

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 'Y' is the coefficient of surface tension.)

- Ans
1.

$\Delta p = \frac{Y}{2R}$
2.

$\Delta p = \frac{2Y}{R}$
3.

$\Delta p = \frac{Y}{R}$
4.

$\Delta p = \frac{4Y}{R}$

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. $\eta_{\text{diesel}} = 41.2\%$
- ☐ 2. $\eta_{\text{diesel}} = 51.2\%$
- ☒ 3. $\eta_{\text{diesel}} = 61.2\%$
- ☐ 4. $\eta_{\text{diesel}} = 59.5\%$

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/cm² and mean velocity of 2 m/s. Take g = 10 m/s².

- 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/s²)

- 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 $pV^{1.35} = \text{constant}$, 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

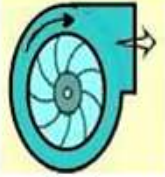
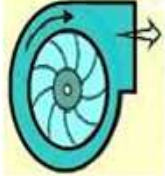
Option 3 ID : 264330723388

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 $100 \times 10^3 \text{ N/m}^2$ and mean velocity of 2 m/s. Take $g = 10 \text{ m/s}^2$.

- 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 $g = 10 \text{ m/s}^2$.

- 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

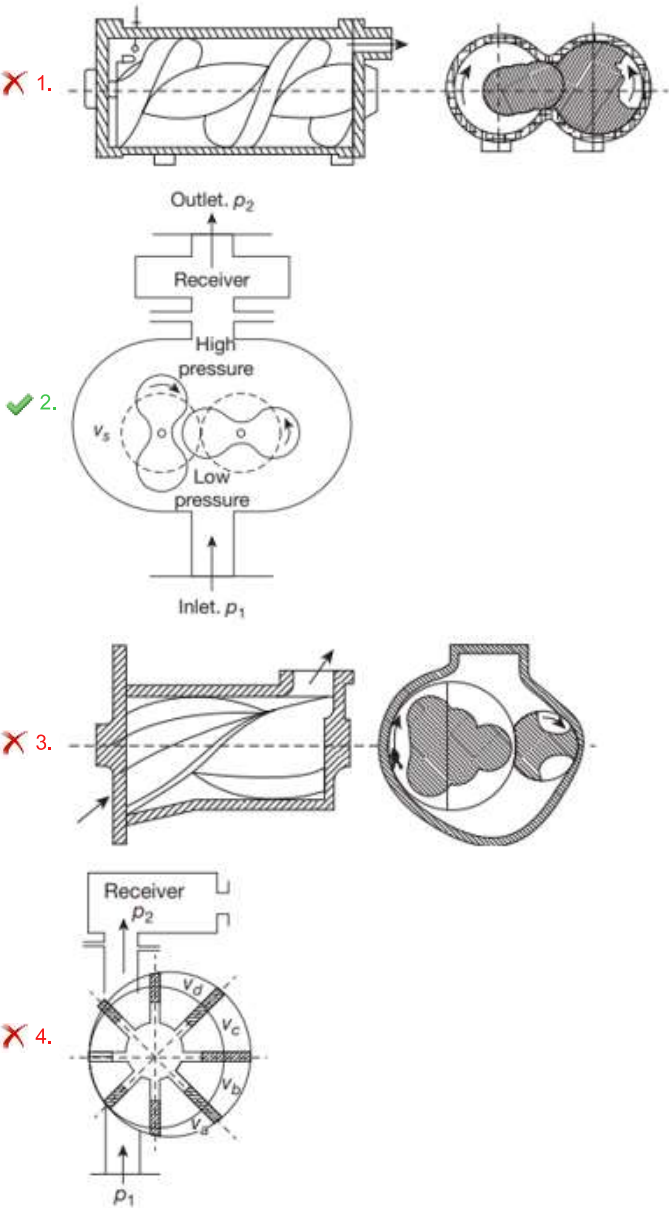
Option 4 ID : 264330723755

Status : Answered

Chosen Option : 1

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

Ans



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 m³/kg and the outlet specific volume is 0.15 m³/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 m³/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

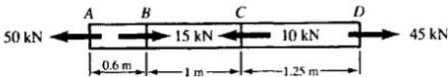
Option 3 ID : 264330723915

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.

4.

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.

4.

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/mm². Determine the longitudinal stress developed in the pipe.

- Ans
- ✖

1.

45 N/mm²

✖

2.

60 N/mm²

✖

3.

15 N/mm²

✔

4.

30 N/mm²
- 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

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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.

4.

Heat and work are boundary phenomena.
- Heat and work are associated with a process; not with a state.

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/m³

2.

14,000 N/m³

3.

9800 N/m³

4.

12,250 N/m³

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 ($p v^{1.2} = \text{Constant}$) 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.

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

2.

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

3.

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

4.

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

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

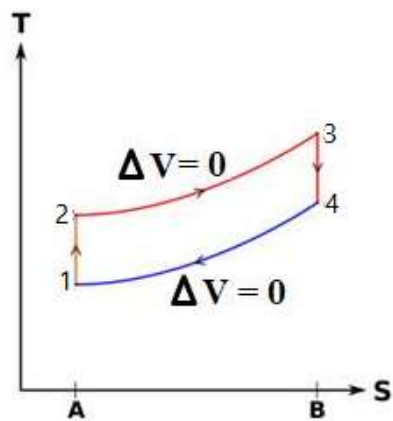
Option 3 ID : 264330723373

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