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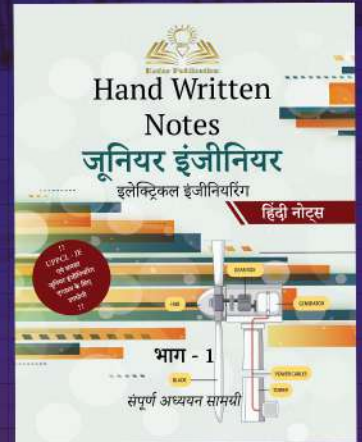
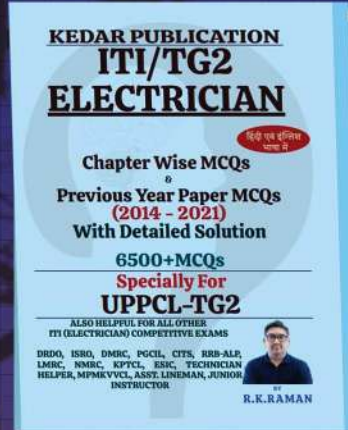
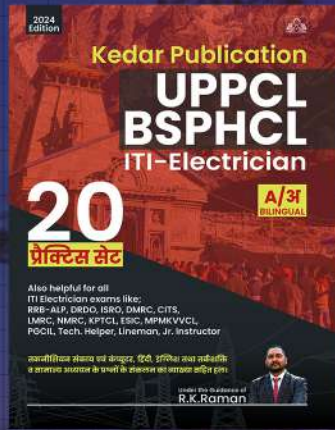
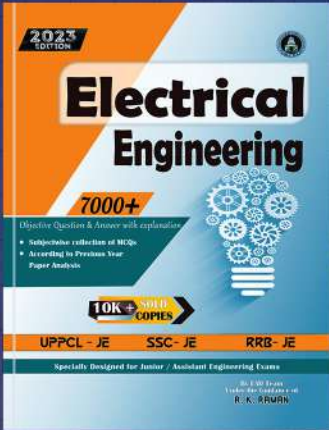
Objective Book for

Electrical-JE

UPPCL BSPHCL

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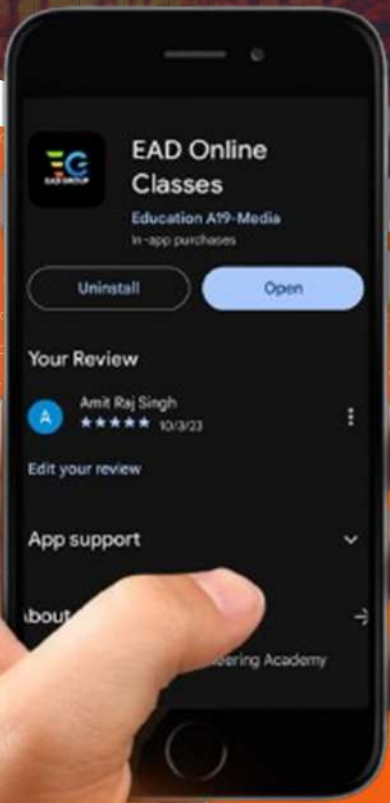
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Raman sir
Electrical Engg. Expert



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Participant ID:	
Participant Name:	ANIKET KUMAR
Test Center Name:	ION Digital Zone iDZ 1 Hathipur
Test Date:	12/05/2018
Test Time:	3:00 PM - 5:00 PM
Subject:	E02 Assistant Manager (Electrical)
Marks Obtained:	

Section : Technical

Q.1 A full wave diode rectifier is applied with a voltage from a 60 V-0-60 V transformer. Load and diode forward resistances are 100 Ω and 10 Ω respectively. The average output voltage of the rectifier circuit is:

- Ans
- 1. 34.7 V
 - 2. 24.6 V
 - 3. 17.4 V
 - 4. 49.1 V

Question ID : 7246222970

Chosen Option : --

Q.2 An alternating current varying sinusoidally has a peak value of 50 A and a frequency of 10 Hz. Mathematical expression for the current is:

- Ans
- 1. $i = 50 * \sqrt{2} \sin(2 * \pi * 10)t$
 - 2. $i = \frac{50}{\sqrt{2}} \sin(2 * \pi * 10)t$
 - 3. $i = 50 * \sqrt{2} \sin(\pi * 10)t$
 - 4. $i = 50 \sin(2 * \pi * 10)t$

