen Option : **1**

Q.2 What is the pressure increase inside a soap bubble (Δp), which has two interfaces with air, an inner and outer surface of nearly the same radius 'R'?
(Consider that ' Υ ' is the coefficient of surface tension.)

Ans

✗ 1. $\Delta p = \frac{\Upsilon}{2R}$

✗ 2. $\Delta p = \frac{2\Upsilon}{R}$

✗ 3. $\Delta p = \frac{\Upsilon}{R}$

✓ 4. $\Delta p = \frac{4\Upsilon}{R}$

Question ID : **264330184687**
Option 1 ID : **264330723448**
Option 2 ID : **264330723450**
Option 3 ID : **264330723449**
Option 4 ID : **264330723451**
Status : **Answered**
Chosen Option : **4**

Q.3 The Rankine efficiency of a steam power plant:

Ans

✗ 1. improves in summer as compared to that in winter

✓ 2. improves in winter as compared to that in summer

✗ 3. worst in winter as compared to that in summer

✗ 4. is unaffected by climatic conditions

Question ID : **264330184724**
Option 1 ID : **264330723597**
Option 2 ID : **264330723596**
Option 3 ID : **264330723599**
Option 4 ID : **264330723598**
Status : **Answered**
Chosen Option : **1**

Q.4 According to laws of thermodynamics, which of the following statements is INCORRECT?

Ans

✔ 1. Heat energy can be fully converted into work energy.

✘ 2. Fraction of heat energy can be converted into work energy.

✘ 3. Work energy can be fully converted into heat energy.

✘ 4.

The first law of thermodynamics is the same as the law of conservation of energy.

Question ID : **264330184707**
Option 1 ID : **264330723529**
Option 2 ID : **264330723530**
Option 3 ID : **264330723528**
Option 4 ID : **264330723531**
Status : **Answered**
Chosen Option : **1**

Q.5 A diesel engine has a compression ratio of 15 and heat addition at a constant pressure takes place at 6% of stroke. Find the air standard efficiency of the diesel engine.

(Take γ for air = 1.4.)

Ans

✘ 1. $\eta_{diesel} = 41.2\%$

✘ 2. $\eta_{diesel} = 51.2\%$

✔ 3. $\eta_{diesel} = 61.2\%$

✘ 4. $\eta_{diesel} = 59.5\%$

Question ID : **264330184719**
Option 1 ID : **264330723576**
Option 2 ID : **264330723577**
Option 3 ID : **264330723578**
Option 4 ID : **264330723579**
Status : **Answered**
Chosen Option : **3**

Q.6 Identify the correct option based on the assertion (A) and reason (R) listed below.

Assertion (A): Dam walls are made thicker at the bottom than top.

Reason (R): Pressure due to water is highest at the bottom.

Ans

✔ 1. Both A and R are true

✘ 2. A is true but R is false

✘ 3. Both A and R are false

✘ 4. A is false but R is true

Question ID : **264330184832**
Option 1 ID : **264330724030**
Option 2 ID : **264330724029**
Option 3 ID : **264330724028**
Option 4 ID : **264330724031**
Status : **Answered**
Chosen Option : **1**

Q.7 As per the boiler regulations, every boiler must be fitted with at least _____ safety valves.

Ans
✗ 1. four
✗ 2. five
✓ 3. two
✗ 4. three

Question ID : **264330184725**
Option 1 ID : **264330723600**
Option 2 ID : **264330723603**
Option 3 ID : **264330723602**
Option 4 ID : **264330723601**
Status : **Answered**
Chosen Option : **3**

Q.8 The main purpose of using the evaporator in a refrigeration system is to _____.

Ans
✗ 1. compress the refrigerant gas
✓ 2. absorb heat from the surrounding air
✗ 3. condense the refrigerant gas
✗ 4. expand the refrigerant liquid

Question ID : **264330184739**
Option 1 ID : **264330723657**
Option 2 ID : **264330723656**
Option 3 ID : **264330723658**
Option 4 ID : **264330723659**
Status : **Answered**
Chosen Option : **2**

Q.9 Select the correct option based on the assertion (A) and reason (R) listed below.

Assertion (A): Two surfaces are polished and brought in contact with each other to reduce friction.

Reason (R): Rough surfaces have less friction between them.

Ans
✗ 1. Both A and R are True
✗ 2. Both A and R are false
✗ 3. A is false but R is true
✓ 4. A is true but R is false

Question ID : **264330184778**
Option 1 ID : **264330723812**
Option 2 ID : **264330723814**
Option 3 ID : **264330723815**
Option 4 ID : **264330723813**
Status : **Answered**
Chosen Option : **2**

Q.10 What will be the maximum coefficient of performance (COP) for the vapour absorption cycle if T_g is generator temperature, T_c is environment temperature and T_e is refrigerated space temperature?

Ans

✗ 1. $\frac{T_g(T_c - T_e)}{T_c(T_g - T_e)}$

✗ 2. $\frac{T_c(T_g - T_e)}{T_g(T_c - T_e)}$

✗ 3. $\frac{T_g(T_c - T_e)}{T_e(T_g - T_c)}$

✓ 4. $\frac{T_e(T_g - T_c)}{T_g(T_c - T_e)}$

Question ID : **264330184741**
Option 1 ID : **264330723667**
Option 2 ID : **264330723666**
Option 3 ID : **264330723665**
Option 4 ID : **264330723664**
Status : **Answered**
Chosen Option : **4**

Q.11 Centrifugal pumps dealing with mud, slurry and sewage have _____.

Ans

✗ 1. isolated impeller

✓ 2. open impeller

✗ 3. semi-closed impeller

✗ 4. closed impeller

Question ID : **264330184849**
Option 1 ID : **264330724099**
Option 2 ID : **264330724098**
Option 3 ID : **264330724097**
Option 4 ID : **264330724096**
Status : **Answered**
Chosen Option : **2**

Q.12 Calculate the kinetic head (in meter) for a system wherein water is flowing through a pipe of 4 cm diameter under pressure of 20 N/cm^2 and mean velocity of 2 m/s. Take g = 10 m/s^2.

Ans
✗ 1. 0.1
✗ 2. 0.35
✗ 3. 0.5
✓ 4. 0.2

Question ID : **264330184839**
Option 1 ID : **264330724056**
Option 2 ID : **264330724058**
Option 3 ID : **264330724059**
Option 4 ID : **264330724057**
Status : **Answered**
Chosen Option : **4**

Q.13 Calculate the magnitude of resultant of two like parallel forces of 20 N separated by a distance of 20 cm.

Ans
✓ 1. 40 N
✗ 2. 60 N
✗ 3. 20 N
✗ 4. 0 N

Question ID : **264330184777**
Option 1 ID : **264330723811**
Option 2 ID : **264330723808**
Option 3 ID : **264330723809**
Option 4 ID : **264330723810**
Status : **Answered**
Chosen Option : **1**

Q.14 Calculate the discharge through a convergent mouthpiece of diameter 50 mm that is discharging water under a constant head of 20 meters in litre/second. (Consider g = 10 m/s^2)

Ans
✗ 1. 41.25
✓ 2. 39.25
✗ 3. 37.25
✗ 4. 38.25

Question ID : **264330184836**
Option 1 ID : **264330724047**
Option 2 ID : **264330724046**
Option 3 ID : **264330724044**
Option 4 ID : **264330724045**
Status : **Answered**
Chosen Option : **2**

Q.15 Which of following is a defect that would never occur in shielded metal arc welding?

