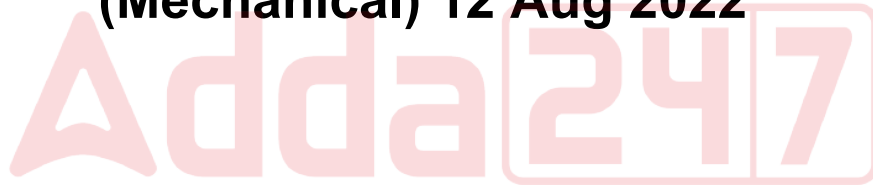


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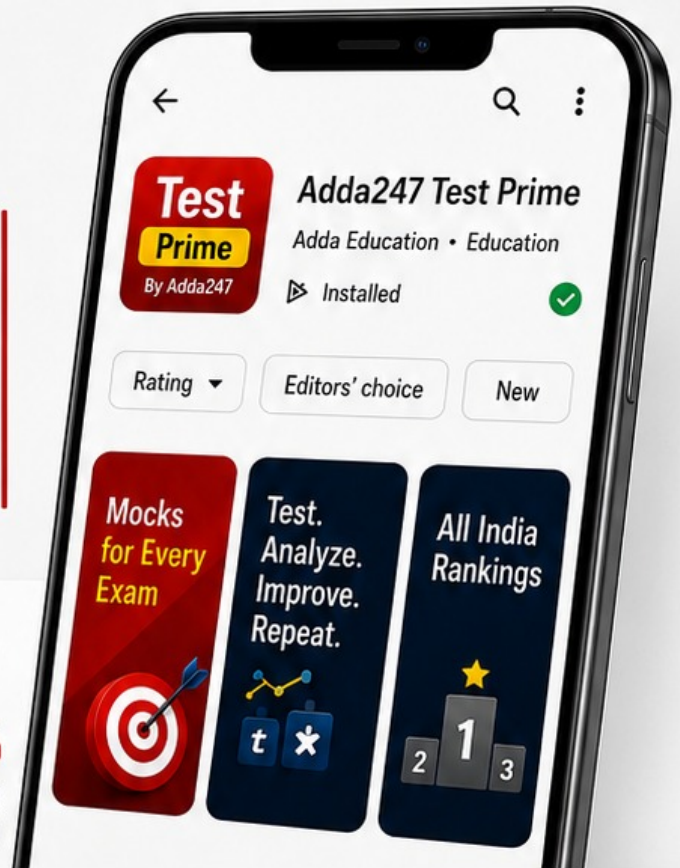


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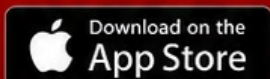


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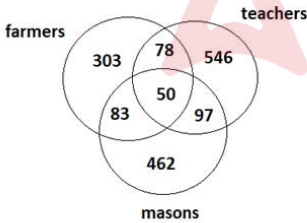
Section : General Aptitude and Reasoning

Q.1 Select the option that replaces the question mark in the following number series.
15, 24, 42, 69, 105, ?

- Ans
- ✗ 1. 105
 - ✗ 2. 145
 - ✓ 3. 150
 - ✗ 4. 154

Question ID : 75322916550
Status : Answered
Chosen Option : 3

Q.2 Study the given diagram carefully and answer the question. The numbers in different sections indicate the numbers of persons in a village.



How many such persons are there who are farmers as well as teachers?

- Ans
- ✓ 1. 128
 - ✗ 2. 78
 - ✗ 3. 146
 - ✗ 4. 102

Question ID : 75322916548
Status : Answered
Chosen Option : 1

Q.3 If '+' means '-', '-' means 'x', 'x' means '+', and '-' means '-', what will come in place of the question mark (?) in the following equation?

$3 - 20 + 2 \times 3 + 30 = ?$

- Ans
- 1. 33
 - 2. 7
 - 3. 30
 - 4. 3

Question ID : 75322916549
Status : Answered
Chosen Option : 4

Q.4 In this question, a group of numbers/symbols is coded using letters as per the table given below and the conditions which follow. The correct combination of codes following the condition is your answer.

Number/Symbol	3	<	#	%	8	9	+	\$	4	/	2	5	=	*
Code	B	T	U	S	A	L	C	K	D	H	Y	V	X	Z

- Conditions-
- (i) If the first element is a symbol and the last, a number, then the codes of the first and the last elements will be exchanged.
 - (ii) If the first and last elements are numbers that are completely divisible by 2, then the last element is to be coded as 'G'.
 - (iii) If both second and third elements are perfect squares, the third element is to be coded as the code for the second element.

How will be % + < 2 # 3 coded? (consider counting of elements from left to right)

- Ans
- 1. SCTYUB
 - 2. BCTYUS
 - 3. SCTYUA
 - 4. BKUYS A

Question ID : 75322916547
Status : Answered
Chosen Option : 1

Q.5 Two statements are given, followed by two conclusions numbered I and II. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements.

Statements:
Some breads are pastas.
Some drinks are cameras.

Conclusions:
I. Some pastas are drinks.
II. Some breads are cameras.

- Ans
- 1. Only conclusion I follows
 - 2. None of the conclusion follows
 - 3. Both the conclusions I and II follows
 - 4. Only conclusion II follows

Question ID : 75322916551
Status : Answered
Chosen Option : 2

Q.6 Annual increase in population of a town is 4% and the present population is 80000. What will be the population of the town after 2 years?

- Ans
- ✗ 1. 88,378
 - ✓ 2. 86,528
 - ✗ 3. 85,330
 - ✗ 4. 81,635

Question ID : 75322916555
Status : Answered
Chosen Option : 2

Q.7 A man can row at 24 km/h in still water. It takes him thrice as long to row up as to row down the river the same distance. Find the speed of the stream:

- Ans
- ✗ 1. 15 km/h
 - ✗ 2. 10 km/h
 - ✗ 3. 8 km/h
 - ✓ 4. 12 km/h

Question ID : 75322916554
Status : Answered
Chosen Option : 3

Q.8 The LCM of two numbers is 5301 and their HCF is 9. If one of the number is 171, find the other number.

- Ans
- ✗ 1. 351
 - ✓ 2. 279
 - ✗ 3. 180
 - ✗ 4. 711

Question ID : 75322916552
Status : Answered
Chosen Option : 2

Q.9 The circumference of a circular garden is 1012 m. Outside the garden, a road of 3.5 m wide runs around it. What is the cost of gravelling the road at the rate of ₹. 6 per m² ?

(use $\pi = \frac{22}{7}$)

- Ans
- ✗ 1. ₹ 7,161
 - ✓ 2. ₹ 21,483
 - ✗ 3. ₹ 3,580.50
 - ✗ 4. ₹ 11,450

Question ID : 75322916556
Status : Answered
Chosen Option : 3

Q.10 A 48 litre mixture contains water and milk in the ratio 3 : 5 . How much water should be added to this mixture to reverse this ratio?

- Ans
- ☐ 1. 38 litres
 - ☒ 2. 32 litres
 - ☐ 3. 30 litres
 - ☐ 4. 36 litres

Question ID : 75322916553
Status : Answered
Chosen Option : 2

Q.11 Which is the State animal of West Bengal?