Question ID : 7246222963

Chosen Option : 1

Q.3 An RLC series circuit consisting of $R = 4 \Omega$, inductive reactance = 6 Ω and capacitive reactance = 3 Ω is connected across a 220 V, 50 Hz single phase AC supply. Power factor of the circuit is:

- Ans
- 1. 0.6 leading
 - 2. 0.8 lagging
 - 3. 0.6 lagging
 - 4. 0.8 leading

Question ID : 7246222972

Chosen Option : 2

Q.4 Potentiometer is basically a device for:

- Ans
- 1. measuring a current
 - 2. comparing two voltages
 - 3. comparing two currents
 - 4. measuring a voltage

Question ID : 7246223044

Chosen Option : 2

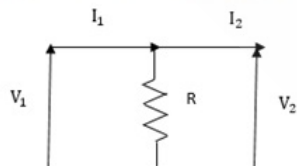
Q.5 Propagation delay through a master slave flip flop is given as 1000 ns. The maximum clock frequency that can be used with this flip flop is:

- Ans
- 1. 0.1 MHz
 - 2. 100 MHz
 - 3. 10 MHz
 - 4. 1 MHz

Question ID : 7246223018

Chosen Option : --

Q.6 Z parameters of the network shown below are:



- Ans
- 1. $Z_{11} = 2R, Z_{22} = 2R, Z_{12} = R, Z_{21} = R$

Question ID : 7246222969

Chosen Option : 2

2. $Z_{11} = R, Z_{22} = R, Z_{12} = 2R, Z_{21} = 2R$
3. $Z_{11} = 2R, Z_{22} = 2R, Z_{12} = 2R, Z_{21} = 2R$
4. $Z_{11} = R, Z_{22} = R, Z_{12} = R, Z_{21} = R$

Q.7 At any power factor of the load, the efficiency of transformer will be maximum when:

- Ans 1. copper loss is equal to core loss
2. copper loss is equal to eddy current loss
3. copper loss is less than core loss
4. copper loss is greater than core loss

Question ID : 7246222976

Chosen Option : 1

Q.8 In a synchronous machine, all of the following losses are independent of the load EXCEPT:

- Ans 1. iron loss
2. bearing friction
3. windage loss
4. copper loss

Question ID : 7246223047

Chosen Option : 4

Q.9 A synchronous machine with low value of short circuit ratio has:

- Ans 1. higher stability limit
2. good voltage regulation
3. good speed regulation
4. lower stability limit

Question ID : 7246223035

Chosen Option : 1

Q.10 A buck DC-to-DC converter is applied with a voltage of 100 V and supplies a resistive load of 50 Ω . During ON state, it has a voltage drop of 2 V. The chopping frequency is 1 kHz and duty ratio is 50%. Average and rms output voltages respectively are:

- Ans 1. 98 V and 69.4 V
2. 24.5 V and 89.4 V
3. 49 V and 89.2 V
4. 49 V and 69.4 V

Question ID : 7246222992

Chosen Option : --

Q.11 In a bipolar junction transistor, the base region is made very thin so that:

- Ans 1. recombination in base region is minimum
2. base can be easily fabricated
3. electric field gradient in the base is high
4. base can be easily biased

Question ID : 7246223005

Chosen Option : 1

Q.12 Direction of rotation of a three-phase cage-type induction motor can be reversed by:

- Ans 1. reversing the phase sequence
2. reducing the frequency
3. reducing the load
4. reducing the voltage

Question ID : 7246222979

Chosen Option : 1

Q.13 A transformer can have negative voltage regulation at:

- Ans 1. Zero power factor
2. Leading power factor
3. Lagging power factor
4. Unity power factor

Question ID : 7246222988

Chosen Option : 2

Q.14 A 5 bit ladder has a digital input of 11010. Assuming that 0 corresponds to 0 V and 1 corresponds to +10 V, its output voltage will be:

- Ans 1. +6.5 V
2. -6.5 V
3. -8.125 V
4. +8.125 V

Question ID : 7246223019

Chosen Option : --

Q.15 Load factor of a power station is generally:

- Ans 1. unity
 2. less than unity
 3. greater than unity
 4. zero

Question ID : 7246223049
 Chosen Option : 2

Q.16 Turn-off of GTO is achieved by negative gate current I_{GN} such that:

- Ans 1. $I_{GN} = I_A / \beta_{off}$
 2. $I_{GN} < I_A / \beta_{off}$
 3. $I_{GN} > I_A / \beta_{off}$
 4. any I_{GN}

Question ID : 7246223007
 Chosen Option : --

Q.17 Which of the following loss in a transformer is zero at all operating conditions?