Ans

✔ 1. Tungsten inclusion

✘ 2. Slag inclusion

✘ 3. Crack

✘ 4. Porosity

Question ID : **264330184851**
Option 1 ID : **264330724106**
Option 2 ID : **264330724104**
Option 3 ID : **264330724107**
Option 4 ID : **264330724105**
Status : **Answered**
Chosen Option : **2**

Q.16 The velocity profile of a turbulent flow along a wall consists of four regions, characterised by the distance from the wall. The correct sequence of these regions from the wall is:

Ans

✘ 1.
buffer layer, transition layer, viscous sub-layer, turbulent layer

✘ 2.
buffer layer, viscous sub-layer, transition layer, turbulent layer

✘ 3.
viscous sub-layer, transition layer, buffer layer, turbulent layer

✔ 4.
viscous sub-layer, buffer layer, transition layer, turbulent layer

Question ID : **264330184759**
Option 1 ID : **264330723737**
Option 2 ID : **264330723736**
Option 3 ID : **264330723738**
Option 4 ID : **264330723739**
Status : **Answered**
Chosen Option : **2**

Q.17 What is the maximum coefficient of performance (COP) for an absorption type refrigerator wherein heating, cooling and refrigeration occur at temperatures of 100°C, 20°C and −5°C, respectively?

Ans

✘ 1. 1.15

✘ 2. 6.9

✔ 3. 2.3

✘ 4. 4.6

Question ID : **264330184737**
Option 1 ID : **264330723648**
Option 2 ID : **264330723651**
Option 3 ID : **264330723649**
Option 4 ID : **264330723650**
Status : **Answered**
Chosen Option : **3**

Q.18 A draft tube has the inlet diameter of 1 m and the outlet diameter of 2 m. The absolute pressure at the inlet of the draft tube is 0.4 bar. The outlet of the draft tube is exposed to atmosphere. The flow rate of water through the draft tube is 1600 litres per second. Then, the vertical distance between the inlet and the outlet is approximately _____.

Ans
✗ 1. 0.06 m
✓ 2. 6 m
✗ 3. 60 m
✗ 4. 0.6 m

Question ID : **264330184766**
Option 1 ID : **264330723767**
Option 2 ID : **264330723766**
Option 3 ID : **264330723764**
Option 4 ID : **264330723765**
Status : **Answered**
Chosen Option : **2**

Q.19 _____ is the pressure that a fluid attains when it is brought to rest isentropically.

Ans
✓ 1. Stagnation pressure
✗ 2. Thermodynamic pressure
✗ 3. Static pressure
✗ 4. Dynamic pressure

Question ID : **264330184678**
Option 1 ID : **264330723412**
Option 2 ID : **264330723415**
Option 3 ID : **264330723414**
Option 4 ID : **264330723413**
Status : **Answered**
Chosen Option : **1**

Q.20 A fluid cannot cross a streamline. The reason is that, at all the points, the velocity perpendicular to the streamline is _____.

Ans
✓ 1. zero
✗ 2. non-zero
✗ 3. infinity
✗ 4. unity

Question ID : **264330184748**
Option 1 ID : **264330723694**
Option 2 ID : **264330723695**
Option 3 ID : **264330723692**
Option 4 ID : **264330723693**
Status : **Answered**
Chosen Option : **2**

Q.21 Which of the following is NOT a type of centrifugal pump?

Ans

✔ 1. Linear flow pump

✘ 2. Radial flow pump

✘ 3. Mixed flow pump

✘ 4. Axial flow pump

Question ID : **264330184848**
Option 1 ID : **264330724093**
Option 2 ID : **264330724092**
Option 3 ID : **264330724094**
Option 4 ID : **264330724095**
Status : **Answered**
Chosen Option : **1**

Q.22 As per the steady flow energy equation, work is done in rotary compressors due to _____.

Ans

✘ 1. increase in the adiabatic index

✔ 2. increase in enthalpy

✘ 3. increase in viscosity

✘ 4. increase in entropy

Question ID : **264330184728**
Option 1 ID : **264330723615**
Option 2 ID : **264330723613**
Option 3 ID : **264330723614**
Option 4 ID : **264330723612**
Status : **Answered**
Chosen Option : **2**

Q.23 Match column A with column B.

Column A	Column B
A. Velocity compounded impulse turbine	1. Parson turbine
B. Simple impulse turbine	2. Curtis turbine
C. 50 % reaction turbine	3. De-Laval turbine

Ans

✗ 1. A-3; B-1; C-2

✗ 2. A-2; B-1; C-3

✗ 3. A-1; B-3; C-2

✓ 4. A-2; B-3; C-1

Question ID : **264330184799**
Option 1 ID : **264330723899**
Option 2 ID : **264330723898**
Option 3 ID : **264330723897**
Option 4 ID : **264330723896**
Status : **Answered**
Chosen Option : **4**

Q.24 The sum of datum head and pressure head from Bernoulli's equation is known as _____.

Ans

✓ 1. piezometric head

✗ 2. manometric head

✗ 3. datum head

✗ 4. atmospheric head

Question ID : **264330184841**
Option 1 ID : **264330724064**
Option 2 ID : **264330724065**
Option 3 ID : **264330724066**
Option 4 ID : **264330724067**
Status : **Answered**
Chosen Option : **1**

Q.25 A single-stage, reciprocating air compressor takes in 1.4 kg of air per minute at 1 bar and 17°C and delivers it at 6 bar. Assuming that the compression process follows the law $pV^{1.35} = constant$, calculate the indicated power input to the compressor.

Ans

✗ 1. 3.42 kW

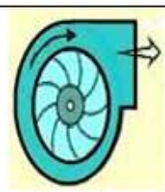
✗ 2. 1.57 kW

✗ 3. 0.26 kW

✓ 4. 4.43 kW

Question ID : **264330184672**
Option 1 ID : **264330723390**
Option 2 ID : **264330723389**
Option 3 ID : **264330723388**
Option 4 ID : **264330723391**
Status : **Marked For Review**
Chosen Option : **4**

Q.26 Match column A with column B.

Column A	Column B
A. 	1. Radial vanes
B. 	2. Backward curved Vanes
C. 	3. Forward curved vanes

Ans
1. A-1; B-3; C-2
2. A-2; B-3; C-1
3. A-2; B-1; C-3
4. A-3; B-1; C-2

Question ID : **264330184813**
Option 1 ID : **264330723953**
Option 2 ID : **264330723952**
Option 3 ID : **264330723954**
Option 4 ID : **264330723955**
Status : **Answered**
Chosen Option : **4**

Q.27 What is the coefficient of performance (COP) of a vapour compression refrigeration system if the enthalpies at the start of compression, at the end of compression and at the end of condensation are 195 kJ/kg, 220 kJ/kg and 95 kJ/kg, respectively?

Ans
✗ 1. 2
✓ 2. 4
✗ 3. 0.25
✗ 4. 1

Question ID : **264330184742**
Option 1 ID : **264330723670**
Option 2 ID : **264330723671**
Option 3 ID : **264330723668**
Option 4 ID : **264330723669**
Status : **Answered**
Chosen Option : **2**

Q.28 Identify the correct statement from the following.