- Ans
- ☐ 1. Wild buffalo
 - ☒ 2. Fishing cat
 - ☐ 3. Giant squirrel
 - ☐ 4. Swamp deer

Question ID : 75322916560
Status : Answered
Chosen Option : 2

Q.12 As per Article 29(2) of the Constitution of India, no citizen shall be denied admission into any educational institution maintained by the State or receiving aid out of State funds on grounds only of:

- Ans
- ☐ 1. religion, class, caste or language
 - ☐ 2. religion, race, class or language
 - ☒ 3. religion, race, caste or language
 - ☐ 4. religion, class, race or caste

Question ID : 75322916561
Status : Answered
Chosen Option : 3

Q.13 For how many days did the Salt March volunteers, led by Mahatma Gandhi, walk during freedom struggle of India?

- Ans
- ☐ 1. Twenty days
 - ☐ 2. Eighteen days
 - ☐ 3. Twenty two days
 - ☒ 4. Twenty four days

Question ID : 75322916557
Status : Answered
Chosen Option : 3

Q.14 What is the length of mainland India from north to south between the extreme latitudes?

- Ans
- ☒ 1. 3,414 km
 - ☒ 2. 3,214 km
 - ☒ 3. 3,314 km
 - ☒ 4. 3,514 km

Question ID : 75322916559
Status : Answered
Chosen Option : 3

Q.15 What is India's estimated fiscal deficit for the financial year 2022-23, as a percentage of GDP?

- Ans
- ☒ 1. 6.4 per cent
 - ☒ 2. 7.4 per cent
 - ☒ 3. 5.4 per cent
 - ☒ 4. 4.4 per cent

Question ID : 75322916558
Status : Answered
Chosen Option : 1

Q.16 Given below are four jumbled sentences. Select the option that gives their correct order.

- A. He was brought up by a cowherd.
- B. Chandragupta Maurya was the founder of the Mauryan Empire.
- C. He was born into a family left destitute by the death of his father.
- D. Later, he was sold to a Brahman politician, Kautilya, who took him to Taxila and educated him.

- Ans
- ☒ 1. BADC
 - ☒ 2. CABD
 - ☒ 3. ACDB
 - ☒ 4. BCAD

Question ID : 75322916562
Status : Answered
Chosen Option : 4

Q.17 Select the most appropriate option to substitution the underlined segment in the given sentence. If there is no need to improve it, select 'no substitution required'.

The French Revolution was a great event to a history of mankind.

- Ans
- ☒ 1. in a history
 - ☒ 2. in the history
 - ☒ 3. no substitution required
 - ☒ 4. to the history

Question ID : 75322916564
Status : Answered
Chosen Option : 2

Q.18 Select the most appropriate option to substitution the underlined segment in the given sentence. If there is no need to improve it, select 'no substitution required'.

The primary course of information about Samudra Gupta is the record prepared by one of his officers.

- Ans
- ☒ 1. coarse
 - ☒ 2. no substitution required
 - ☒ 3. source
 - ☒ 4. resource

Question ID : 75322916563
Status : Answered
Chosen Option : 3

Comprehension:

Read the following passage and answer the questions given after it.

Export of tea during the last fiscal FY22 declined marginally to 200.79 million kilograms as compared to 203.79 million kilograms in the previous financial year, according to Tea Board data. Offtake by the CIS countries, the largest importer of Indian tea, fell to 42.48 million kilograms in the last fiscal, as against 49.08 million kilograms during 2020-21.

The export to Iran, the second-largest importer after CIS, however, rose slightly to 29.28 million kilograms from 28.35 million kilograms in the similar previous period.

The United Arab Emirates (UAE) lifted a much higher offtake during the last fiscal at 23.20 million kilograms as against 13.60 million kilograms in the corresponding previous financial year, Tea Board said.

The USA lifted a slightly higher amount from India at 13.46 million kilograms from 12.06 million kilograms while imports by the UK were lower at 10.15 million kilograms during the last fiscal.

Sources in the tea industry said the marginal fall in exports was due to a shortage of shipping containers and high ocean freight.

Note: CIS countries are the post-Soviet nations throughout Eurasia.

SubQuestion No : 19

Q.19 The main theme of the passage is

- Ans
- ✗ 1. Export of tea by different countries
 - ✗ 2. Import of tea by CIS countries
 - ✗ 3. Cause of decline in tea export
 - ✓ 4. Decline in the export of Indian tea

Question ID : 75322916566
Status : Answered
Chosen Option : 4

Comprehension:

Read the following passage and answer the questions given after it.

Export of tea during the last fiscal FY22 declined marginally to 200.79 million kilograms as compared to 203.79 million kilograms in the previous financial year, according to Tea Board data. Offtake by the CIS countries, the largest importer of Indian tea, fell to 42.48 million kilograms in the last fiscal, as against 49.08 million kilograms during 2020-21.

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Sources in the tea industry said the marginal fall in exports was due to a shortage of shipping containers and high ocean freight.

Note: CIS countries are the post-Soviet nations throughout Eurasia.

SubQuestion No : 20

Q.20 Which statement is true?

- a. Iran and UAE both imported more tea from India in FY 22 than in FY 21.
- b. USA and UK imported more tea from India in FY 22 than in FY 21.

- Ans
- ✗ 1. a and b both are false
 - ✓ 2. a is true, b is false
 - ✗ 3. a is false b is true
 - ✗ 4. a and b both are true

Question ID : 75322916567
Status : Answered
Chosen Option : 2

Section : Domain Knowledge

Q.1 In a machining operation, doubling the cutting speed reduces the tool life to one-fourth of the original value. The value of 'n' in Taylor tool life equation [$VT^n = c$] will be:

- Ans
- ✓ 1. $\frac{1}{2}$
 - ✗ 2. $\frac{1}{5}$
 - ✗ 3. $\frac{1}{3}$
 - ✗ 4. $\frac{1}{4}$

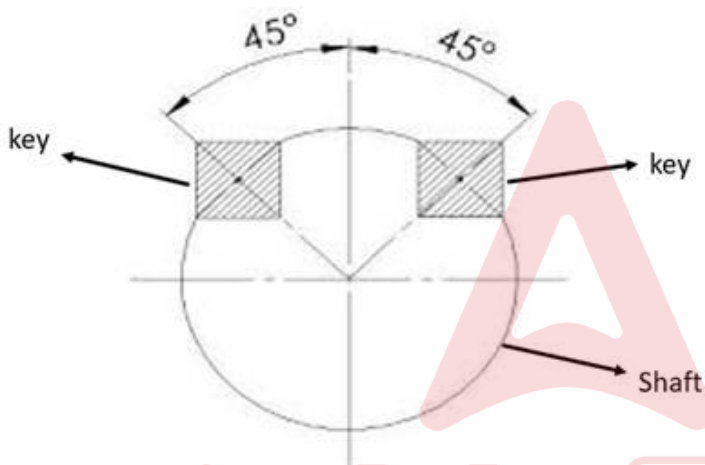
Question ID : 75322916604
Status : Answered
Chosen Option : 4

Q.2 The maximum principal strain theory is also known as:

- Ans
- ☒ 1. Rankine's theory
 - ☒ 2. Haigh's theory
 - ☒ 3. Saint Venant's theory
 - ☒ 4. Guest's and Tresca theory

Question ID : 75322916601
Status : Answered
Chosen Option : 3

Q.3 The following figure shows:



- Ans
- ☒ 1. Woodruff key
 - ☒ 2. Splines
 - ☒ 3. Kennedy key
 - ☒ 4. Feather key

Question ID : 75322916602
Status : Answered
Chosen Option : 4

Q.4 Which of the following is true for a double-threaded screw?

