Delhi Development Authority
(Recruitment Cell)
Advertisement No. 03/2022/Rectt.Cell./Pers./DDA

ParticipantID	
ParticipantName	
TestCenterName	iON Digital Zone iDZ 2 SECTOR 62
Test Date	03/04/2023
TestTime	4:30PM-6:30PM
Subject	JuniorEngineer(ElectricalorMechanical)

Section:DomainQuestions(Electrical)

Q.1 Which of the following elements is NOT a part of a transmission line?

Ans
1. Support
✔2. Load
✗3. Line insulator
✗4. Conductor

QuestionID:630680198086
Status:Answered
ChosenOption:2

Q.2 What will be the potential energy of a block having mass of 1 kg at a height of 5 m from the ground?

Ans
✗1. 98 J
✗2. 89 J
✔3. 49 J
✗4. 94 J

QuestionID:630680198094
Status:Answered
ChosenOption:3

Q.3 If the capacitance between two conductors of a 3-phase transmission line is 10 μF, then the capacitance of each conductor to neutral is _____.

Ans
✗1. 10 μF
✗2. 30 μF
✗3. 5 μF
✔4. 20 μF

QuestionID:630680198089
Status:Answered
ChosenOption:4

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Q.4 In overhead transmission lines, the annual cost of energy wasted in the conductor is:

Ans ✔1. inversely proportional to the area of cross section of the conductor

2. inversely proportional to the resistance of the conductor

3. directly proportional to the area of cross section of the conductor

4. independent of the resistance of the conductor

QuestionID:630680198087
Status:Answered
ChosenOption:3

Q.5 Find the maximum permissible current through a 400-Ω, 1-W resistor.

Ans 1. 5 mA

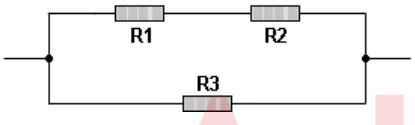
2. 1 mA

3. 10 mA

✔4. 50 mA

QuestionID:630680198067
Status:Answered
ChosenOption:4

Q.6 Find the total resistance for following circuit, if R1 = R2 = 5 Ω and R3 = 40 Ω.



Ans ✔1. 8 Ω

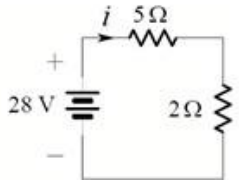
2. 50 Ω

3. 10 Ω

4. 5 Ω

QuestionID:630680198071
Status:Answered
ChosenOption:1

Q.7 Find the voltage drop across a 5-Ω resistor in the following circuit.



Ans
1. 16 V
2. 24 V
✔3. 20 V
4. 8 V

QuestionID:630680198068
Status:Answered
ChosenOption:3

Q.8 Which of the following relations is correct as per Ohm's law?

Ans
1. $R = V \times I$
2. $P = I \times R^2$
✔3. $V = I \times R$
4. $I = R \times V$

QuestionID:630680198066
Status:Answered
ChosenOption:3

Q.9 Which of the following types of support is the most suitable for high voltage long distance overhead transmission lines?

Ans
1. Wooden poles
✔2. Steel towers
3. Steel poles
4. RCC poles

QuestionID:630680198090
Status:Answered
ChosenOption:3

Q.10 With reference to an AC transmission system, state true/false for the following statements.

Statement 1: AC circuit breakers are cheaper than DC circuit breakers.

Statement 2: In an AC line, the size of the conductor is greater than that in a DC line.

Ans
1. Statement 1 is false; Statement 2 is true
✗ 2. Statement 1 is false; Statement 2 is false
✗ 3. Statement 1 is true; Statement 2 is false
✓ 4. Statement 1 is true; Statement 2 is true

QuestionID:630680198093
Status:Answered
ChosenOption:4

Q.11 In a synchronous generator, the coil span factor is unity. What will be the angle of short pitch?

Ans
1. 90°
✓ 2. 0°
✗ 3. 30°
✗ 4. 60°

QuestionID:630680198101
Status:Answered
ChosenOption:1

Q.12 In the rheostatic control method of speed control of a DC motor, which of the following parameters is varied to control the speed?

Ans
1. Field voltage
✗ 2. Armature voltage
✓ 3. Armature resistance
✗ 4. Field flux

QuestionID:630680198105
Status:Answered
ChosenOption:3

Q.13 The relationship between the flux density and field intensity of a magnetic material is called the _____.

Ans
1. saturation curve
✓ 2. magnetization curve
✗ 3. polarization curve
✗ 4. hysteresis curve

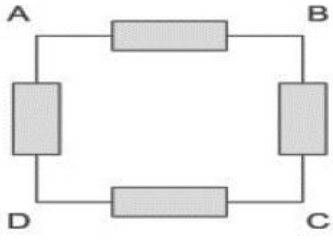
QuestionID:630680198079
Status:Answered
ChosenOption:2

Q.14 A sinusoidal voltage is expressed as v(t) = 250 sin 1256t. Find the frequency.

Ans
✔1.
✘2. 100 Hz
✘3. 400 Hz
✘4. 50 Hz

QuestionID:630680198080
Status:Answered
ChosenOption:1

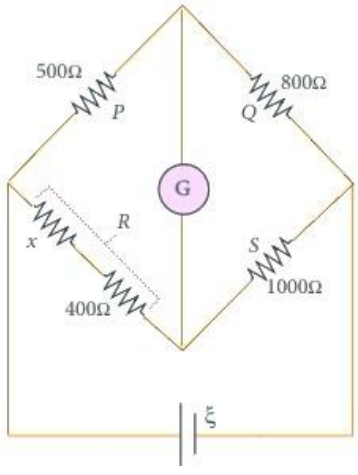
Q.15 As per Kirchhoff's voltage law, select the correct formula for the following circuit.



Ans
✔1. $V_{AB} + V_{BC} + V_{CD} + V_{DA} = 0$
✘2. $V_{AB} + V_{CB} + V_{DC} + V_{DA} = 0$
✘3. $V_{AB} + V_{BC} + V_{CD} + V_{AD} = 0$
✘4. $V_{AB} + V_{BC} + V_{DC} + V_{DA} = 0$

QuestionID:630680198075
Status:Answered
ChosenOption:1

Q.16 Find the voltage ' x ' in the following network when the bridge is balanced.



Ans
1. 825 Ω
2. 625 Ω
3. 225 Ω
4. 425 Ω

QuestionID:630680198072
Status:Answered
ChosenOption:3

Q.17 Two metres X and Y require 30 mA and 60 mA, respectively, for full scale deflection. Which of the following statements is correct?

Ans
1. Data is not sufficient to decide the sensitivity.
2. Both are equally sensitive.
3. X is more sensitive than Y.
4. Y is more sensitive than X.

QuestionID:630680198084
Status:Answered
ChosenOption:3

Q.18 With reference to the generalized circuit constants of transmission lines, the unit of constant C is _____.

Ans
1. Ohm
2. Volt
3. Mho
4. Ampere

QuestionID:630680198085
Status:Answered
ChosenOption:3

Q.19 Which parameter in a magnetic circuit is measured in AT/Wb?