Ans
✗ 1.
In an SI engine, the carburettor supplies grease to the cylinder.

✗ 2.
In an SI engine, the carburettor supplies both air and grease mixture to the cylinder.

✗ 3.
In an SI engine, the carburettor supplies only fuel to the cylinder.

✓ 4.
In an SI engine, the carburettor supplies both air and fuel mixture to the cylinder.

Question ID : **264330184793**
Option 1 ID : **264330723874**
Option 2 ID : **264330723875**
Option 3 ID : **264330723873**
Option 4 ID : **264330723872**
Status : **Answered**
Chosen Option : **4**

Q.29 Calculate the total head of water at the cross section of 5 m above the datum line. The pipe has a diameter of 5 cm, and the water is flowing with a pressure of 100×10^3 N/m^2 and mean velocity of 2 m/s. Take g = 10 m/s^2.

Ans
✗ 1. 10.2
✗ 2. 19.2
✓ 3. 15.2
✗ 4. 14.1

Question ID : **264330184840**
Option 1 ID : **264330724060**
Option 2 ID : **264330724063**
Option 3 ID : **264330724062**
Option 4 ID : **264330724061**
Status : **Answered**
Chosen Option : **3**

Q.30 Which of the following is NOT a method of steam turbine governing?

Ans

✗ 1. By-pass governing

✓ 2. Excel governing

✗ 3. Throttle governing

✗ 4. Nozzle governing

Question ID : **264330184824**
Option 1 ID : **264330723999**
Option 2 ID : **264330723997**
Option 3 ID : **264330723996**
Option 4 ID : **264330723998**
Status : **Marked For Review**
Chosen Option : **3**

Q.31 Based on the following two statements related to the manometer, select the correct option.

Statements:

A) A piezometer tube can measure the pressure in a container that is lesser than the atmospheric pressure.

B) In case of a simple U-tube manometer, if the pressure to be measured is high, then a lighter gauge fluid is preferred and, if the pressure is low, a heavier gauge fluid is preferred.

Ans

✓ 1. Both Statement A and Statement B are incorrect.

✗ 2. Statement A is incorrect, but Statement B is correct.

✗ 3. Statement A is correct, but Statement B is incorrect.

✗ 4. Both Statement A and Statement B are correct.

Question ID : **264330184688**
Option 1 ID : **264330723455**
Option 2 ID : **264330723454**
Option 3 ID : **264330723453**
Option 4 ID : **264330723452**
Status : **Answered**
Chosen Option : **3**

Q.32 Match column A with column B.

Column A	Column B
A. Newtonian fluid	1. Fluid having viscosity
B. Ideal fluid	2. Fluid obeying Newton's law of viscosity
C. Real fluid	3. Fluid is incompressible and non-viscous

Ans

✗ 1. A-3; B-1; C-2

✓ 2. A-2; B-3; C-1

✗ 3. A-1; B-3; C-2

✗ 4. A-2; B-1; C-3

Question ID : **264330184827**
Option 1 ID : **264330724011**
Option 2 ID : **264330724008**
Option 3 ID : **264330724009**
Option 4 ID : **264330724010**
Status : **Answered**
Chosen Option : **2**

Q.33 Calculate the head loss due to friction using Darcy formula when water flows through a pipe of 100 mm in diameter and 50 m long with velocity of 2 m/s. Assume f = 0.005 and g = 10 m/s^2.

Ans

✗ 1. 2.9

✗ 2. 1

✓ 3. 2

✗ 4. 2.2

Question ID : **264330184844**
Option 1 ID : **264330724079**
Option 2 ID : **264330724076**
Option 3 ID : **264330724077**
Option 4 ID : **264330724078**
Status : **Answered**
Chosen Option : **3**

Q.34 Match the properties of fluids mentioned in Column (A) with the related parameters mentioned in Column (B).

A. Properties of Fluids	B. Related Parameters
1. Density	i. Reciprocal of Bulk modulus of elasticity
2. Coefficient of compressibility	ii. Centistoke
3. Kinematic viscosity	iii. J/m^2
4. Surface tension	iv. Reciprocal of specific volume

Ans

✔ 1. 1-iv, 2-i, 3-ii, 4-iii

✘ 2. 1-ii, 2-i, 3-iv, 4-iii

✘ 3. 1-i, 2-ii, 3-iii, 4-iv

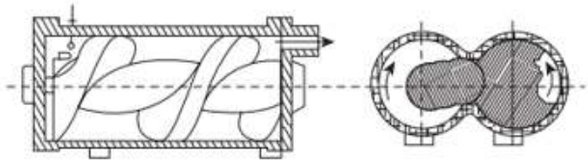
✘ 4. 1-iv, 2-iii, 3-ii, 4-i

Question ID : **264330184763**
Option 1 ID : **264330723753**
Option 2 ID : **264330723754**
Option 3 ID : **264330723752**
Option 4 ID : **264330723755**
Status : **Answered**
Chosen Option : **1**

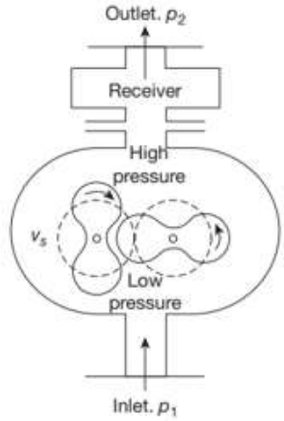
Q.35 Which of the following diagrams is that of a lobe compressor?

Ans

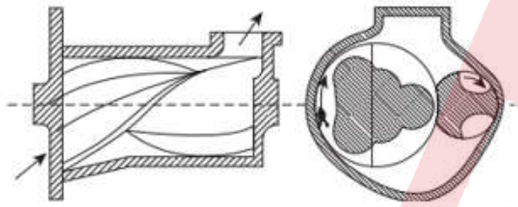
✗ 1.



✓ 2.



✗ 3.



✗ 4.

Question ID : **264330184665**
Option 1 ID : **264330723363**
Option 2 ID : **264330723360**
Option 3 ID : **264330723362**
Option 4 ID : **264330723361**
Status : **Answered**
Chosen Option : **4**

Q.36 The basic function of an expansion valve in a refrigerator is to _____ the _____refrigerant from the _____pressure to the _____ pressure.

Ans

✗ 1. expand; liquid; evaporator; condenser

✗ 2. condense; gaseous; evaporator; condenser

✗ 3. condense; gaseous; condenser; evaporator

✓ 4. expand; liquid; condenser; evaporator

Question ID : **264330184673**
Option 1 ID : **264330723395**
Option 2 ID : **264330723394**
Option 3 ID : **264330723392**
Option 4 ID : **264330723393**
Status : **Answered**
Chosen Option : **4**

Q.37 In a steady-flow air compressor, air enters at a speed of 5 m/s with a pressure of 1 bar and leaves at a speed of 7.5 m/s with a pressure of 7 bar. If the inlet specific volume is 0.5 m^3/kg and the outlet specific volume is 0.15 m^3/kg, what is the ratio of the inlet pipe diameter to the outlet pipe diameter?