[a = Pitch of the screw, b = Lead of the screw]

- Ans
- ☒ 1. $b = 2 + a$
 - ☒ 2. $b = 2a$
 - ☒ 3. $a = b^2$
 - ☒ 4. $a = 2b$

Question ID : 75322916639
Status : Answered
Chosen Option : 2

Q.5 A single-stage reciprocating compressor takes 1 kg/min gas at 1 bar and 300 K and delivers it at 7 bar. Assuming the law of compression is $pV^{1.3} = \text{Constant}$, clearance is negligible. What will be indicated power input to compressor?

[Assuming: $7^{3/13} = 1.56$,

Gas constant (R) = 0.18 kJ/kg-K]

- Ans
- ☒ 1. 2.184 kW
 - ☒ 2. 2.184 W
 - ☒ 3. 21.84 kW
 - ☒ 4. 0.2184 kW

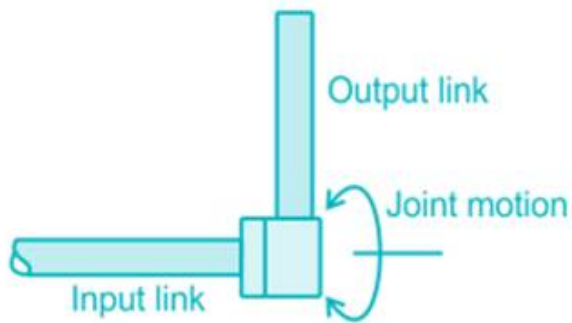
Question ID : 75322916585
Status : Answered
Chosen Option : 3

Q.6 Which of the following is true?

- Ans
- ☒ 1.
The base tangent method is used to measure the radial runout of gear.
 - ☒ 2.
The base tangent method is used to measure the gear tooth thickness.
 - ☒ 3.
The base tangent method is used to measure the gear tooth profile.
 - ☒ 4.
The base tangent method is used to measure the hardness of gear tooth material.

Question ID : 75322916587
Status : Answered
Chosen Option : 3

Q.7 Which type of robotic joint is shown in the figure?



- Ans
- ✓ 1. Revolving joint
 - ✗ 2. Twisting joint
 - ✗ 3. Orthogonal joint
 - ✗ 4. Linear joint

Question ID : 75322916616
Status : Answered
Chosen Option : 3

Q.8 Which of the following is NOT a positive displacement type rotary compressor?

- Ans
- ✗ 1. Root blower
 - ✓ 2. Axial flow compressor
 - ✗ 3. Vane type compressor
 - ✗ 4. Screw compressor

Question ID : 75322916637
Status : Answered
Chosen Option : 3

Q.9 Which of the following is NOT a part of a planer machine?

- Ans
- ✓ 1. Stellites
 - ✗ 2. Cross rail
 - ✗ 3. Bed
 - ✗ 4. Tool head

Question ID : 75322916633
Status : Answered
Chosen Option : 1

Q.10 Which type of layout is employed in the ship building industries?

- Ans
- ☒ 1. Process layout
 - ☐ 2. Fixed position layout
 - ☒ 3. Product layout
 - ☒ 4. Group layout

Question ID : 75322916595
Status : Answered
Chosen Option : 2

Q.11 Which of the following is a conventional energy source?

- Ans
- ☒ 1. Wind energy
 - ☒ 2. Biomass
 - ☒ 3. Solar energy
 - ☐ 4. Nuclear energy

Question ID : 75322916583
Status : Answered
Chosen Option : 2

Q.12 Grashof number is expressed as:

- Ans
- ☒ 1. $\frac{\text{Buoyancy force}}{\text{Inertia force}}$
 - ☐ 2. $\frac{\text{Buoyancy force}}{\text{Viscous force}}$
 - ☒ 3. $\frac{\text{Viscous force}}{\text{Buoyancy force}}$
 - ☒ 4. $\frac{\text{Inertia force}}{\text{Buoyancy force}}$

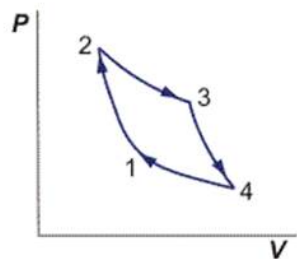
Question ID : 75322916623
Status : Answered
Chosen Option : 3

Q.13 The following pressure-volume (p-V) diagram represents the:

[where, Process 1-2: Reversible adiabatic process, Process 2-3: reversible isothermal process,

Process 3-4: Reversible adiabatic process,

Process 4-1: reversible isothermal process]



- Ans
- ✗ 1. Brayton cycle
 - ✗ 2. Rankine cycle
 - ✓ 3. Carnot cycle
 - ✗ 4. Reversed Carnot cycle

Question ID : 75322916568
Status : Answered
Chosen Option : 3

Q.14 A 40 cm diameter pipe, conveying water, branches into two pipes of diameters 30 cm and 20 cm, respectively. If the average velocity in a 40 cm diameter pipe is 3 m/s and the average velocity in a 30 cm diameter pipe is 2 m/s, then what will be the average velocity in the pipe of 20 cm diameter?

- Ans
- ✗ 1. 5 m/s
 - ✗ 2. 10 m/s
 - ✓ 3. 7.5 m/s
 - ✗ 4. 15 m/s

Question ID : 75322916578
Status : Answered
Chosen Option : 3

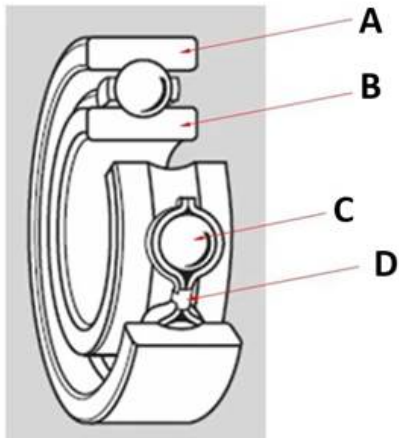
Q.15 What will be the pressure of 2 bar in terms of head of water?

[Density of water = 1000 kg/m³, Acceleration due to gravity = 10 m/s²)

- Ans
- ✗ 1. 25 m
 - ✗ 2. 10 m
 - ✗ 3. 15 m
 - ✓ 4. 20 m

Question ID : 75322916647
Status : Answered
Chosen Option : 4

Q.16 Which of the following is true for the given roller element bearing (in figure)?



- Ans
- ✓ 1. 'C' is the rolling element.
 - ✗ 2. 'A' is the inner race.
 - ✗ 3. 'A' is the rolling element.
 - ✗ 4. 'B' is the outer race.