Ans
✔1. Reluctance
✘2. Magnetomotive force
✘3. Flux density
✘4. Permeance

QuestionID:630680198077
Status:Answered
ChosenOption:1

Q.20 Which of the following types of single-phase induction motors requires two capacitors?

Ans
1. Permanent split capacitor motor
✔2. Capacitor start-capacitor run motor
✘3. Capacitor start induction motor
✘4. Split phase induction motor

QuestionID:630680198097
Status:Answered
ChosenOption:2

Q.21 If an induction motor is made to run at synchronous speed, the value of slip will be _____ .

Ans
✔1. zero
✘2. 0.9
✘3. 1.0
✘4. 0.5

QuestionID:630680198095
Status:Answered
ChosenOption:1

Q.22 Which method of finding voltage regulation of alternator is known as the E.M.F. method?

Ans
1. Ampere-turn method
✘2. Zero-power factor method
✘3. Potier method
✔4. Synchronous impedance method

QuestionID:630680198099
Status:Answered
ChosenOption:4

Q.23 With reference to the corona effect in transmission lines, which of the following statements is INCORRECT?

Ans
1. Ozone is produced by corona.
✔2. The current drawn by the line due to corona is sinusoidal.
✘ 3. It reduces the transmission efficiency.
✘ 4. Corona effect can be reduced by increasing conductor size.

QuestionID:630680198091
Status:Answered
ChosenOption:2

Q.24 The area of the cross section of a wire becomes half when the wire is stretched to double its length. How is the resistance of the wire affected in the new condition?

Ans
1. Resistance will remain the same
✔2. Resistance will be four times
✘ 3. Resistance will be doubled
✘ 4. Resistance will be halved

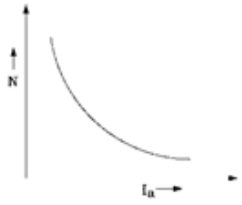
QuestionID:630680198070
Status:Answered
ChosenOption:2

Q.25 With reference to a DC transmission, which of the following statements is INCORRECT?

Ans
✔1. Corona losses are very high.
✘ 2. There are no inductance and surges in a DC transmission.
✘ 3. DC system is more efficient than AC.
✘ 4. There is no skin effect in a DC transmission.

QuestionID:630680198092
Status:Answered
ChosenOption:1

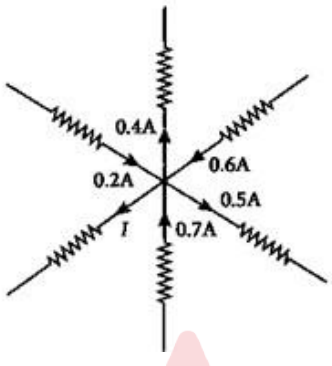
Q.26 Which motor exhibits the characteristics shown below?



Ans
1. DC cumulative compound motor
✗2. DC differentially compound motor
✗3. DC shunt motor
✓4. DC series motor

QuestionID:630680198104
Status:Answered
ChosenOption:4

Q.27 Find the current 'I' in following circuit.



Ans
✗1. 0.2 A
✓2. 0.6 A
✗3. 0.8 A
✗4. 0.4 A

QuestionID:630680198073
Status:Answered
ChosenOption:2

Q.28 State true/false for the following statements.

Statement 1: For vacuum, susceptibility is zero.

Statement 2: A toroidal magnet has no air gap.

Ans
1. Statement 1 is false; Statement 2 is false
✔2. Statement 1 is true; Statement 2 is true
✘3. Statement 1 is true; Statement 2 is false
✘4. Statement 1 is false; Statement 2 is true

QuestionID:630680198078
Status:Answered
ChosenOption:3

Q.29 10 resistors are connected in series. If each resistor is of 220 Ω, find the effective resistance of the series.

Ans
✘1. 220 kΩ
✘2. 22 Ω
✔3. 2.2 kΩ
✘4. 22 kΩ

QuestionID:630680198074
Status:Answered
ChosenOption:3

Q.30 In a transmission line, the receiving end power is 200 kW. If the transmission efficiency is 80%, find the line losses.

Ans
✘1. 20 W
✘2. 40 W
✘3. 60 W
✔4. 50 W

QuestionID:630680198088
Status:Answered
ChosenOption:4

Q.31 In a series RLC circuit, at resonance the _____ is zero.

Ans
1. impedance
✘2. capacitance
✔3. net reactance
✘4. resistance

QuestionID:630680198082
Status:Answered
ChosenOption:3

Q.32 An RLC series circuit has R = 2 Ω and C = 20 μF and the resonance frequency of 1000 rad/sec. Find the Q-factor.

Ans
1. 30
2. 25
3. 45
4. 50

QuestionID:630680198083
Status:NotAnswered
Chosen Option :--

Q.33 A straight repulsion type motor has _____ starting torque and _____ starting current.

Ans
1. low; high
2. high; moderate
3. high; negligible
4. low; negligible

QuestionID:630680198098
Status:NotAnswered
Chosen Option :--

Q.34 With reference to alternators, state true/false for the following statements.

Statement 1: Rotating field system eliminates the problem of sparking at the slip-rings.

Statement 2: Most alternators have stator armature and rotor as field.

Ans
1. Statement 1 is true; Statement 2 is true
2. Statement 1 is false; Statement 2 is true
3. Statement 1 is true; Statement 2 is false
4. Statement 1 is false; Statement 2 is false

QuestionID:630680198100
Status:Answered
ChosenOption:1

Q.35 A 4-pole wave connected DC generator has 360 conductors and is rotated at 1000 rpm. Find the generated voltage if the useful flux per pole is 30 mWb.

Ans
1. 240 V
2. 480 V
3. 360 V
4. 720 V

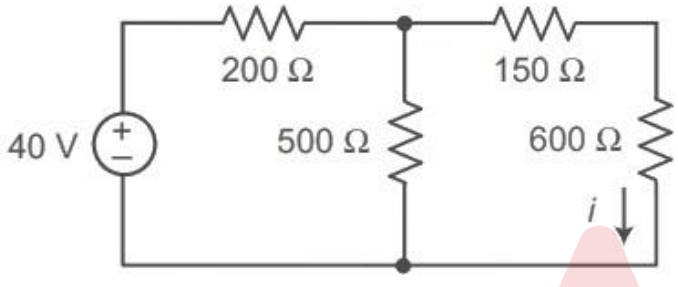
QuestionID:630680198103
Status:Answered
ChosenOption:3

Q.36 Find the peak to peak value of the sinusoidal current represented as i(t) = 400 sin 314t.

Ans
1. 800 A
2. 600 A
3. 400 A
4. 200 A

QuestionID:630680198081
Status:Answered
ChosenOption:1

Q.37 Find the current 'i' in the following circuit.