Ans

✓ 1. 2.236 : 1

✗ 2. 1.118 : 1

✗ 3. 1 : 1.118

✗ 4. 1 : 2.236

Question ID : **264330184731**
Option 1 ID : **264330723627**
Option 2 ID : **264330723624**
Option 3 ID : **264330723625**
Option 4 ID : **264330723626**
Status : **Answered**
Chosen Option : **1**

Q.38 A mass of 2.4 kg of air at 150 kPa and 12°C is contained in a gas-tight, frictionless piston–cylinder device. The air is then compressed to a final pressure of 600 kPa. During this process, heat is transferred from the air in such a way that the temperature inside the cylinder remains constant. Calculate the work input during the process.

Ans

✓ 1. −272 kJ

✗ 2. 272 kJ

✗ 3. −11 kJ

✗ 4. 11 kJ

Question ID : **264330184649**
Option 1 ID : **264330723296**
Option 2 ID : **264330723297**
Option 3 ID : **264330723298**
Option 4 ID : **264330723299**
Status : **Answered**
Chosen Option : **2**

Q.39 Free air of volumetric flow rate 30 m^3/min is compressed from 101.3 kPa to 2.23 bar in a Roots blower. Determine the indicated power required.

Ans

✗ 1. 36.51 kW
✗ 2. 65.72 kW
✗ 3. 44.83 kW
✓ 4. 60.85 kW

Question ID : **264330184670**
Option 1 ID : **264330723380**
Option 2 ID : **264330723383**
Option 3 ID : **264330723381**
Option 4 ID : **264330723382**
Status : **Answered**
Chosen Option : **4**

Q.40 As per the valve timing diagram of the four-stroke cycle diesel engine, typically, the fuel valve closes _____.

Ans

✗ 1. 0°–5° after BDC
✗ 2. 39°–50° before BDC
✗ 3. 10°–15° before TDC
✓ 4. 15°–25° after TDC

Question ID : **264330184716**
Option 1 ID : **264330723567**
Option 2 ID : **264330723566**
Option 3 ID : **264330723564**
Option 4 ID : **264330723565**
Status : **Marked For Review**
Chosen Option : **1**

Q.41 Among the following impeller arrangements, which impeller of the centrifugal pump offers the maximum efficiency?

Ans

✗ 1. Straight blade
✗ 2. Radial blade
✗ 3. Forward-curved blade
✓ 4. Backward-curved blade

Question ID : **264330184754**
Option 1 ID : **264330723718**
Option 2 ID : **264330723717**
Option 3 ID : **264330723716**
Option 4 ID : **264330723719**
Status : **Answered**
Chosen Option : **4**

Q.42 The basic difference between the reversed Carnot cycle and the ideal vapour-compression refrigeration cycle is that a/an _____ in the reversed Carnot cycle is replaced with a/an _____ in the ideal vapour-compression refrigeration cycle.

Ans

✗ 1. expansion valve; turbine

✗ 2. turbine; nozzle

✗ 3. nozzle; expansion valve

✓ 4. turbine; expansion valve

Question ID : **264330184674**
Option 1 ID : **264330723397**
Option 2 ID : **264330723398**
Option 3 ID : **264330723399**
Option 4 ID : **264330723396**
Status : **Answered**
Chosen Option : **4**

Q.43 Regarding the pressure distribution of a fluid in an open rectangular tank, which of the below-mentioned statements is FALSE?

Ans

✗ 1. The gauge pressure at the water surface on the side wall is zero.

✗ 2. The resultant force acts through the centroid of the area of the bottom of the tank.

✓ 3. The pressure is maximum at the middle of the side wall of the tank.

✗ 4. Pressure is uniform on the bottom.

Question ID : **264330184689**
Option 1 ID : **264330723459**
Option 2 ID : **264330723457**
Option 3 ID : **264330723458**
Option 4 ID : **264330723456**
Status : **Answered**
Chosen Option : **3**

Q.44 About which of the following aspects of a thermodynamic process does the first law of thermodynamics NOT provide information?

Ans

✗ 1. Heat transfer into or out of a system

✗ 2. Total energy change in a system

✗ 3. Work done by a system

✓ 4. Direction of a spontaneous process

Question ID : **264330184706**
Option 1 ID : **264330723525**
Option 2 ID : **264330723524**
Option 3 ID : **264330723527**
Option 4 ID : **264330723526**
Status : **Answered**
Chosen Option : **4**

Q.45 Which of the following is an INCORRECT statement?

Ans

✗ 1. Locomotive boiler is natural circulation boiler.

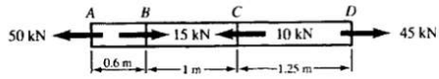
✗ 2. Lancashire boiler is a natural circulation boiler.

✓ 3. Cochran boiler is a forced circulation boiler.

✗ 4. Babcock-Wilcox boiler is a natural circulation boiler.

Question ID : **264330184803**
Option 1 ID : **264330723914**
Option 2 ID : **264330723913**
Option 3 ID : **264330723915**
Option 4 ID : **264330723912**
Status : **Answered**
Chosen Option : **3**

Q.46 A steel bar with the area of cross-section 500 mm^2 is acted upon by the forces shown in the figure below. What is the total elongation in the bar if the value of Young's modulus is 200 GPa?



Ans

✗ 1. 0.61 mm

✓ 2. 1.21 mm

✗ 3. 0.51 mm

✗ 4. 0.09 mm

Question ID : **264330184642**
Option 1 ID : **264330723270**
Option 2 ID : **264330723271**
Option 3 ID : **264330723269**
Option 4 ID : **264330723268**
Status : **Answered**
Chosen Option : **2**

Q.47 Match column A with column B.

Column A	Column B
A.Mechanical efficiency	1.Ratio of brake power to indicated power
B.Indicated thermal efficiency	2.Ratio of actual volume to swept volume
C.Volumetric efficiency	3.Ratio of indicated power to fuel power

Ans
✗ 1. A-2; B-3; C-1
✗ 2. A-3; B-1; C-2
✓ 3. A-1; B-3; C-2
✗ 4. A-2; B-1; C-3

Question ID : **264330184792**
Option 1 ID : **264330723868**
Option 2 ID : **264330723871**
Option 3 ID : **264330723869**
Option 4 ID : **264330723870**
Status : **Answered**
Chosen Option : **3**

Q.48 The Darcy friction factor (f) for fully developed laminar flow in a circular pipe with the Reynolds number of 1600 is given as:

Ans
✗ 1. 0.02
✗ 2. 0.005
✗ 3. 0.01
✓ 4. 0.04

Question ID : **264330184768**
Option 1 ID : **264330723772**
Option 2 ID : **264330723774**
Option 3 ID : **264330723773**
Option 4 ID : **264330723775**
Status : **Answered**
Chosen Option : **4**

Q.49 Which of the following pressure measurement gauges is gravity based?

Ans
✔ 1. Manometer
✘ 2. Bourdon tube
✘ 3. McLeod gauge
✘ 4. Pirani gauge

Question ID : **264330184683**
Option 1 ID : **264330723435**
Option 2 ID : **264330723432**
Option 3 ID : **264330723433**
Option 4 ID : **264330723434**
Status : **Answered**
Chosen Option : **1**

Q.50 The absolute pressure is equal to:

Ans
✘ 1. gauge pressure − atmospheric pressure
✔ 2. gauge pressure + atmospheric pressure
✘ 3. vacuum pressure + gauge pressure
✘ 4. gauge pressure + atmospheric pressure + vacuum pressure

Question ID : **264330184746**
Option 1 ID : **264330723685**
Option 2 ID : **264330723684**
Option 3 ID : **264330723686**
Option 4 ID : **264330723687**
Status : **Answered**
Chosen Option : **2**

Q.51 Based on the following two statements related to the actual vapour power cycle and the ideal Rankine cycle, select the correct option.