Question ID : 75322916603
Status : Answered
Chosen Option : 1

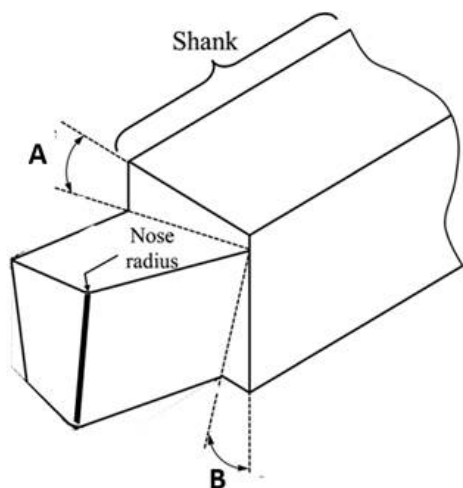
Q.17 S-N curve is drawn for:

[S = Stress amplitude, N = Number of cycles for failure]

- Ans
- ✓ 1. Fatigue testing
 - ✗ 2. Creep testing
 - ✗ 3. Eddy current test
 - ✗ 4. Hardness testing

Question ID : 75322916576
Status : Answered
Chosen Option : 1

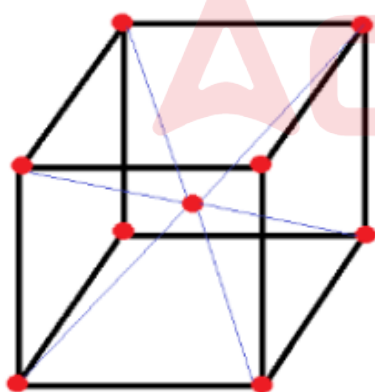
Q.18 Which of the following is correct for the geometry of a single-point cutting tool?



- Ans
- ✗ 1. 'B' is back rake angle.
 - ✗ 2. 'B' is side rake angle.
 - ✓ 3. 'A' is side rake angle.
 - ✗ 4. 'A' is side clearance angle.

Question ID : 75322916607
Status : Answered
Chosen Option : 3

Q.19 The given figure indicates the:



- Ans
- ✓ 1. BCC unit cell
 - ✗ 2. FCC unit cell
 - ✗ 3. Simple cubic unit cell
 - ✗ 4. HCP unit cell

Question ID : 75322916572
Status : Answered
Chosen Option : 1

Q.20 Which of the following is the copper-tin alloy?

- Ans
- ☐ 1. Invar
 - ☒ 2. Bronze
 - ☐ 3. Brass
 - ☐ 4. German silver

Question ID : 75322916577
Status : Answered
Chosen Option : 2

Q.21 What will be the approximate wavelength at which the spectral emission power of tungsten filament at 1450 K is maximum?

- Ans
- ☐ 1. 200 μm
 - ☒ 2. 2 μm
 - ☐ 3. 20 μm
 - ☐ 4. 0.2 μm

Question ID : 75322916621
Status : Answered
Chosen Option : 2

Q.22 Which of the following is NOT the robot programming method?

- Ans
- ☐ 1. Walk through method
 - ☐ 2. Off-line programming method
 - ☐ 3. Manual method
 - ☒ 4. Base travel method

Question ID : 75322916617
Status : Answered
Chosen Option : 3

Q.23 In a community hall, there are 200 bulbs with a guaranteed lifetime of 3000 hours. After collecting the statistics, it is found that the number of bulbs that survived till 3000 hours is 170. What will be the reliability of the bulbs?

- Ans
- ☐ 1. 0.15
 - ☐ 2. 0.65
 - ☒ 3. 0.85
 - ☐ 4. 0.35

Question ID : 75322916598
Status : Answered
Chosen Option : 3

Q.24 Fin efficiency may be defined as:

[A = Actual heat transfer rate from fin, B = Ideal heat transfer rate from fin if the entire fin were at base temperature]

Ans

✓ 1. $\frac{A}{B}$

✗ 2. $\frac{B}{A+B}$

✗ 3. $\frac{A}{A+B}$

✗ 4. $\frac{B}{A}$

Question ID : 75322916622

Status : Answered

Chosen Option : 1

Q.25 A simply supported beam (length = a) is loaded by a uniformly distributed load (W per unit length) all along the span.

What will be the maximum deflection of the beam? [EI = Flexural rigidity]

Ans

✗ 1. $\frac{Wa^4}{8EI}$

✗ 2. $\frac{5Wa^3}{384EI}$

✓ 3. $\frac{5Wa^4}{384EI}$

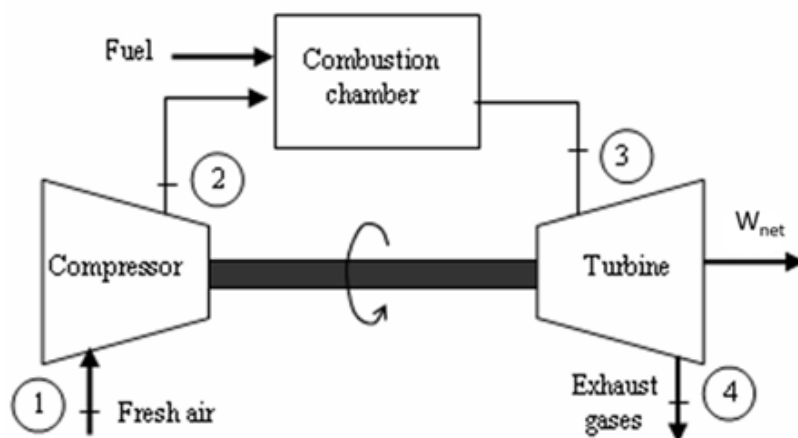
✗ 4. $\frac{Wa^3}{8EI}$

Question ID : 75322916590

Status : Answered

Chosen Option : 3

Q.26 The given figure refers to:



- Ans
- ✓ 1. an open cycle gas turbine plant
 - ✗ 2. a diesel engine plant
 - ✗ 3. a closed cycle gas turbine plant
 - ✗ 4. a steam power plant

Question ID : 75322916642
Status : Answered
Chosen Option : 1

Q.27 The capacity of the refrigerator working on a reversed Carnot cycle is 400 TR (assume, 1 TR = 3.5 kW), when working between -10°C and 30°C . What will be the quantity of ice produced (in kg/s) at 0°C , when water is supplied at 15°C ? [Specific heat of water = 4200 J/kg-K , Latent heat of ice = 337 kJ/kg]

- Ans
- ✗ 1. 7 kg/s
 - ✗ 2. 4 kg/s
 - ✗ 3. 3 kg/s
 - ✓ 4. 3.5 kg/s

Question ID : 75322916624
Status : Answered
Chosen Option : 4

Q.28 The formation and subsequent collapse of vapour bubbles in a flowing fluid is called:

- Ans
- ✗ 1. priming
 - ✗ 2. slip
 - ✓ 3. cavitation
 - ✗ 4. capillary

Question ID : 75322916635
Status : Answered
Chosen Option : 3

Q.29 For a simple cubic structure, which of the following is true?