Ans
1. 40 mA
2. 32 mA
3. 48 mA
4. 80 mA

QuestionID:630680198076
Status:Answered
ChosenOption:2

Q.38 The two components of the power developed by a salient-pole synchronous motor are:

Ans
1. excitation power and magnet power
2. friction power and windage power
3. reluctance power and friction power
4. excitation power and reluctance power

QuestionID:630680198102
Status:Answered
ChosenOption:4

Q.39 A 3-phase, 50-Hz, 4-pole induction motor runs at a speed of 1400 rpm. Find the slip speed.

Ans
✔1. 100 rpm
✗2. 50 rpm
✗3. 1500 rpm
✗4. 1400 rpm

QuestionID:630680198096
Status:Answered
ChosenOption:1

Q.40 Which of the following materials has the highest resistivity?

Ans
✔1. Insulator
✗2. Semiconductor
✗3. Super conductor
✗4. Conductor

QuestionID:630680198069
Status:Answered
ChosenOption:1

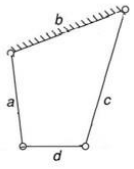
Section:DomainQuestions(Mechanical)

Q.1 Which of the following methods is an example of an air-cooling system for engines?

Ans
✗ 1. Thermosyphon system
✗2. Pressure cooling system
✔3. Cooling fins
✗4. Non-return system

QuestionID:630680198120
Status:Answered
ChosenOption:3

Q.2 Consider a four-link mechanism shown in the given figure. If link **b** is fixed and the shortest link **d** is made a coupler, read the statements that follow and select the correct answer.



Statements:

A) Links **a** and **c** would oscillate.

B) This mechanism is known as double-rocker mechanism.

Ans
1. Both statements **A** and statement **B** are incorrect.
2. Statement **A** is incorrect, but statement **B** is correct.
3. Both statements **A** and **B** are correct.
4. Statement **A** is correct, but statement **B** is incorrect.

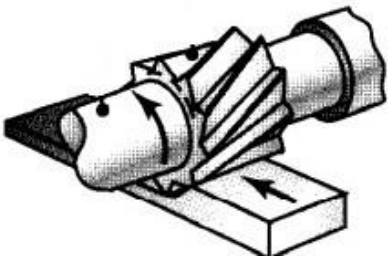
QuestionID:630680198138
Status:NotAnswered
Chosen Option :--

Q.3 Out of the following milling operations, which one best represents the end-milling operation?

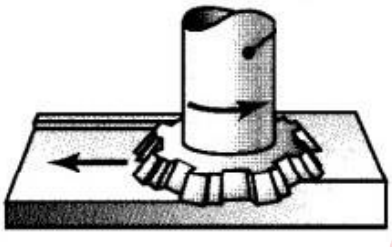
Ans

✔1.

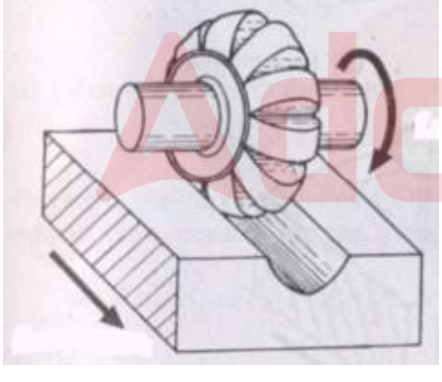
✗2.



✗3.



✗4.



QuestionID:630680198129
Status:Answered
ChosenOption:1

Q.4 For a casting with gates at its two sides, the misrun may show up at the centre of the casting. This defect is known as _____.

Ans
1. cold shut
2. hot tear
3. porosity
4. gas hole

QuestionID:630680198124
Status:NotAnswered
Chosen Option :--

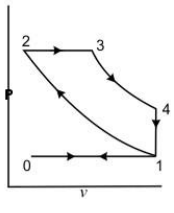
Q.5 For a gear, the circle passing through the roots of the teeth is known as _____.

Ans
1. addendum circle
2. dedendum circle
3. dedendum
4. addendum

QuestionID:630680198144
Status:Answered
ChosenOption:2

Q.6 The efficiency of an air standard diesel cycle, represented by the following P-v diagram, is _____.

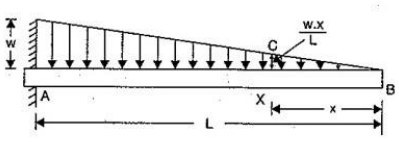
(Where $r_0 = \frac{V_1}{V_2}$, $r_c = \frac{V_3}{V_2}$, and γ represent the ratio of specific heats at constant pressure and constant volume)



Ans
1. $1-\frac{\left\{(r_c)^{\gamma}-1\right\}}{\gamma(r_0)^{\gamma-1}(r_c-1)}$
2. $1-\frac{\left\{(r_c)^{\gamma-1}-1\right\}}{(\gamma-1)(r_0)^{\gamma-2}(r_c-1)}$
3. $1-\frac{(r_0)^{\gamma-2}(r_c-1)}{(\gamma-1)\left\{(r_c)^{\gamma-1}-1\right\}}$
4. $1-\frac{(r_0)^{\gamma-1}(r_c-1)}{\gamma\left\{(r_c)^{\gamma}-1\right\}}$

QuestionID:630680198119
Status:Answered
ChosenOption:2

Q.7 Based on the following two statements related to cantilever beam subjected to a gradually varying load (refer to the given figure), select the correct answer.



Statements:

A) The shear force diagram is parabolic in nature with maximum value at point A.

B) The bending moment diagram is cubic in nature.

Ans
1. Both statements **A** and statement **B** are incorrect.
2. Both statements **A** and **B** are correct.
3. Statement **A** is correct, but statement **B** is incorrect.
4. Statement **A** is incorrect, but statement **B** is correct.

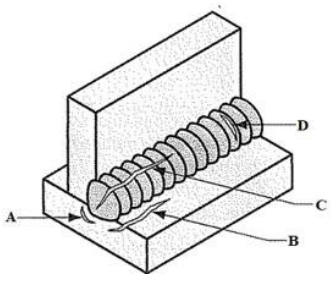
QuestionID:630680198133
Status:NotAnswered
Chosen Option :--

Q.8 For a circular shaft of radius R, subjected to torsion, the relationship between τ (shear stress), R, G (modulus of rigidity), θ (angle of twist) and L (length of shaft) is _____.

Ans
1. $\frac{\tau}{R} = \frac{G}{L.\theta}$
2. $\frac{\tau}{L} = \frac{G}{R.\theta}$
3. $\frac{\tau}{R} = \frac{G.\theta}{L}$
4. $\frac{\tau}{L} = \frac{G.\theta}{R}$

QuestionID:630680198137
Status:NotAnswered
Chosen Option :--

Q.9 Of the various forms of welding cracks shown in the given figure, which is the underbead crack?

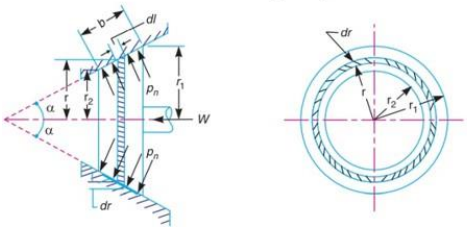


Ans
✗1. B
✓2. A
✗3. D
✗4. C

QuestionID:630680198127
Status:Answered
ChosenOption:3

Q.10 When the wear is uniform over the cone clutch as shown in the given figure, the total frictional torque developed is _____.