Statements:

A) Steam leaves the boiler at a somewhat lower pressure in the actual cycle than the ideal one.

B) Water must be pumped to a sufficiently higher pressure in the actual cycle than the ideal one.

Ans
✘ 1. Both Statement A and Statement B are incorrect.
✘ 2. Statement A is incorrect, but Statement B is correct.
✔ 3. Both Statement A and Statement B are correct.
✘ 4. Statement A is correct, but Statement B is incorrect.

Question ID : **264330184656**
Option 1 ID : **264330723327**
Option 2 ID : **264330723326**
Option 3 ID : **264330723324**
Option 4 ID : **264330723325**
Status : **Marked For Review**
Chosen Option : **3**

Q.52 Based on the following two statements related to boilers, select the correct option.

Statements:

A) The major drawback in a LaMont boiler is formation and sticking of bubbles in the inner surface of heating tubes.

B) If the boiler pressure is raised to critical pressure, the steam and the water will have the same density and thereby, the risk of bubble formation can be eliminated.

Ans

✔ 1. Both Statement A and Statement B are correct and B is the solution to the problem presented in A.

✘ 2. Statement A is incorrect, but Statement B is correct.

✘ 3. Both Statement A and Statement B are correct, but B is not the correct solution to the problem presented in A.

✘ 4. Statement A is correct, but Statement B is incorrect.

Question ID : **264330184663**
Option 1 ID : **264330723355**
Option 2 ID : **264330723354**
Option 3 ID : **264330723352**
Option 4 ID : **264330723353**
Status : **Answered**
Chosen Option : **1**

Q.53 A Carnot cycle runs between _____ adiabatic and _____ isothermal processes.

Ans

✘ 1. 3, 1

✔ 2. 2, 2

✘ 3. 1, 3

✘ 4. 0, 4

Question ID : **264330184788**
Option 1 ID : **264330723853**
Option 2 ID : **264330723854**
Option 3 ID : **264330723852**
Option 4 ID : **264330723855**
Status : **Answered**
Chosen Option : **2**

Q.54 Match the thermodynamic systems with their correct examples.

Thermodynamic System		Example	
A	Open	**I**	The gas sealed within the cylinder of a spark-ignition engine
B	Closed	**II**	Liquid nitrogen stored in a sealed and insulated container
C	Isolated	**III**	A car radiator

Ans

✗ 1. A-I, B-III, C-II

✗ 2. A-II, B-III, C-I

✓ 3. A-III, B-I, C-II

✗ 4. A-I, B-II, C-III

Question ID : **264330184647**
Option 1 ID : **264330723290**
Option 2 ID : **264330723289**
Option 3 ID : **264330723291**
Option 4 ID : **264330723288**
Status : **Answered**
Chosen Option : **3**

Q.55 Which of the following is NOT a natural circulation boiler?

Ans

✓ 1. LaMont boiler

✗ 2. Locomotive boiler

✗ 3. Lancashire boiler

✗ 4. Babcock & Wilcox boiler

Question ID : **264330184658**
Option 1 ID : **264330723335**
Option 2 ID : **264330723334**
Option 3 ID : **264330723333**
Option 4 ID : **264330723332**
Status : **Answered**
Chosen Option : **1**

Q.56 In case of frictionless flow with no work or heat transfer, the height of the energy grade line (EGL) is _____ and is equal to the _____.

Ans

✗ 1. constant; elevation and pressure head

✓ 2. constant; total Bernoulli head

✗ 3. variable; elevation and pressure head

✗ 4. variable; total Bernoulli head

Question ID : **264330184691**
Option 1 ID : **264330723464**
Option 2 ID : **264330723466**
Option 3 ID : **264330723465**
Option 4 ID : **264330723467**
Status : **Answered**
Chosen Option : **2**

Q.57 The shear stress at the outer surface of a solid shaft with diameter D and torque T is _____.

Ans

✗ 1. $\frac{\pi T}{16D^3}$

✗ 2. $\frac{16D^3}{\pi T}$

✗ 3. $\frac{\pi D^3}{16T}$

✓ 4. $\frac{16T}{\pi D^3}$

Question ID : **264330184643**
Option 1 ID : **264330723275**
Option 2 ID : **264330723274**
Option 3 ID : **264330723273**
Option 4 ID : **264330723272**
Status : **Answered**
Chosen Option : **4**

Q.58 Darcy's friction factor for a fully developed flow through a closed duct is given by _____.
(Consider that D_h is hydraulic diameter, τ_w is wall shear stress, Δp^* is piezometric pressure drop over a length of L, ρ is density and V is average flow velocity.)

Ans

✗ 1. $\frac{\rho V^2}{\tau_w}$

✗ 2. $\frac{D_h \Delta p^*}{2L\rho V^2}$

✓ 3. $\frac{D_h \Delta p^*}{L(\frac{1}{2})\rho V^2}$

✗ 4. $\frac{(\frac{1}{2})\rho V^2}{\tau_w}$

Question ID : **264330184693**
Option 1 ID : **264330723475**
Option 2 ID : **264330723473**
Option 3 ID : **264330723472**
Option 4 ID : **264330723474**
Status : **Marked For Review**
Chosen Option : **3**

Q.59 Based on the following two statements related to the pressure in a static fluid, select the correct option.

Statements:

A) Absolute pressures are always positive, but gauge pressures can be either positive or negative.

B) A gauge pressure of zero corresponds to a pressure that is below the local atmospheric pressure.

Ans

✗ 1. Both Statement A and Statement B are correct.

✗ 2. Statement A is incorrect, but Statement B is correct.

✓ 3. Statement A is correct, but Statement B is incorrect.

✗ 4. Both Statement A and Statement B are incorrect.

Question ID : **264330184682**
Option 1 ID : **264330723428**
Option 2 ID : **264330723430**
Option 3 ID : **264330723429**
Option 4 ID : **264330723431**
Status : **Answered**
Chosen Option : **3**

Q.60 Identify the correct options based on the assertion and reason listed below.

Assertion (A): Compounding is done in the turbine.

Reason (R): Compounding is done to prevent over speeding of turbine.

Ans

✗ 1. A is false but R is true

✗ 2. A is true but R is false

✓ 3. Both A and R are true

✗ 4. Both A and R are false

Question ID : **264330184800**
Option 1 ID : **264330723903**
Option 2 ID : **264330723901**
Option 3 ID : **264330723902**
Option 4 ID : **264330723900**
Status : **Answered**
Chosen Option : **3**

Q.61 Based on the two statements given below, select the correct option.

Statements:

A) The state of a simple compressible system is completely specified by three independent, intensive properties.

B) A system is called a simple compressible system in the absence of an electrical, magnetic, gravitational, motion or surface tension effect.

Ans

✗ 1. Both Statement A and Statement B are correct.

✓ 2. Statement A is incorrect, but Statement B is correct.

✗ 3. Both Statement A and Statement B are incorrect.

✗ 4. Statement A is correct, but Statement B is incorrect.