[A = Length of cube edge, B = Atomic radius]

- Ans
- ☒ 1. $B = 2A$
 - ☒ 2. $A = 2B$
 - ☒ 3. $A = (2\sqrt{2})B$
 - ☒ 4. $B = (2\sqrt{2})A$

Question ID : 75322916574
Status : Answered
Chosen Option : 2

Q.30 The ratio of the sum of the individual maximum demands of a group to the maximum demand of the total group is known as:

- Ans
- ☒ 1. load factor
 - ☒ 2. diversity factor
 - ☒ 3. capacity factor
 - ☒ 4. demand factor

Question ID : 75322916630
Status : Answered
Chosen Option : 4

Q.31 The thermal resistance of a plane wall is given by:

[A = Heat transfer area normal to the direction of heat flow, B = Thermal conductivity of wall material,

C = Thickness of the plane wall]

- Ans
- ☒ 1. $\frac{B}{AC}$
 - ☒ 2. $\frac{C}{AB}$
 - ☒ 3. $\frac{AC}{B}$
 - ☒ 4. $\frac{A}{BC}$

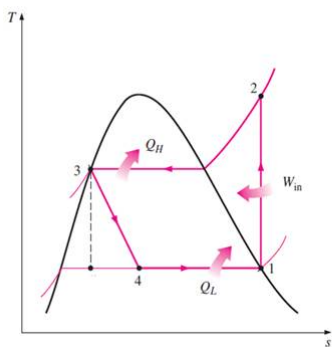
Question ID : 75322916569
Status : Answered
Chosen Option : 2

Q.32 Electrostatic precipitator is used to:

- Ans
- ✗ 1. control the temperature of the air-conditioner
 - ✗ 2. control the speed of the steam turbine
 - ✗ 3. regulate the flow in refrigeration system
 - ✓ 4. remove the fine particles from a gas stream by using electrical energy

Question ID : 75322916608
Status : Answered
Chosen Option : 4

Q.33 The following figure represents the T-s diagram of a vapour compression refrigeration cycle. Which of the following is true for this cycle?



- Ans
- ✗ 1. Process 2-3 is an isentropic process.
 - ✗ 2. Process 1-2 is an isenthalpic process.
 - ✓ 3. Process 4-1 is an isobaric process.
 - ✗ 4. Process 3-4 is an isobaric process.

Question ID : 75322916625
Status : Answered
Chosen Option : 3

Q.34 A steel bar of 100 mm diameter is turned at a feed of 0.25 mm/rev with a depth of cut of 4 mm. The rotational speed of the workpiece is 120 rpm. What will be the material removal rate? [$\pi = 3.14$]

- Ans
- ✗ 1. 6280 mm³/s
 - ✗ 2. 3140 mm³/s
 - ✓ 3. 628 mm³/s
 - ✗ 4. 314 mm³/s

Question ID : 75322916605
Status : Answered
Chosen Option : 3

Q.35 For brittle materials, the factor of safety is defined as:

- Ans
- ☒ 1. $\frac{\text{Yield point stress}}{\text{Working stress}}$
 - ☒ 2. $\frac{\text{Working stress}}{\text{Ultimate stress}}$
 - ☒ 3. $\frac{\text{Ultimate stress}}{\text{Working stress}}$
 - ☒ 4. $\frac{\text{Working stress}}{\text{Yield point stress}}$

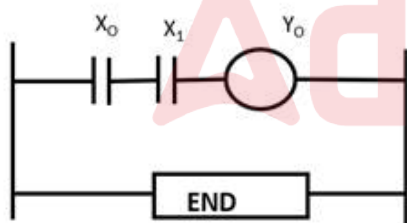
Question ID : 75322916599
Status : Answered
Chosen Option : 2

Q.36 Which of the following is NOT a variable path equipment used in material handling?

- Ans
- ☒ 1. Tractor
 - ☒ 2. Truck
 - ☒ 3. Hand trolley
 - ☒ 4. Belt conveyor

Question ID : 75322916644
Status : Answered
Chosen Option : 2

Q.37 Which of the following is correct for the given ladder diagram?



- Ans
- ☒ 1. The output (Y_0) is ON only when input switch (X_0) is turned ON and input switch (X_1) is inactivated.
 - ☒ 2. The output (Y_0) is ON only when both input switches (X_0 and X_1) are inactivated.
 - ☒ 3. The output (Y_0) is ON only when only input switch (X_1) is turned ON and input switch (X_0) is inactivated.
 - ☒ 4. The output (Y_0) is ON when both input switches (X_0 and X_1) are turned ON.

Question ID : 75322916645
Status : Answered
Chosen Option : 2

Q.38 “The ability with which a measuring device can detect small differences in the quantity being measured by it” is known as:

- Ans
- ✗ 1. precision
 - ✓ 2. sensitivity
 - ✗ 3. repeatability
 - ✗ 4. hysteresis

Question ID : 75322916586
Status : Answered
Chosen Option : 2

Q.39 A heat exchanger is required to cool 60,000 kg/hr of alcohol from 60°C to 40°C using 40,000 kg/hr of water entering at 5°C. What will be the heat transfer rate?
[Specific heat of alcohol = 3600 J/kg-K, Specific heat of water = 4200 J/kg-K]

- Ans
- ✗ 1. 120 kW
 - ✗ 2. 12 MW
 - ✓ 3. 1200 kW
 - ✗ 4. 10 MW

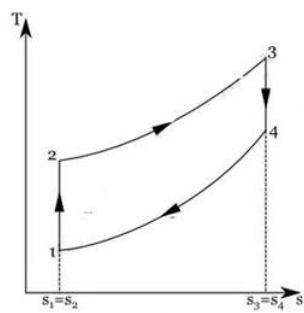
Question ID : 75322916620
Status : Answered
Chosen Option : 3

Q.40 What will be the input pulse rate of a stepper motor if it has 10° per step and rotates at 300 rpm?

- Ans
- ✗ 1. 200 pulse/sec
 - ✗ 2. 220 pulse/sec
 - ✓ 3. 180 pulse/sec
 - ✗ 4. 160 pulse/sec

Question ID : 75322916619
Status : Answered
Chosen Option : 1

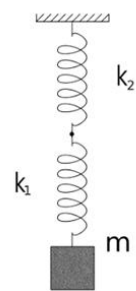
Q.41 T-s diagram of Diesel cycle is shown in the figure. Which of the following is correct for this cycle?



- Ans
- ✗ 1. Process 2-3 is a constant volume process.
 - ✗ 2. Process 4-1 is a reversible adiabatic process.
 - ✓ 3. Process 2-3 is a constant pressure process.
 - ✗ 4. Process 4-1 is a constant pressure process.

Question ID : 75322916571
Status : Answered
Chosen Option : 3

Q.42 What will be the natural frequency of a vibrating system, if a mass is suspended at the bottom of two springs in series (as shown in the given figure)? [Given, mass = 5 kg, stiffness of springs = $k_1 = k_2 = 1 \text{ N/mm}$, $\pi = \frac{22}{7}$]



- Ans
- ✓ 1. $\frac{35}{22} \text{ Hz}$
 - ✗ 2. $\frac{21}{22} \text{ Hz}$
 - ✗ 3. $\frac{7}{22} \text{ Hz}$
 - ✗ 4. $\frac{49}{22} \text{ Hz}$

Question ID : 75322916638
Status : Answered
Chosen Option : 1

Q.43 Which of the following is a contact type of sensor?

- Ans
- ✗ 1. Vision sensor
 - ✗ 2. Photo-optic sensor
 - ✗ 3. Proximity sensor
 - ✓ 4. Tactile sensor

Question ID : 75322916618
Status : Answered
Chosen Option : 4

Q.44 An engine is working on the ideal Otto cycle. The temperature at the beginning and at the end of the compression are 325 K and 650 K, respectively. What will be the air-standard efficiency of the engine?