(Where W is the axial thrust, R = $\left[\frac{r_1 + r_2}{2}\right]$, , μ is the coefficient of friction, α is semi angle of the cone)



Ans
✗1. $\frac{2}{3}\mu WR.\text{cosec}(\alpha)$
2. $\frac{1}{2}\mu WR.\text{cosec}(\alpha)$
3. $\frac{3}{2}\mu WR.\text{cosec}(\alpha)$
✓4. $\mu WR.\text{cosec}(\alpha)$

QuestionID:630680198142
Status:NotAnswered
Chosen Option :--

Q.11 Lathes that do NOT have tailstocks are called _____.

Ans
1. tracer lathes
✔ 2. chucking machines
✗ 3. bar machines
✗ 4. bench lathes

QuestionID:630680198128
Status:NotAnswered
Chosen Option :--

Q.12 In a steam turbine, the angle which the absolute velocity of steam at inlet makes with the plane of moving blades is known as a/an _____.

Ans
✔ 1. nozzle angle
✗ 2. inlet angle of fixed blade
✗ 3. exit angle of moving blade
✗ 4. inlet angle of moving blade

QuestionID:630680198121
Status:Answered
ChosenOption:4

Q.13 Proof resilience is given by _____.

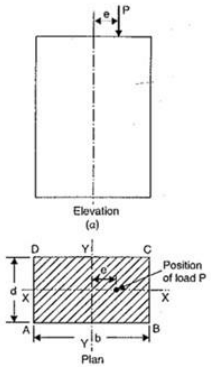
(Where E, σ and V are Young's modulus, stress and volume, respectively).

Ans
✗ 1. $\frac{V.\sigma^2}{E}$
2. $\frac{V.\sigma^2}{2.E}$
✗ 3. $\frac{2.E}{V.\sigma^2}$
✗ 4. $\frac{E}{V.\sigma^2}$

QuestionID:630680198132
Status:Answered
ChosenOption:2

Q.14 The maximum stress of a rectangular section subjected to an eccentric load as shown in the given figure is _____.

(Where A = b.d)



Ans

✗1. $\frac{P}{A}\left(1-\frac{e}{6.b}\right)$

2. $\frac{P}{A}\left(1+\frac{6.e}{b}\right)$

3. $\frac{P}{A}\left(1-\frac{6.e}{b}\right)$

4. $\frac{P}{A}\left(1+\frac{e}{6.b}\right)$

QuestionID:630680198135
Status:NotAnswered
Chosen Option :--

Q.15 Bernoulli's equation can be obtained by single scalar integral of _____.

Ans

✗1. the momentum equation

✗2. the Darcy-Weisbach equation

✗3. the continuity equation

✓4. Euler's equation

QuestionID:630680198108
Status:Answered
ChosenOption:4

Q.16 _____ is the relationship between Poisson's ratio (γ), bulk modulus of elasticity (K), and modulus of rigidity (G).

Ans

✗1. $\gamma=\frac{2(G+3K)}{(3K-2G)}$

2. $\gamma=\frac{(3K+2G)}{2(G-3K)}$

3. $\gamma=\frac{(3K-2G)}{2(G+3K)}$

4. $\gamma=\frac{2(G-3K)}{(3K+2G)}$

QuestionID:630680198131
Status:NotAnswered
Chosen Option :--

Q.17 Based on the following two statements related to positive-displacement pumps (PDPs), select the correct answer.

Statements:

A) At constant shaft rotation speed, a PDP produces nearly constant flow rate and virtually unlimited pressure rise, with little effect of viscosity.

B) The flow rate of a PDP cannot be varied except by changing the displacement or the speed.

Ans

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

✗2. Both statements **A** and statement **B** are incorrect.

✓3. Both statements **A** and **B** are correct.

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

QuestionID:630680198113
Status:NotAnswered
Chosen Option :--

Q.18 स्फुलिंग प्रज्वलन (spark-ignition) इंजनों में, _____ के साथ दहन के दौरान _____ मिश्रण पर अधिकतम तापमान प्राप्त होता है।

Ans

✗ 1. वियोजन; तनु

2. बिना वियोजन; उचित तत्वानुपातकीय

3. बिना वियोजन; तनु

4. वियोजन; उचित तत्वानुपातकीय

QuestionID:630680198116
Status:Answered
ChosenOption:4

Q.19 The type of sand mould in which a synthetic liquid resin is mixed with sand and the mixture hardens at room temperature is known as _____.

Ans
1. green-sand
✗ 2. cold-box
✗ 3. hot-box
✓ 4. no-bake

QuestionID:630680198123
Status:Answered
ChosenOption:1

Q.20 As the fuel-air mixture becomes richer, the power output of an IC engine _____.

Ans
✓ 1. first increases and then decreases
✗ 2. first decreases and then increases
✗ 3. keeps on decreasing
✗ 4. keeps on increasing

QuestionID:630680198117
Status:Answered
ChosenOption:4

Q.21 _____ is an example of the **third inversion** of a double slider-crank chain mechanism.

Ans
1. Rotary internal combustion engine
✗ 2. Crank and slotted lever mechanism
✗ 3. Whitworth quick-return motion mechanism
✓ 4. Oldham's coupling

QuestionID:630680198139
Status:NotAnswered
Chosen Option :--

Q.22 Which of the following is NOT a correct expression for modular ratio of composite bars (where E, σ, ε, P and A are Young's modulus, stress, strain, load and area of cross-section, respectively, whereas subscripts 1 and 2 represent values for first and second bar, respectively)?

Ans

1. $\frac{P_1.A_2}{P_2.A_1}$

2. $\frac{\varepsilon_1}{\varepsilon_2}$

3. $\frac{\sigma_1}{\sigma_2}$

4. $\frac{E_1}{E_2}$

QuestionID:630680198130
Status:NotAnswered
Chosen Option :--

Q.23 The coefficient of steadiness of a flywheel is defined as _____.

Ans

1. the ratio of the mean speed to the minimum speed

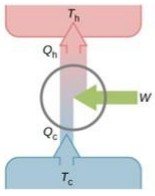
2. the ratio of the mean speed to the maximum speed

3. the ratio of the mean speed to the maximum fluctuation of speed

4. the ratio of the minimum speed to the maximum speed

QuestionID:630680198140
Status:Answered
ChosenOption:3

Q.24 The coefficient of performance (COP) relation for reversible refrigerator, operating between temperatures T_c and T_h as shown in the given figure, is:



Ans

1. $COP = \dfrac{1}{(T_c/T_h)-1}$

2. $COP = \dfrac{1}{(T_h/T_c)-1}$

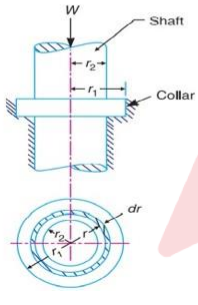
3. $COP = \dfrac{1}{1-(T_h/T_c)}$

4. $COP = \dfrac{1}{1-(T_c/T_h)}$

QuestionID:630680198115
Status:Answered
ChosenOption:4

Q.25 When the wear is uniform over the flat single collar bearing surface, as shown in the given figure, the total frictional torque developed is _____.