Question ID : **264330184648**
Option 1 ID : **264330723292**
Option 2 ID : **264330723294**
Option 3 ID : **264330723295**
Option 4 ID : **264330723293**
Status : **Answered**
Chosen Option : **1**

Q.62 _____ pressure is measured at any point in a fluid which is non-moving.

Ans
✗ 1. Differential
✗ 2. Manometric
✗ 3. Atmospheric
✓ 4. Hydrostatic

Question ID : **264330184830**
Option 1 ID : **264330724021**
Option 2 ID : **264330724020**
Option 3 ID : **264330724023**
Option 4 ID : **264330724022**
Status : **Answered**
Chosen Option : **4**

Q.63 The operation of enlarging an already drilled hole is known as _____.

Ans
✓ 1. boring
✗ 2. punching
✗ 3. shearing
✗ 4. coining

Question ID : **264330184852**
Option 1 ID : **264330724108**
Option 2 ID : **264330724109**
Option 3 ID : **264330724111**
Option 4 ID : **264330724110**
Status : **Answered**
Chosen Option : **1**

Q.64 What is the primary purpose of using an economiser in a boiler system?

Ans
✗ 1. To reduce the emission of greenhouse gases
✗ 2. To cool down the exhaust flue gases
✓ 3. To heat the feedwater by utilising heat from the exhaust flue gases
✗ 4. To increase the pressure within the boiler

Question ID : **264330184727**
Option 1 ID : **264330723609**
Option 2 ID : **264330723608**
Option 3 ID : **264330723610**
Option 4 ID : **264330723611**
Status : **Answered**
Chosen Option : **3**

Q.65 Which of the following is/are the correct pair(s) of reaction turbines?

1. Francis turbine – Mixed-flow turbine

2. Kaplan turbine – Radial flow turbine

3. Propeller turbine – Axial flow turbine

Ans
✗ 1. Only 1
✓ 2. Only 1 and 3
✗ 3. Only 2 and 3
✗ 4. Only 1 and 2

Question ID : **264330184761**
Option 1 ID : **264330723744**
Option 2 ID : **264330723746**
Option 3 ID : **264330723747**
Option 4 ID : **264330723745**
Status : **Answered**
Chosen Option : **2**

Q.66 An efficient lubrication system ensures that _____.

Ans
✓ 1. the engine runs without noise
✗ 2. the engine runs with greater noise
✗ 3. the engine runs with greater friction
✗ 4. the engine runs roughly

Question ID : **264330184795**
Option 1 ID : **264330723880**
Option 2 ID : **264330723883**
Option 3 ID : **264330723882**
Option 4 ID : **264330723881**
Status : **Answered**
Chosen Option : **1**

Q.67 What is the effect of increase in the evaporator temperature on the COP of a vapour compression refrigeration cycle?

Statement 1: The coefficient of performance (COP) of a vapour compression refrigeration cycle is directly proportional to the evaporator temperature and inversely proportional to the condenser temperature.

Statement 2: A vapour compression refrigeration cycle with a higher COP is more energy efficient.

Considering the above-mentioned question and statements, select the correct option.

Ans

✗ 1. Statement 2 alone is required to answer the question.

✗ 2. Both Statement 1 and Statement 2 are required to answer the question.

✓ 3. Statement 1 alone is required to answer the question.

✗ 4. Neither Statement 1 nor Statement 2 is required to answer the question.

Question ID : **264330184736**
Option 1 ID : **264330723645**
Option 2 ID : **264330723646**
Option 3 ID : **264330723644**
Option 4 ID : **264330723647**
Status : **Answered**
Chosen Option : **3**

Q.68 The ratio of the sensible heat transfer to the total heat transfer in air-conditioning systems is known as _____.

Ans

✓ 1. sensible heat factor

✗ 2. cooling factor

✗ 3. bypass factor

✗ 4. humidity factor

Question ID : **264330184676**
Option 1 ID : **264330723404**
Option 2 ID : **264330723406**
Option 3 ID : **264330723405**
Option 4 ID : **264330723407**
Status : **Answered**
Chosen Option : **1**

Q.69 A gaseous system having internal energy of 50 J is being added by 100 J of heat. Calculate the amount of external work done.

Ans

✗ 1. 150 J

✓ 2. 50 J

✗ 3. 20 J

✗ 4. 2 J

Question ID : **264330184785**
Option 1 ID : **264330723841**
Option 2 ID : **264330723840**
Option 3 ID : **264330723843**
Option 4 ID : **264330723842**
Status : **Answered**
Chosen Option : **2**

Q.70 High carbon steels have carbon percentage in the range of:

Ans
✗ 1. 11-15%
✗ 2. 8-10%
✓ 3. 0.6-2%
✗ 4. 6-8%

Question ID : **264330184850**
Option 1 ID : **264330724103**
Option 2 ID : **264330724100**
Option 3 ID : **264330724101**
Option 4 ID : **264330724102**
Status : **Answered**
Chosen Option : **3**

Q.71 Identify the odd one on the basis of the number of tubes.

Ans
✗ 1. Cochran boiler
✗ 2. Lancashire boiler
✓ 3. Cornish boiler
✗ 4. Locomotive boiler

Question ID : **264330184802**
Option 1 ID : **264330723909**
Option 2 ID : **264330723911**
Option 3 ID : **264330723908**
Option 4 ID : **264330723910**
Status : **Marked For Review**
Chosen Option : **2**

Q.72 Based on the following two statements related to the Curtis stage turbine, select the correct option.

Statements:

A) In the Curtis stage turbine, the total enthalpy and pressure drop occurs in the nozzles so that the pressure remains constant in all the three rows of blades.

B) In the fixed (static) blade passage, both pressure and velocity remain constant.

Ans
✗ 1. Both Statement A and Statement B are incorrect.
✓ 2. Both Statement A and Statement B are correct.
✗ 3. Statement A is incorrect, but Statement B is correct.
✗ 4. Statement A is correct, but Statement B is incorrect.

Question ID : **264330184679**
Option 1 ID : **264330723419**
Option 2 ID : **264330723416**
Option 3 ID : **264330723418**
Option 4 ID : **264330723417**
Status : **Marked For Review**
Chosen Option : **2**

Q.73 Select the correct option on the basis of the statements given below.

Statement A: Water tube boilers are low – pressure boilers.

Statement B: Fire tube boilers are high – pressure boilers.

Ans

✗ 1. Statement A is true, but Statement B is false.

✗ 2. Both statements A and B are true.

✗ 3. Statement B is true, but Statement A is false.

✓ 4. Both statements A and B are false.

Question ID : **264330184804**
Option 1 ID : **264330723916**
Option 2 ID : **264330723918**
Option 3 ID : **264330723917**
Option 4 ID : **264330723919**
Status : **Answered**
Chosen Option : **4**

Q.74 Which of the following statements expresses the main function of a steam generator?

Ans

✓ 1.
It transfers the heat produced by the combustion of fuel to water and, ultimately, produces steam.

✗ 2.
It transfers the heat to the atmospheric air and thereby, causes condensation of the steam.

✗ 3.
It transfers the water directly to the feed pump and develops electric power.

✗ 4.
It reduces the water energy storage capacity and diminishes the steam generation.

Question ID : **264330184726**
Option 1 ID : **264330723605**
Option 2 ID : **264330723606**
Option 3 ID : **264330723604**
Option 4 ID : **264330723607**
Status : **Answered**
Chosen Option : **1**

Q.75 A cylindrical pipe of diameter 1.5 m and thickness 1.5 cm is subjected to internal fluid pressure of 1.2 N/mm^2. Determine the longitudinal stress developed in the pipe.