- Ans
- ✗ 1. 40%
 - ✗ 2. 55%
 - ✓ 3. 50%
 - ✗ 4. 45%

Question ID : 75322916584
Status : Answered
Chosen Option : 3

Q.45 Find the force exerted by a jet of water of area of cross-section 0.004 m^2 on a stationary flat plate, when the jet strikes the plate normally with a velocity of 25 m/s. [density of water= 1000 kg/m^3]

- Ans
- ✗ 1. 2 kN
 - ✗ 2. 3 kN
 - ✓ 3. 2.5 kN
 - ✗ 4. 3.5 kN

Question ID : 75322916579
Status : Answered
Chosen Option : 3

Q.46 A heat pump is used to maintain an auditorium at 300 K, when the atmospheric temperature is 280 K. The heat load of the auditorium is 3000 kJ/min. What will be the power required to run the heat pump if its coefficient of performance (COP) is one-third of the COP of the Carnot engine pump working between the same temperature limits?

- Ans
- ✗ 1. 15 kW
 - ✓ 2. 10 kW
 - ✗ 3. 20 kW
 - ✗ 4. 5 kW

Question ID : 75322916646
Status : Answered
Chosen Option : 1

Q.47 Which of the following is NOT the component of the battery ignition system?

- Ans
- ☒ 1. Ballast resistor
 - ☒ 2. Distributor
 - ☒ 3. Trigger box
 - ☒ 4. Contact breaker

Question ID : 75322916629
Status : Answered
Chosen Option : 1

Q.48 What will be the maximum pressure in a single plate clutch when the axial force is 3.14 kN. The inside and outside radius of contact surface are 50 mm and 100 mm, respectively. Assume uniform wear. [$\pi = 3.14$]

- Ans
- ☒ 1. 0.2 MPa
 - ☒ 2. 0.25 MPa
 - ☒ 3. 0.15 MPa
 - ☒ 4. 0.1 MPa

Question ID : 75322916593
Status : Answered
Chosen Option : 4

Q.49 A robot with polar coordinate system has:

- Ans
- ☒ 1. two angular (rotary) motions and one radial (linear) motion
 - ☒ 2. three orthogonal sliding motion axes
 - ☒ 3. three rotary motion
 - ☒ 4. two linear motions and one rotary motion

Question ID : 75322916615
Status : Answered
Chosen Option : 1

Q.50 A car in which the heat engine and electric motor both are directly connected to the wheel, which makes it possible for both of them to supply power to the wheel at the same time, is known as:

- Ans
- ☒ 1. an internal combustion engine operated engine vehicle
 - ☒ 2. a series hybrid system
 - ☒ 3. a parallel hybrid system
 - ☒ 4. a battery electric vehicle

Question ID : 75322916643
Status : Answered
Chosen Option : 2

Q.51 The flexibility that specifies the capacity to produce parts through alternative workstation sequences in response to equipment breakdowns, tool failures and other interruptions is known as:

- Ans
- ☒ 1. production flexibility
 - ☒ 2. routing flexibility
 - ☒ 3. machine flexibility
 - ☒ 4. product flexibility

Question ID : 75322916610
Status : Answered
Chosen Option : 4

Q.52 'A microstructure which is recognised by its pearly lustrous appearance and has the structure of thin alternating plates of 13% (approximately) cementite in a matrix of 87% (approximately) ferrite' is known as:

- Ans
- ☒ 1. martensite
 - ☒ 2. pearlite
 - ☒ 3. bainite
 - ☒ 4. austenite

Question ID : 75322916634
Status : Answered
Chosen Option : 2

Q.53 Based on the degree of hybridisation, which of the following is NOT the type of hybrid electric vehicle?

- Ans
- ☒ 1. Nano-hybrid
 - ☒ 2. Micro hybrid
 - ☒ 3. Full hybrid
 - ☒ 4. Mild hybrid

Question ID : 75322916632
Status : Answered
Chosen Option : 3

Q.54 Which of the following methods are used to produce seamless tubes?

- Ans
- ☒ 1. Piercing
 - ☒ 2. Shot peening
 - ☒ 3. Upset forging
 - ☒ 4. Deep drawing

Question ID : 75322916573
Status : Answered
Chosen Option : 4

Q.55 Which of the following is NOT a type of steering gear used in automobiles?

- Ans
- ☒ 1. Worm and worm wheel steering gear
 - ☒ 2. Elliot type steering gear
 - ☒ 3. Recirculating ball type steering gear
 - ☒ 4. Worm and nut steering gear

Question ID : 75322916641
Status : Answered
Chosen Option : 2

Q.56 Which of the following is NOT the cutter holding device used in the milling machine?

- Ans
- ☒ 1. Vices
 - ☒ 2. Arbor
 - ☒ 3. Adapter
 - ☒ 4. Collets

Question ID : 75322916582
Status : Answered
Chosen Option : 1

Q.57 Which of the following is NOT the part of central processing unit (CPU)?

- Ans
- ☒ 1. Memory unit
 - ☒ 2. Control unit
 - ☒ 3. Stylus
 - ☒ 4. Arithmetic and logical unit

Question ID : 75322916612
Status : Answered
Chosen Option : 3

Q.58 Which of the following is a type of sampling plan?

- Ans
- ☒ 1. A-Sampling plan
 - ☒ 2. Single sampling plan
 - ☒ 3. X-Sampling plan
 - ☒ 4. Poisson sampling plan

Question ID : 75322916596
Status : Answered
Chosen Option : 2

Q.59 Which of the following is correct about steam turbines?

- Ans
- ☒ 1. Curtis turbine is a reaction turbine.
 - ☒ 2.
 - ☒ 3. Curtis turbine is an example of a pressure compounded impulse turbine.
 - ☒ 4. De laval is a reaction turbine.

Question ID : 75322916570
Status : Answered
Chosen Option : 3

Q.60 The designation of a grinding wheel is given by:

51 – A – 30 – L – 5 – V – 20

Which of the following is true for this wheel?

- Ans
- ☒ 1. '5' represents the structure
 - ☒ 2. 'L' represents the bond type
 - ☒ 3. 'A' represents grain size
 - ☒ 4. '30' represents the grade

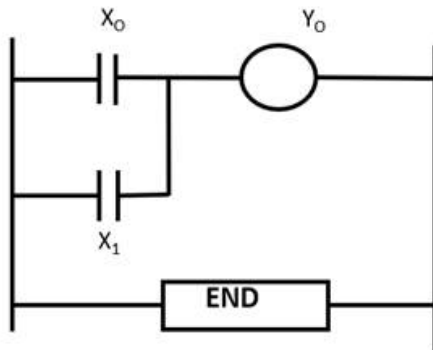
Question ID : 75322916580
Status : Answered
Chosen Option : 2

Q.61 The chemical formula of R744 is:

- Ans
- ☒ 1. CHClF_2
 - ☒ 2. CO_2
 - ☒ 3. CCl_3F
 - ☒ 4. NH_3

Question ID : 75322916627
Status : Answered
Chosen Option : 1

Q.62 Which of the following is INCORRECT about the given ladder diagram?



Ans ☒ 1.

The output (Y_0) is ON when only input switch (X_0) is turned ON.

☒ 2.