(Where W is the load transmitted over the bearing area, r_1 is the external radius of the collar, r_2 is the internal radius of the collar, μ is the coefficient of friction)



Ans

1. $\frac{2}{3}\mu.W(r_1-r_2)$

2. $\frac{1}{2}\mu.W(r_1+r_2)$

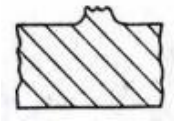
3. $\frac{2}{3}\mu.W(r_1+r_2)$

4. $\frac{1}{2}\mu.W(r_1-r_2)$

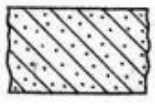
QuestionID:630680198141
Status:Answered
ChosenOption:4

Q.26 Penetration, which is a casting defect, is best represented by which of the following figures?

Ans

✗1. 

✓2. 

✗3. 

✗4. 

QuestionID:630680198125
Status:Answered
ChosenOption:2

Q.27 _____ is an example of the first inversion of a double slider-crank chain mechanism.

Ans

✗1. Whitworth quick-return motion mechanism

✗2. Crank and slotted lever mechanism

✗3. Rotary internal combustion engine

✓4. Elliptical Trammel

QuestionID:630680198145
Status:NotAnswered
Chosen Option :--

Q.28 _____ is a fusion-welding process.

Ans

1. Ultrasonic welding

✓2. Oxyfuel-gas welding

✗3. Friction welding

✗4. Soldering

QuestionID:630680198126
Status:Answered
ChosenOption:3

Q.29 Based on the following two statements on the hydraulic grade line (HGL), select the correct answer.

Statements:

A) The HGL is the energy grade line (EGL) plus the velocity head $[V^2/(2g)]$.

B) The HGL is the height to which liquid would rise in a piezometer tube attached to the flow.

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

QuestionID:630680198110
Status:Answered
ChosenOption:2

Q.30 Euler crippling load formula for a column with both ends fixed is _____.

(Where E, I and L_e are Young's modulus, moment of inertia and equivalent length, respectively)

Ans
1. ✗ $\frac{\pi^2.E.I}{4L_e^2}$
2. ✗ $\frac{4\pi^2.E.I}{L_e^2}$
3. ✓ $\frac{\pi^2.E.I}{L_e^2}$
4. ✗ $\frac{2\pi^2.E.I}{L_e^2}$

QuestionID:630680198136
Status:NotAnswered
Chosen Option :--

Q.31 The temperature (T) given by perfect gas temperature scale, based on the temperature of a gas at constant volume, is _____.

(Where P and V are pressure and volume at temperature T, and P_{tp} and V_{tp} are pressure and volume at triple point of water)

Ans

1. $T = 273.16\left(\frac{V}{V_{tp}}\right)$

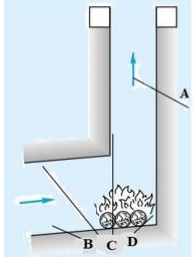
2. $T = 273.16\left(\frac{P}{P_{tp}}\right)$

3. $T = 273.16\left(\frac{P}{P_{tp}}\right)^2$

4. $T = 273.16\left(\frac{V}{P_{tp}}\right)^2$

QuestionID:630680198114
Status:NotAnswered
Chosen Option :--

Q.32 In the fire chimney shown in the given figure, Bernoulli's equation is valid at which region (represented by points A, B, C and D)?



Ans

1. B
2. C
3. A
4. D

QuestionID:630680198106
Status:Answered
ChosenOption:3

Q.33 Which of the following pumps comes under the category of dynamic pumps?

Ans

1. Axial flow
2. Gear
3. Screw
4. Sliding vane

QuestionID:630680198112
Status:Answered
ChosenOption:4

Q.34 The velocity ratio of driven (N_2) to driver (N_1) belt considering creep effect is _____.

(Where σ_1 and σ_2 are stress in the belt on the tight and slack side, respectively, E is Young's modulus for the material of the belt, and d_1 and d_2 are diameters of the driver and the follower, respectively)

Ans

✗1. $\frac{N_2}{N_1}=\frac{d_1}{d_2}\cdot\frac{\left(E-\sqrt{\sigma_2}\right)}{\left(E-\sqrt{\sigma_1}\right)}$

✗2. $\frac{N_2}{N_1}=\frac{d_2}{d_1}\cdot\frac{\left(E+\sqrt{\sigma_1}\right)}{\left(E+\sqrt{\sigma_2}\right)}$

✗3. $\frac{N_2}{N_1}=\frac{d_2}{d_1}\cdot\frac{\left(E-\sqrt{\sigma_1}\right)}{\left(E-\sqrt{\sigma_2}\right)}$

✓4. $\frac{N_2}{N_1}=\frac{d_1}{d_2}\cdot\frac{\left(E+\sqrt{\sigma_2}\right)}{\left(E+\sqrt{\sigma_1}\right)}$

QuestionID:630680198143
Status:NotAnswered
Chosen Option :--

Q.35 Based on the following two statements on laminar and turbulent flows, select the correct answer.

Statements:

A) In a laminar flow, the fluid particles move along smooth paths in a predictable manner.

B) In a viscous turbulent flow, the motion of an individual fluid particle is not predictable.

Ans

1. Statement **A** is correct, but statement **B** is incorrect.

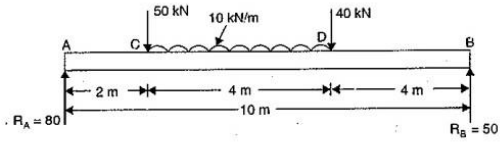
✗2. Statement **A** is incorrect, but statement **B** is correct.

✓3. Both statements **A** and **B** are correct.

✗4. Both statements **A** and statement **B** are incorrect.

QuestionID:630680198107
Status:Answered
ChosenOption:3

Q.36 The loading of a simply supported beam is shown in the given figure. Read the statements that follow and select the correct answer.



Statements:

A) There is abrupt change of shear force from positive to negative value at a point lying between points C and D.

B) Maximum value of bending moment is at point D.

Ans

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

QuestionID:630680198134
Status:NotAnswered
Chosen Option :--

Q.37 Based on the following two statements on friction factor in pipe flows, select the correct answer.

Statements:

A) In case of a laminar fully developed flow through pipes, the friction factor depends on the Reynolds number and pipe roughness.

B) The friction factor at a given the Reynolds number, in the turbulent region, depends on the relative roughness (ratio of average roughness to the diameter of the pipe) rather than absolute roughness.

Ans

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

QuestionID:630680198111
Status:Answered
ChosenOption:4

Q.38 The entropy change (ΔS) for irreversible process is equal to _____.