Ans

✗ 1. 45 N/mm^2

✗ 2. 60 N/mm^2

✗ 3. 15 N/mm^2

✓ 4. 30 N/mm^2

Question ID : **264330184644**
Option 1 ID : **264330723278**
Option 2 ID : **264330723279**
Option 3 ID : **264330723276**
Option 4 ID : **264330723277**
Status : **Answered**
Chosen Option : **4**

Q.76 Which of the following statements is true?

Ans

✗ 1.
Impulse turbine occupies more space than reaction turbines for same power output.

✗ 2.
Impulse turbine occupies double the space than reaction turbine for the same power output

✓ 3.
Impulse turbine occupies less space than reaction turbine for the same power output.

✗ 4.
Impulse turbine occupies same space as reaction turbine for the same power output.

Question ID : **264330184846**
Option 1 ID : **264330724084**
Option 2 ID : **264330724086**
Option 3 ID : **264330724085**
Option 4 ID : **264330724087**
Status : **Answered**
Chosen Option : **1**

Q.77 Based on the two statements given below, select the correct option.

Statements:

A) The first law of thermodynamics is also known as the conservation of energy principle.

B) For all the adiabatic processes between two specified states of a closed system, the net work done is the same, regardless of the nature of the closed system and the details of the process.

Ans

✗ 1. Statement A is incorrect, but Statement B is correct.

✗ 2. Statement A is correct, but Statement B is incorrect.

✗ 3. Both Statement A and Statement B are correct but are not related.

✓ 4. Both Statement A and Statement B are correct and are related to each other.

Question ID : **264330184646**
Option 1 ID : **264330723286**
Option 2 ID : **264330723285**
Option 3 ID : **264330723284**
Option 4 ID : **264330723287**
Status : **Marked For Review**
Chosen Option : **4**

Q.78 Which of the following options is NOT considered as an assumption when deriving Bernoulli's equation for a fluid flow?

Ans

✗ 1. Incompressible flow

✗ 2. Streamline flow

✓ 3. Unsteady flow

✗ 4. Ideal fluid

Question ID : **264330184751**
Option 1 ID : **264330723705**
Option 2 ID : **264330723707**
Option 3 ID : **264330723704**
Option 4 ID : **264330723706**
Status : **Answered**
Chosen Option : **3**

Q.79 The ratio of the power produced by the turbine runner to the power supplied by water at the turbine inlet is defined as _____.

Ans

✓ 1. hydraulic efficiency

✗ 2. overall efficiency

✗ 3. manometric efficiency

✗ 4. mechanical efficiency

Question ID : **264330184753**
Option 1 ID : **264330723713**
Option 2 ID : **264330723714**
Option 3 ID : **264330723712**
Option 4 ID : **264330723715**
Status : **Answered**
Chosen Option : **1**

Q.80 Which of the following is NOT a type of oil pump used in IC engine.

Ans
✗ 1. Vane type oil pump
✗ 2. Plunger type oil pump
✗ 3. Gear type oil pump
✓ 4. Row type oil pump

Question ID : **264330184797**
Option 1 ID : **264330723889**
Option 2 ID : **264330723891**
Option 3 ID : **264330723888**
Option 4 ID : **264330723890**
Status : **Marked For Review**
Chosen Option : **4**

Q.81 Which of the following statements is INCORRECT regarding heat and work?

Ans
✓ 1. Systems possess heat and work, but not energy.
✗ 2. Heat and work are path functions.
✗ 3. Heat and work are associated with a process; not with a state.
✗ 4. Heat and work are boundary phenomena.

Question ID : **264330184711**
Option 1 ID : **264330723545**
Option 2 ID : **264330723547**
Option 3 ID : **264330723546**
Option 4 ID : **264330723544**
Status : **Answered**
Chosen Option : **1**

Q.82 In the P-V diagram for a pure substance, the point at which the saturated liquid line and the saturated vapour line meet is called _____.

Ans
✗ 1. normal point
✓ 2. critical point
✗ 3. saturation point
✗ 4. triple point

Question ID : **264330184645**
Option 1 ID : **264330723282**
Option 2 ID : **264330723281**
Option 3 ID : **264330723283**
Option 4 ID : **264330723280**
Status : **Answered**
Chosen Option : **2**

Q.83 In the gas welding process, a neutral flame contains _____ and _____ in equal proportions.

Ans

✗ 1. oxygen; propane

✗ 2. oxygen; propylene

✗ 3. oxygen; natural gas

✓ 4. oxygen; acetylene

Question ID : **264330184770**
Option 1 ID : **264330723780**
Option 2 ID : **264330723781**
Option 3 ID : **264330723783**
Option 4 ID : **264330723782**
Status : **Answered**
Chosen Option : **4**

Q.84 Surface tension can also be expressed as _____.

Ans

✗ 1. area per unit length

✗ 2. torsion acting per unit length

✗ 3. velocity per unit length

✓ 4. force acting per unit length

Question ID : **264330184828**
Option 1 ID : **264330724014**
Option 2 ID : **264330724015**
Option 3 ID : **264330724012**
Option 4 ID : **264330724013**
Status : **Answered**
Chosen Option : **4**

Q.85 The specific gravity of a fluid is 0.8. What is its specific weight at 4°C?

Ans

✓ 1. 7848 N/m^3

✗ 2. 14,000 N/m^3

✗ 3. 9800 N/m^3

✗ 4. 12,250 N/m^3

Question ID : **264330184681**
Option 1 ID : **264330723424**
Option 2 ID : **264330723427**
Option 3 ID : **264330723425**
Option 4 ID : **264330723426**
Status : **Answered**
Chosen Option : **1**

Q.86 Which of the following is NOT a boiler accessory?

Ans
✗ 1. Air preheater
✗ 2. Steam trap
✗ 3. Economiser
✓ 4. Steam stop valve

Question ID : **264330184809**
Option 1 ID : **264330723939**
Option 2 ID : **264330723938**
Option 3 ID : **264330723937**
Option 4 ID : **264330723936**
Status : **Marked For Review**
Chosen Option : **4**

Q.87 Which of the following options represents the correct order of flow of water in the power conversion of the Pelton wheel turbine?

Ans
✗ 1. Nozzle, penstock, runner buckets, tail race
✓ 2. Penstock, nozzle, runner buckets, tail race
✗ 3. Runner buckets, nozzle, penstock, tail race
✗ 4. Penstock, runner buckets, nozzle, tail race

Question ID : **264330184760**
Option 1 ID : **264330723742**
Option 2 ID : **264330723741**
Option 3 ID : **264330723743**
Option 4 ID : **264330723740**
Status : **Answered**
Chosen Option : **2**

Q.88 In the winter air-conditioning, for comfort, moisture is added without changing its dry bulb temperature and the air is made to warm up. Identify the type of process.

Ans
✗ 1. Heating and dehumidification
✗ 2. Cooling and dehumidification
✓ 3. Heating and humidification
✗ 4. Cooling and humidification

Question ID : **264330184738**
Option 1 ID : **264330723652**
Option 2 ID : **264330723655**
Option 3 ID : **264330723653**
Option 4 ID : **264330723654**
Status : **Marked For Review**
Chosen Option : **3**

Q.89 Which of the following statements is INCORRECT regarding a thermodynamic system?