The output (Y_0) is ON when both the input switches (X_0) and (X_1) are turned ON.

☒ 3.

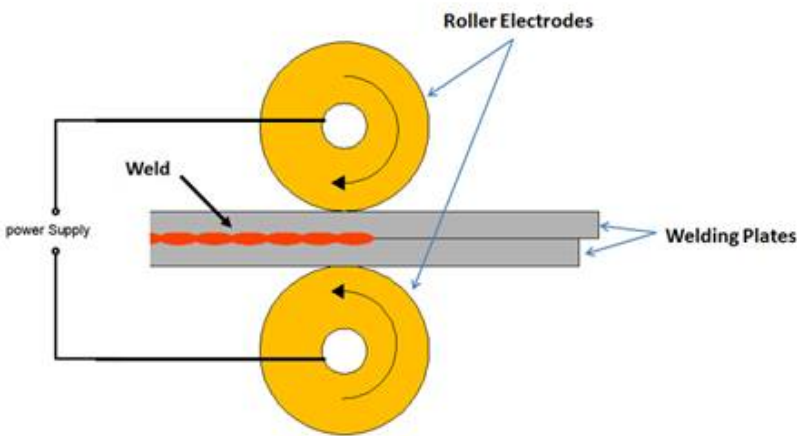
The output (Y_0) is ON when both the input switches (X_0) and (X_1) are inactivated.

☒ 4.

The output (Y_0) is ON when only input switch (X_1) is turned ON.

Question ID : 75322916609
Status : Answered
Chosen Option : 3

Q.63 The following figure represents the:



- Ans
- ☒ 1. resistance butt welding
 - ☒ 2. resistance spot welding
 - ☒ 3. resistance seam welding
 - ☒ 4. resistance projection welding

Question ID : 75322916581
Status : Answered
Chosen Option : 3

Q.64 If the largest permissible diameter of the shaft is smaller than the diameter of the smallest hole, then it is known as:

- Ans
- ☒ 1. force fit
 - ☒ 2. transition fit
 - ☒ 3. interference fit
 - ☒ 4. clearance fit

Question ID : 75322916588
Status : Answered
Chosen Option : 4

Q.65 Which of the following is correct about the break-even analysis?

Ans ☒ 1.

At break-even-point, sales revenue is less than the total cost.

☒ 2.

At break-even-point, sales revenue is greater than the total cost.

☒ 3.

At break-even-point, sales revenue is equal to the total cost.

☒ 4. At break-even-point, sales revenue is equal to zero.

Question ID : 75322916597

Status : Answered

Chosen Option : 3

Q.66 The technique used to determine the quantity and timing for the acquisition of dependent items needed to satisfy master scheduling requirements is known as:

Ans ☒ 1. Rapid prototyping technique

☒ 2. MRP (material requirement planning)

☒ 3. Just-in-time (JIT)

☒ 4. FMS (flexible manufacturing system)

Question ID : 75322916613

Status : Answered

Chosen Option : 2

Q.67 Which of the following is true for the engine cooling system?

Ans ☒ 1.

In thermo-siphon system, the circulation of water is by natural convection.

☒ 2.

In forced system, the circulation of water is by natural convection.

☒ 3.

The rate of water circulation in forced system is very slow in comparison to thermo-siphon system.

☒ 4.

In thermo-siphon system, the circulation of water is by engine driven pump.

Question ID : 75322916628

Status : Answered

Chosen Option : 1

Q.68 What will be the maximum acceleration of the follower during the return stroke, if the follower moves with simple harmonic motion? [where, a = Angular velocity of cam (rad/s), b = Stroke of follower, θ_1 and θ_2 = Angular displacement of cam during outstroke and return stroke, respectively]

Ans

- ✗ 1. $\frac{\pi ab}{2\theta_2}$
- ✗ 2. $\frac{\pi^2 a^2 b}{2\theta_1^2}$
- ✓ 3. $\frac{\pi^2 a^2 b}{2\theta_2^2}$
- ✗ 4. $\frac{\pi ab}{2\theta_1}$

Question ID : 75322916591

Status : Answered

Chosen Option : 3

Q.69 The following data refer to a laboratory experiment with a rope brake: Sum of the diameters of flywheel & rope = 800 mm, Dead weight on the brake = 40 kg, Speed of engine = 140 rpm, Spring balance reading = 100 N, What will be the power of the engine?

[$\pi = 22/7$, $g = 10 \text{ m/s}^2$]

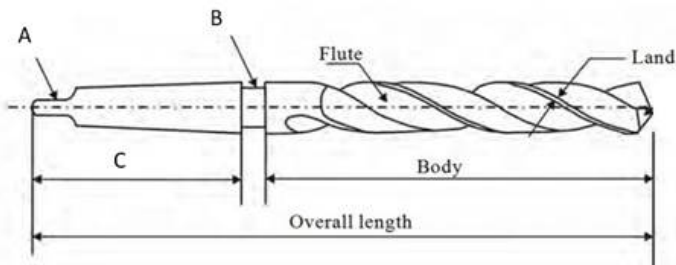
- Ans
- ✗ 1. 1790 W
- ✗ 2. 1730 W
- ✓ 3. 1760 W
- ✗ 4. 1700 W

Question ID : 75322916594

Status : Answered

Chosen Option : 2

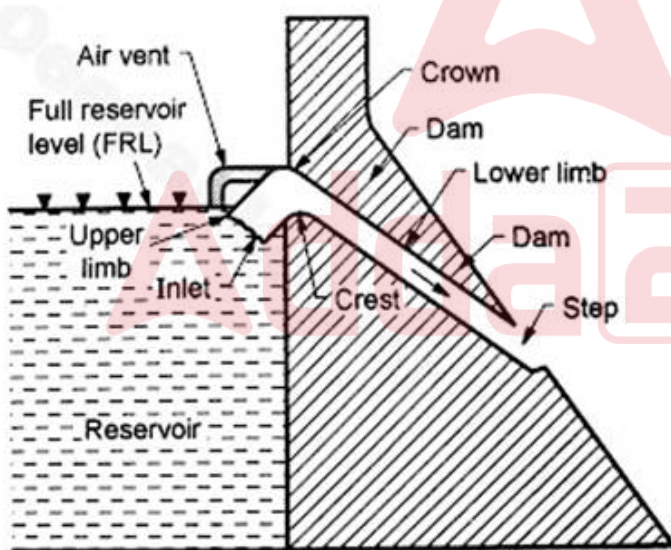
Q.70 Which of the following is correct for the twist drill shown in the given figure?



- Ans
- ✓ 1. Portion 'A' is known as tang
 - ✗ 2. Portion 'B' is known as shank
 - ✗ 3. Portion 'B' is known as tang
 - ✗ 4. Portion 'C' is known as tang

Question ID : 75322916636
Status : Answered
Chosen Option : 3

Q.71 The following figure shows:



- Ans
- ✗ 1. overall spillway
 - ✗ 2. side channel spillway
 - ✗ 3. shaft spillway
 - ✓ 4. saddle siphon spillway

Question ID : 75322916631
Status : Answered
Chosen Option : 4

Q.72 Which of the following is the benefit of Computer Integrated Manufacturing (CIM)?

- Ans
- ☒ 1. It increases the work-in-progress (WIP) inventory.
 - ☒ 2. It leads to higher inventory level.
 - ☒ 3. It increases productivity.
 - ☒ 4. It lowers the quality.