(Where T is the temperature and Q is the heat transfer)

Ans

✗1. $\Delta S \geq \frac{\delta Q}{T}$

2. $\Delta S = \frac{\delta Q}{T}$

3. $\Delta S > \frac{\delta Q}{T}$

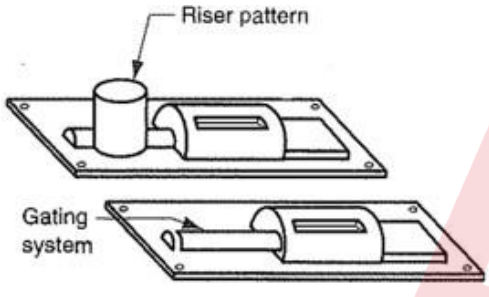
4. $\Delta S \leq \frac{\delta Q}{T}$

QuestionID:630680198118
Status:Answered
ChosenOption:4

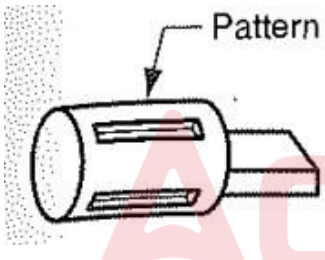
Q.39 Which of the following sand-casting patterns represents the match-plate pattern?

Ans

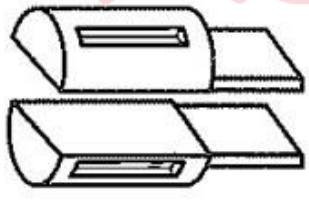
✗1.



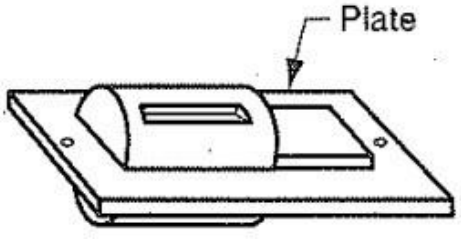
✗2.



✗3.



✓4.



QuestionID:630680198122
Status:Answered
ChosenOption:1

Q.40 The equation of continuity for a compressible fluid flow in a rectangular cartesian coordinate system is _____.

(Where u, v, w are the velocities in x, y, z directions, respectively, ρ is density and t is time)

Ans

✗1. $\frac{\partial \rho}{\partial t}+\frac{\partial u}{\partial t}+\frac{\partial v}{\partial t}+\frac{\partial w}{\partial t}=0$

✗2. $\frac{\partial(\rho u)}{\partial t}+\frac{\partial(\rho v)}{\partial t}+\frac{\partial(\rho w)}{\partial t}=0$

✓3. $\frac{\partial \rho}{\partial t}+\frac{\partial(\rho u)}{\partial t}+\frac{\partial(\rho v)}{\partial t}+\frac{\partial(\rho w)}{\partial t}=0$

✗4. $\frac{\partial u}{\partial t}+\frac{\partial v}{\partial t}+\frac{\partial w}{\partial t}=0$

QuestionID:630680198109
Status:Answered
ChosenOption:3

Section:Reasoning

Q.1 If '–' means 'division', '×' means 'addition', '÷' means 'multiplication' and '+' means 'subtraction', whatwillbethevalueofthefollowingexpression?

[{(15+7)×(4×2)}-(1÷2)]÷2

Ans

✓1.14

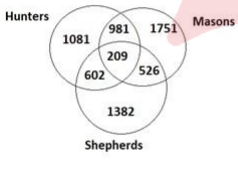
✗2.8

✗3.6

✗4.2

QuestionID: 630680198155
Status: Answered
ChosenOption: 1

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



What is the ratio of the number of shepherds who are masons but not hunters to the number of shepherds who are hunters but not masons?

Ans

1.209:526

✗2.735:526

✗3.1382:602

✓4.526:602

QuestionID: 630680198147
Status: Answered
ChosenOption: 4

Q.3 Select the number from among the given options that can replace the question mark (?) in the following series.

42, 46, 62, 98, 162, ?

Ans
1. 250
2. 280
3. 262
4. 260

QuestionID: 630680198153
Status: Answered
ChosenOption: 3

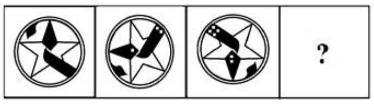
Q.4 Select correct combination of mathematical signs that can sequentially replace the # signs and balance the given equation.

15 # 8 # 21 # 3 # 5 # 2 # 4

Ans
1. −, +, ×, =, ÷, +
2. −, +, ÷, =, ×, +
3. −, +, ÷, ×, =, +
4. +, −, ÷, ×, =, +

QuestionID: 630680198154
Status: Answered
ChosenOption: 2

Q.5 Select the figure from among the given options that can replace the question mark (?) in the following series.



Ans

1. 

2. 

3. 

4. 

QuestionID:630680198151
Status:Answered
ChosenOption:4

Q.6 Eight dwarfs, P, O, A, B, C, D, E and F, are sitting around a square table, facing the centre ofthetable.Fourofthemaresittingatthecorners,whilefouraresittingattheexactcentreofthesides.EisexactlybetweenBandO.AissecondtotherightofE.FandOarediagonallyoppositetoeachother.BandCarediagonallyoppositetoeachother.FisattheimmediateleftofD.B,atacorner,isthirdtotheleftofD.WhoissittingattheimmediateleftofO?

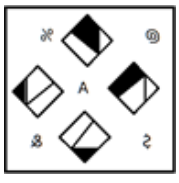
Ans
1. C
2. D
3. E
4. P

QuestionID:630680198146
Status:Answered
ChosenOption:4

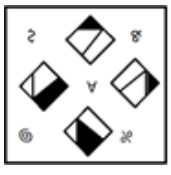
Q.7 Select the correct water image of the given figure.

Ans

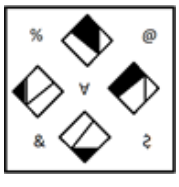
✗1.



✓2.



✗3.



✗4.

QuestionID:630680198152
Status:Answered
ChosenOption:2

Q.8 In a certain code language, 'EVERY' is coded as 'CJWFW' and 'ABOUT' is coded as 'HGMZA'. How will 'OTHER' be coded in that language?

Ans

✗1. JWTIN

✗2. JWSHN

✓3. JWTHM

✗4. JWUHM

QuestionID:630680198148
Status:NotAnswered
Chosen Option :--

Q.9 Select the option that is related to the third term in the same way as the second term is related to the first term.
(The words must be considered as meaningful English words and must not be related to each other based on the number of letters/number of consonants/vowels in the word.)

MECHANIC: GARAGE:: LAWYER :?

Ans
✔1. COURT
✘2. LAW
✘3. JUDGE
✘4. UNIVERSITY

QuestionID: 630680198150
Status: Answered
Chosen Option: 1

Q.10 If
'A@B' means 'A is the wife of B', 'A$B' means 'A is the mother of B',
'A&B' means 'A is the mother of B's mother', 'A#B' means 'A is the son of B' and
'A^B' means 'A is the brother of B's father',
then how is P related to T in the following expression? P^Q#R@S#T

Ans
✘1. Brother
✘2. Son's son
✘3. Sister's son
✔4. Son

QuestionID: 630680198149
Status: Answered
Chosen Option: 2

Section: Quantitative Aptitude

Q.1 Ajay can do a certain work in 52 days. Bharat is 30% more efficient than Ajay. They work together for 13 days. How many days will Chetan alone take to complete the remaining work, if Chetan is 8% more efficient than Ajay?