Ans

✗ 1. The surface separating the system and its surroundings is known as boundary.

✓ 2. Everything including the system is known as surroundings.

✗ 3. The system boundary may be movable or fixed.

✗ 4. An isolated system is a closed system that does not interact in any way with its surroundings.

Question ID : **264330184705**
Option 1 ID : **264330723520**
Option 2 ID : **264330723523**
Option 3 ID : **264330723521**
Option 4 ID : **264330723522**
Status : **Answered**
Chosen Option : **2**

Q.90 Isochoric process means:

Ans

✗ 1. constant-entropy process

✓ 2. constant-volume process

✗ 3. constant-temperature process

✗ 4. constant-pressure process

Question ID : **264330184708**
Option 1 ID : **264330723535**
Option 2 ID : **264330723533**
Option 3 ID : **264330723534**
Option 4 ID : **264330723532**
Status : **Answered**
Chosen Option : **2**

Q.91 In a fluid flow, if the inertia forces are very large as compared to the viscous force, then the type of flow of fluid is called _____.

Ans

✗ 1. laminar flow

✓ 2. turbulent flow

✗ 3. transition flow

✗ 4. either laminar flow or turbulent flow

Question ID : **264330184749**
Option 1 ID : **264330723696**
Option 2 ID : **264330723699**
Option 3 ID : **264330723698**
Option 4 ID : **264330723697**
Status : **Answered**
Chosen Option : **2**

Q.92 In an engine cooling system, the _____ spread(s) the hot water over a large area.

Ans

✗ 1. piston rings

✗ 2. air valves

✗ 3. coolant chamber

✓ 4. radiator

Question ID : **264330184796**
Option 1 ID : **264330723884**
Option 2 ID : **264330723887**
Option 3 ID : **264330723886**
Option 4 ID : **264330723885**
Status : **Answered**
Chosen Option : **3**

Q.93 Considering a grinding wheel and a regulating wheel in regard to the centreless grinding machine working principle, the _____ is of greater diameter and has a high rotational speed, whereas the _____ is of smaller diameter and has a low speed.

Ans

✓ 1. grinding wheel; regulating wheel

✗ 2. grinding wheel; work rest blade

✗ 3. regulating wheel; grinding wheel

✗ 4. regulating wheel; work rest blade

Question ID : **264330184773**
Option 1 ID : **264330723792**
Option 2 ID : **264330723794**
Option 3 ID : **264330723793**
Option 4 ID : **264330723795**
Status : **Answered**
Chosen Option : **1**

Q.94 A single-stage, reciprocating air compressor is required to compress 1 kg of air from 1 bar to 4 bar. The initial temperature is 27°C. Select the correct option.

(Given, W = Work required for isothermal compression, W_{poly} = Work required for polytropic compression ($pv^{1.2}$ = Constant) and W_{isen} = Work required for isentropic compression)

Ans

✗ 1. $W > W_{poly} > W_{isen}$

✗ 2. $W < W_{isen} < W_{poly}$

✓ 3. $W < W_{poly} < W_{isen}$

✗ 4. $W > W_{isen} > W_{poly}$

Question ID : **264330184733**
Option 1 ID : **264330723632**
Option 2 ID : **264330723634**
Option 3 ID : **264330723633**
Option 4 ID : **264330723635**
Status : **Answered**
Chosen Option : **3**

Q.95 What will be the brake power (BP) of the engine if it is tested with a rope brake dynamometer?

Given, W = Dead load (in Newtons), S = Spring balance reading (in Newtons), D = Diameter of the wheel (in metres), d = Diameter of the rope (in metres) and N = Speed of the engine shaft (in RPM)

Ans

✗ 1. $BP = \frac{(W-S)\pi(D-d)N}{60}\ Watts$

✗ 2. $BP = \frac{(W+S)\pi(D+d)N}{60}\ Watts$

✓ 3. $BP = \frac{(W-S)\pi(D+d)N}{60}\ Watts$

✗ 4. $BP = \frac{(W+S)\pi(D-d)N}{60}\ Watts$

Question ID : **264330184713**
Option 1 ID : **264330723552**
Option 2 ID : **264330723555**
Option 3 ID : **264330723553**
Option 4 ID : **264330723554**
Status : **Marked For Review**
Chosen Option : **3**

Q.96 The flywheel of a steam engine has a radius of gyration 1 m and mass of 3000 kg. The starting torque of the engine is 3000 N-m. The kinetic energy of such a flywheel after 10 sec from rest position will be _____.

Ans

✗ 1. 15 kN-m

✗ 2. 1500 kN-m

✗ 3. 1.5 kN-m

✓ 4. 150 kN-m

Question ID : **264330184774**
Option 1 ID : **264330723797**
Option 2 ID : **264330723799**
Option 3 ID : **264330723796**
Option 4 ID : **264330723798**
Status : **Answered**
Chosen Option : **4**

Q.97 The law of thermodynamics that hints at the fact that no heat engine can have efficiency equal to 100% is the _____.

Ans

✗ 1. third law

✗ 2. first law

✓ 3. second law

✗ 4. zeroth law

Question ID : **264330184789**
Option 1 ID : **264330723857**
Option 2 ID : **264330723859**
Option 3 ID : **264330723856**
Option 4 ID : **264330723858**
Status : **Answered**
Chosen Option : **3**

Q.98 The Rankine cycle comprises:

Ans

✗ 1. two isentropic processes and two isothermal processes

✗ 2. two isothermal processes and two constant-volume processes

✓ 3. two isentropic processes and two constant-pressure processes

✗ 4. two isentropic processes and two constant-volume processes

Question ID : **264330184722**
Option 1 ID : **264330723591**
Option 2 ID : **264330723590**
Option 3 ID : **264330723589**
Option 4 ID : **264330723588**
Status : **Answered**
Chosen Option : **3**

Q.99 Which of the following is a boiler accessory?

Ans

✗ 1. Fusible plug

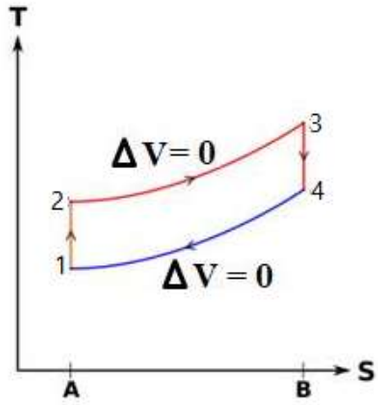
✓ 2. Economiser

✗ 3. Pressure gauge

✗ 4. Steam stop valve

Question ID : **264330184668**
Option 1 ID : **264330723374**
Option 2 ID : **264330723375**
Option 3 ID : **264330723373**
Option 4 ID : **264330723372**
Status : **Answered**
Chosen Option : **2**

Q.100 Identify the cycle on the basis of the T-S diagram shown below.



Ans

✔ 1. Otto cycle

✗ 2. Diesel cycle

✗ 3. Carnot cycle

✗ 4. Sterling cycle

Question ID : **264330184790**
Option 1 ID : **264330723861**
Option 2 ID : **264330723860**
Option 3 ID : **264330723862**
Option 4 ID : **264330723863**
Status : **Answered**
Chosen Option : **1**