Question ID : 75322916611
Status : Answered
Chosen Option : 3

Q.73 What will be the bursting pressure for a steel tube of 50 mm inside the diameter with 2 mm wall thickness?

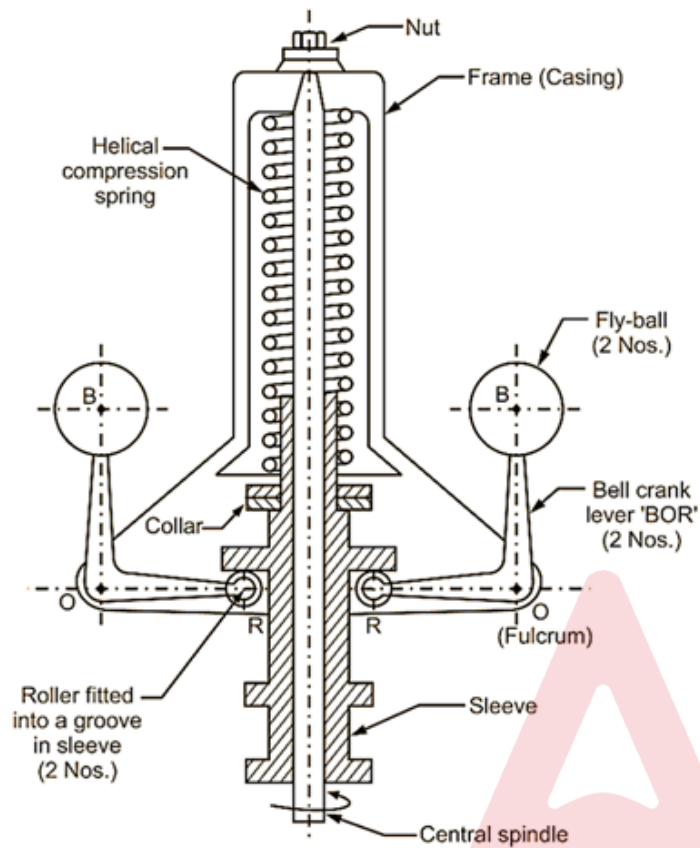
[Permissible tensile stress = 350 N/mm^2]

- Ans
- ☒ 1. 28 N/mm^2
 - ☒ 2. 24 N/mm^2
 - ☒ 3. 36 N/mm^2
 - ☒ 4. 32 N/mm^2

Question ID : 75322916589
Status : Answered
Chosen Option : 3

Q.74

The following figure shows the:



- Ans
- ✓ 1. Hartnell governor
 - ✗ 2. Pickering governor
 - ✗ 3. Porter governor
 - ✗ 4. Hartung governor

Question ID : 75322916592

Status : Answered

Chosen Option : 4

Q.75 Which of the following is NOT a corrosion type?

- Ans
- ✗ 1. Crevice corrosion
 - ✗ 2. Pitting corrosion
 - ✓ 3. Hard corrosion
 - ✗ 4. Fretting corrosion

Question ID : 75322916575

Status : Answered

Chosen Option : 1

Q.76 In a vapour absorption refrigeration system, the refrigeration temperature is 260 K. The generator is operated by waste heat, where the temperature reaches 400 K. The temperature of the heat sink is 320 K, what will be the maximum COP of the system?

- Ans
- ☒ 1. 0.567
 - ☒ 2. 0.867
 - ☒ 3. 0.777
 - ☒ 4. 0.927

Question ID : 75322916626
Status : Answered
Chosen Option : 1

Q.77 Which of the following is NOT the objective of material handling?

- Ans
- ☒ 1. To maximise the delay and interruption by making available the material at the point of use at right quantity and at right time.
 - ☒ 2. To maximise the utilisation of material handling equipment.
 - ☒ 3. To prevent the damage of material handling equipment.
 - ☒ 4. To minimize the cost of material handling.

Question ID : 75322916614
Status : Answered
Chosen Option : 1

Q.78 What will be the force required to punch a circular blank of 50 mm diameter in a plate of 10 mm thickness? The ultimate shear stress of the plate is 350 N/mm². [$\pi = \frac{22}{7}$]

- Ans
- ☒ 1. 500 kN
 - ☒ 2. 550 kN
 - ☒ 3. 700 kN
 - ☒ 4. 650 kN

Question ID : 75322916600
Status : Answered
Chosen Option : 2

Q.79 Which of the following are NOT die accessories?

- Ans
- ☒ 1. Knockouts
 - ☒ 2. Strippers
 - ☒ 3. Stops
 - ☒ 4. Cross rails

Question ID : 75322916640
Status : Answered
Chosen Option : 4

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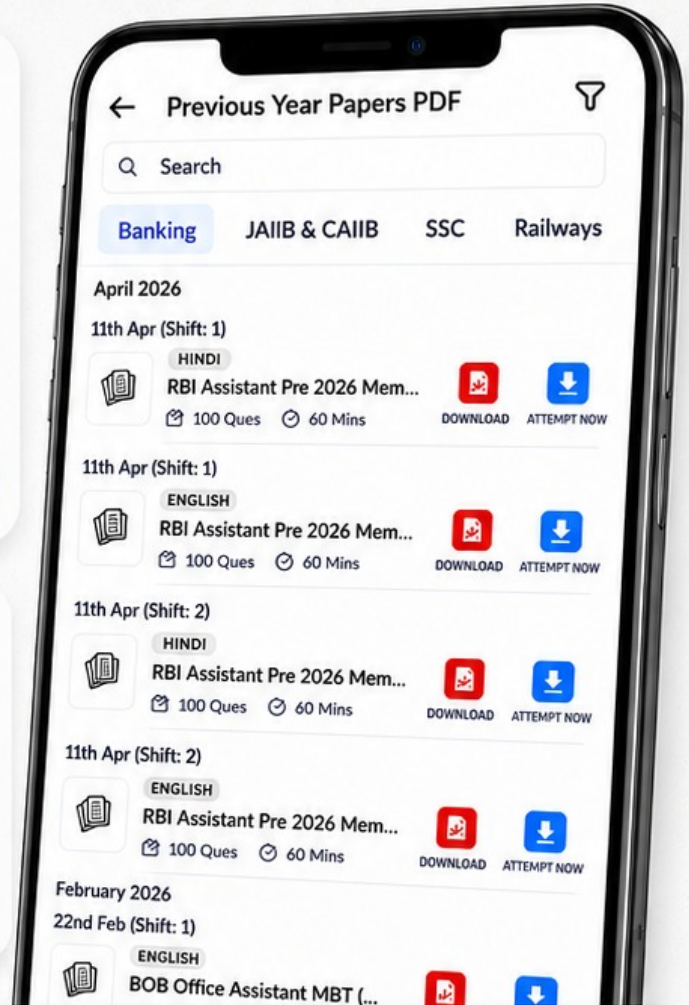
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Q.80 The die in which both the cutting and non-cutting operations are accomplished at one station of the press in every stroke of the ram is known as:

- Ans ☒ 1. combination die
☐ 2. progressive die
☐ 3. simple die
☐ 4. compound die

Question ID : 75322916606

Status : Answered

Chosen Option : 4