Ans
✔1. $20\frac{25}{54}$ days
✘2. $21\frac{29}{54}$ days
✘3. $19\frac{31}{54}$ days
✘4. $22\frac{19}{54}$ days

QuestionID: 630680198163
Status: Not Answered
Chosen Option :--

Q.2 The area (in square units) of the triangle formed by the vertices (3,4), (5,6) and (7,3) is:

Ans
1. 9
2. 8
3. 5
4. 3

QuestionID:630680198164
Status:NotAnswered
Chosen Option :--

Q.3 Ketan travels a certain distance at his own speed, but when he reduces his speed by 8km/h, his time duration for the journey increases by 11 hours, while if he increases his speed by 4 km/h from his original speed, he takes 4 hours less than the original time taken. What is the distance travelled by him?

Ans
1. 1760 km
2. 1650 km
3. 1700 km
4. 1600 km

QuestionID:630680198162
Status:NotAnswered
Chosen Option :--

Q.4 Last year, Arjun's salary was ₹65,400 and this year his salary is ₹71,286. What is the percentage increase in Arjun 's salary?

Ans
1. 9.0%
2. 8.5%
3. 9.5%
4. 8.0%

QuestionID:630680198160
Status:Answered
ChosenOption:1

Q.5 If the average of $x-1$, $2x+1$, $x+3$, $3x+2$ and x is 9, then the value of x is:

Ans
1. 8
2. 7
3. 6
4. 5

QuestionID:630680198158
Status:Answered
ChosenOption:4

Q.6 The number of lead balls, each of 0.4cm radius, that can be made from a sphere whose surface area is 2304π cm^2 is:

Ans
✔1. 2,16,000
✗2. 2,56,000
✗3. 2,89,000
✗4. 2,25,000

QuestionID:630680198165
Status:NotAnswered
Chosen Option :--

Q.7 If $7^x \times 3^{43} \times 147^{12} \times 343^5 = 21^{55}$, then the value of x is:

Ans
✗1. 18
✗2. 15
✗3. 17
✔4. 16

QuestionID:630680198156
Status:Answered
ChosenOption:4

Q.8 In one-day international world cup cricket tournament, six bowlers have taken 15 wickets each, eight bowlers have taken 18 wickets each, ten bowlers have taken 22 wickets each, fifteen bowlers have taken 26 wickets each, and seven bowlers have taken 30 wickets each. The mean number of wickets taken by the bowlers is: (correct to three decimal places)

Ans
✗1. 24.025
✔2. 22.913
✗3. 23.123
✗4. 25.021

QuestionID:630680198159
Status:Answered
ChosenOption:2

Q.9 Sourya bought 3600 eggs at ₹60 a dozen. At what price per hundred must he sell the eggs so as to earn a profit of 12.5%?

Ans
✔1. ₹562.50
✗2. ₹562.25
✗3. ₹562.75
✗4. ₹562.10

QuestionID:630680198161
Status:Answered
ChosenOption:1

Q.10 The value of $0.2\bar{8} + 0.1\bar{5} - 0.2\bar{3}$ is:

Ans
1. $\frac{13}{90}$
2. $\frac{17}{90}$
3. $\frac{19}{90}$
4. $\frac{23}{90}$

QuestionID:630680198157
Status:NotAnswered
Chosen Option :--

Section :GeneralAwareness

Q.1Publicsectorbank,PunjabNationalBank(PNB)signedamemorandumofunderstanding(MoU)with the _____underitsflagshipscheme,PNBRakshakPlusSchemeinJuly2022.

Ans
1. Indian Coast Guard
2.IndianArmy
3.IndianAirForce
4.Indian Navy

QuestionID:630680198169
Status:Answered
ChosenOption:4

Q.2Inahumanbody,mostoftheDNAislocatedinthecellnucleusbutasmallamountofDNAcanalsobefoun dinthe:

Ans
1.lysosome
2.ribosome
3.cellmembrane
4.mitochondria

QuestionID:630680198172
Status:Answered
ChosenOption:4

Q.3AsofJuly2022,themicrofinanceloanisdefinedasacollateral-freeloangiventoahouseholdhavingannualhouseholdincomeupto:

Ans
1.₹1,00,000
2.₹2,00,000
3.₹4,00,000
4.₹3,00,000

QuestionID:630680198170
Status:NotAnswered
Chosen Option :--

Q.4WhichArticleoftheIndianConstitutionrelatestotherepresentationoftheAnglo-IndiancommunityintheLegislativeAssembliesofthestates?

Ans
✗1.Article324
✗2.Article311
✗3.Article319
✓4.Article333

QuestionID:630680198174
Status:Answered
ChosenOption:4

Q.5WhatisthesupercomputingcapacityofthesupercomputerPARAMGangadevelopedbytheCentre forDevelopmentofAdvancedComputing(C-DAC)?

Ans
✓1.1.66petaflops
✗2.2.89petaflops
✗3.0.46petaflops
✗4.3.94petaflops

QuestionID:630680198166
Status:NotAnswered
Chosen Option :--

Q.6TheHindustanSocialistRepublicanAssociation(HSRA)in1928waslaterreorganisedandestablishedasHindustanSocialistRepublicanArmy,in:

Ans
✗1. Lucknow
✓2.Delhi
✗3.Calcutta
✗4.Poona

QuestionID:630680198167
Status:Answered
ChosenOption:3

Q.7BywhichconstitutionalamendmentdoestheConstitutionofIndiaprovidetherighttoeducationfor theageofsixtofourteenyears?

Ans
✓1.Constitution(Eighty-sixth Amendment)Act,2002
✗2.Constitution(Twenty-thirdAmendment)Act,1969
✗3.Constitution(Seventy-secondAmendment)Act,1992
✗4.Constitution(Eighty-fourthAmendment)Act,2001

QuestionID:630680198173
Status:Answered
ChosenOption:1

Q.8MayaDevi TemplewhichisalsoknownasthebirthplaceofGautamBuddhaislocatedat:Ans ✔

1.Lumbini

✘2.Dharamsala

✘3.Rajgir

✘4.Sarnath

QuestionID:630680198168
Status:Answered
ChosenOption:1

Q.9उणकटबधंीयपणपातीवनकेवषयमननलखतमसेकौनसाकथनगलतहै?Ans

✔1.देवदारइसजंगलकसबसेमुखजातहै।

✘2.इनवनममहवपूणजातयाँबांस,साल,शीशम,चंदन,खैर,कुसुमऔरअजुनह।

✘3.येभारतकेसबसेपकप सेफैलेएवन ह।

✘4.इहमानसूनीवन भीकहाजाता ह।

QuestionID:630680198171
Status:Answered
ChosenOption:1

Q.10HowmanygoldmedalshasIndiawonattheU20AsianWrestlingChampionshipsinManama,Bahraini nJuly2022?

Ans ✘1.5

✘2.3

✔3.4

✘4.6

QuestionID:630680198175
Status:Answered
ChosenOption:1

Section:EnglishLanguage

Q.1 Sentencesofaparagrapharegivenbelowinjumbledorder.Arrangethesentencesinthecorrectorder toformameaningfulandcoherentparagraph.

A. Overthelastfiveyears,Ihavemanagedtoacquirequiteacollection.
B. Iworkinabankandspendatleasthalfmysalaryonthese.
C. Oldbooks,especially,fascinateme.
D.Iamwhatisusuallydescribedasabookworm.Ans

✔1.DCBA

✘2.DABC

✘3.BCAD

✘4.ACDB

QuestionID:630680198182
Status:Answered
ChosenOption:2

Q.2Partsofthefollowingsentencehavebeengivenasoptions.Selecttheoptionthatcontainsanerrori
nspelling.Ifyoudon'tfindanyerror,mark'Noerror' asyouranswer.

Hestoodinthedoorwaymakingoccasionaleffortstowhistlethroughpartedlips.

Ans
✔1.Noerror

✘2.towhistlethroughpartedlips

✘3.makingoccasionalefforts

✘4.Hestoodinthedoorway

QuestionID:630680198179
Status:Answered
ChosenOption:4

Q.3Selectthemostappropriatesynonymofthegivenwordtofillintheblank.

Apparent
Itwas _____ thathehadn'tsleptinthebedatall.

Ans
✘1.vague

✔2.obvious

✘3.deceptive

✘4.actual

QuestionID:630680198178
Status:Answered
ChosenOption:2

Q.4Selectthemostappropriateoptiontofillintheblank.

Iknewnothingbeyondwhathe_____meabouthimself.

Ans
✘1.istelling

✘2.hastold

✘3.tells

✔4.hadtold

QuestionID:630680198176
Status:Answered
ChosenOption:4

Q.5Selectthemostappropriatemeaningofthegivenidiom.

Burnthecandleatbothends

Ans
✘1.Toearnalivingforthefamily

✔2.Tooverworkuntilexhausted

✘3.Toworkthroughthenight

✘4.Toannoysomeonealot

QuestionID:630680198181
Status:Answered
ChosenOption:2

Q.6Selectthemostappropriateoptiontofillintheblanks.

Igot_____thebedandcoveredmyself _____ ablanket.

Ans ✗1.on;through

✗2.in;by

✗3.at;from

✓4.into;with

QuestionID:630680198177
Status:Answered
ChosenOption:4

Q.7Selectthemostappropriatemeaningofthegivenidiom.

Burythehatchet

Ans ✗1.Tocommittoanaction

✗2.Toignoredanger

✗3.Toleavesomeonealone

✓4.Tomake peace

QuestionID:630680198180
Status:Answered
ChosenOption:1

Comprehension:

Readthegivenpassageandanswerthequestionsthatfollow.

HundredsmorepeoplewereevacuatedfromtheirhomesaswildfiresblisteredlandinFrance,Spain and Portugal on Friday, while officials in Europe issued health warnings for the heatwaveinthecomingdays.
More than 1,000 firefighters, supported by water-bomber aircraft, have battled since Tuesdaytocontroltwoblazesinsouthwestern Francethathavebeenfannedbyscorchingheat,tinder-boxconditionsandstrongwinds.Whiletemperaturesdippedalittlein Portugal,theywerestillexpecte d to top 40 degrees Celsius (104 Fahrenheit) in some places, with five districts on redalertandmorethan1,000firefighterstackling17wildfires,authoritiessaid.
In Spain, a new wildfire broke out in the south of the country after blazes in the west in thepastweek.Morethan400peoplewereevacuatedfromthehillsof Mijas,atownpopularwithnorthe rnEuropeantouristsintheprovinceof Malaga.
Meanwhile, the worst drought in over 70 years reduced Italy's longest river, the Po, to littlemorethanatrickleinplaces,withtemperaturesexpectedtorisenextweek.Italyhasdeclaredast ateofemergencyalongthePo,whichsupportsaboutathirdofthecountry'sagricultural production.

SubQuestion No : 8

Q.8Inwhichcountryhasthetemperaturedroppedalittleatpresent?Ans

✗1.Spain

✓2. Portugal

✗3.France

✗4.Italy

QuestionID:630680198186
Status:Answered
ChosenOption:2

Comprehension:

Readthegivenpassageandanswerthequestionsthatfollow.

HundredsmorepeoplewereevacuatedfromtheirhomesaswildfiresblisteredlandinFrance,Spain and Portugal on Friday, while officials in Europe issued health warnings for the heatwaveinthecomingdays.
More than 1,000 firefighters, supported by water-bomber aircraft, have battled since Tuesdaytocontroltwoblazesinsouthwestern Francethathavebeenfannedbyscorchingheat,tinder-boxconditionsandstrongwinds.Whiletemperaturesdippedalittleinportugal,theywerestillexpecte d to top 40 degrees Celsius (104 Fahrenheit) in some places, with five districts on redalertandmorethan1,000firefighterstackling17wildfires,authoritiessaid.
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SubQuestion No : 9

Q.9Thepassagementionsseveralconcerns.WhichofthefollowingisNOTaconcernhere?Ans ✗

1.Healthwarningsissuedforthepeopleof Europe.

✓2.AgriculturalproductioninEurope.

✗3.WildfiresinseveralcountriesofEurope.

✗4. HeatwavescorchingEurope.

QuestionID:630680198184
Status:Answered
ChosenOption:2

Comprehension:

Readthegivenpassageandanswerthequestionsthatfollow.

HundredsmorepeoplewereevacuatedfromtheirhomesaswildfiresblisteredlandinFrance,Spain and Portugal on Friday, while officials in Europe issued health warnings for the heatwaveinthecomingdays.
More than 1,000 firefighters, supported by water-bomber aircraft, have battled since Tuesdaytocontroltwoblazesinsouthwestern Francethathavebeenfannedbyscorchingheat,tinder-boxconditionsandstrongwinds.Whiletemperaturesdippedalittleinportugal,theywerestillexpecte d to top 40 degrees Celsius (104 Fahrenheit) in some places, with five districts on redalertandmorethan1,000firefighterstackling17wildfires,authoritiessaid.
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Meanwhile, the worst drought in over 70 years reduced Italy's longest river, the Po, to littlemorethanatrickleinplaces,withtemperaturesexpectedtorisenextweek.Italyhasdeclaredast ateofemergencyalongthePo,whichsupportsaboutathirdofthecountry'sagricultural production.

SubQuestion No:10

Q.10Readthegivensentencesandselectthecorrectoption.

A. Wildfiresarebreakingoutinseveral countriesofEurope.
B. Europeishitbyanunprecedentedheatwave.Ans

✗1.StatementAistruebutstatementBisfalse

✗2.BothstatementsAandBaretruebutBdoesnotexplainthereasonforA.

✓3.BothstatementsAandBaretrueandBexplainsthereasonforA.

✗4.StatementAisfalsebutstatementBistrue

QuestionID:630680198185
Status:Answered
ChosenOption:3