- Ans 1. Eddy current loss
 2. Iron loss
 3. Friction loss
 4. Hysteresis loss

Question ID : 7246223006
 Chosen Option : 3

Q.18 A 50 kW load at power factor of 0.8 lagging is supplied from a single phase AC supply. Reactive power drawn from the source is:

- Ans 1. 37.5 kVAR lagging
 2. 625 kVAR leading
 3. 37.5 kVAR leading
 4. 625 kVAR lagging

Question ID : 7246222973
 Chosen Option : 1

Q.19 Which of the following is a digital transducer?

- Ans 1. Piezoelectric transducer
 2. Encoder
 3. Photovoltaic
 4. Thermocouple

Question ID : 7246222995
 Chosen Option : 2

Q.20 Current i_s in the following circuit is:



- Ans 1. 2 A
 2. 0.2 A
 3. 1 A
 4. 0.8 A

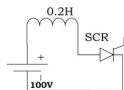
Question ID : 7246222961
 Chosen Option : 3

Q.21 Which of the following can be measured with the help of piezoelectric crystal?

- Ans 1. Flow
 2. Velocity
 3. Acceleration
 4. Temperature

Question ID : 7246223015
 Chosen Option : 3

Q.22 If the latching current in the circuit shown in the figure below is 2 mA, then minimum width of gate pulse required to properly turn on the SCR is:



- Ans 1. 6 μ s

Question ID : 7246222991
 Chosen Option : --

2. 3 μs 3. 2 μs 4. 4 μs

Q.23 A unity feedback system is characterised by an open loop transfer function of $G(s) = \frac{K}{s(s+10)}$. Value of K required in order to have a damping ratio of 0.5 is:

Ans 1. 50 2. 10 3. 20 4. 100

Question ID : 7246222985

Chosen Option : 4

Q.24 The resolution in volts of a 9 bit D/A converter which uses ladder network and has full scale output voltage of +5 V is:

Ans 1. 20 mV 2. 100 mV 3. 10 mV 4. 1 mV

Question ID : 7246223017

Chosen Option : 3

Q.25 The power factor of an alternator is determined by its:

Ans 1. prime mover 2. speed 3. load 4. excitation

Question ID : 7246223034

Chosen Option : 4

Q.26 Dissipation factor of a capacitor can be measured with:

Ans 1. Galvanometer 2. Campbell bridge 3. Potentiometer 4. Schering bridge

Question ID : 7246223031

Chosen Option : 2

Q.27 Find the power factor of an installation supplying the following loads:
300 kW at unity power factor, 1000 kW at 0.8 lagging power factor and 1500 kW at 0.6 leading power factor.

Ans 1. 0.71 leading 2. 0.71 lagging 3. 0.92 leading 4. 0.92 lagging

Question ID : 7246222999

Chosen Option : --

Q.28 The starting torque of a wound rotor induction motor can be increased by adding:

Ans 1. external capacitance to the rotor circuit 2. external inductance to the rotor circuit 3.

a combination of inductance and capacitance to the rotor circuit

 4. external resistance to the rotor circuit

Question ID : 7246223030

Chosen Option : 4

Q.29 Integral of unit impulse is a:

Ans 1. unit ramp 2. unit step 3. constant 4. unit impulse

Question ID : 7246223028

Chosen Option : 2

Q.30 For a bipolar junction transistor, common base current gain is 0.98 and the base current is 120 μA . Its common emitter current gain will be:

Ans 1. 98 2. 56 3. 49 4. 118

Question ID : 7246223027

Chosen Option : 4

Q.31

The error when the meter is reading half of the full scale reading is:

Question ID : 7246223033

Chosen Option : 1

Ans 1.

greater than the error when reading full scale

2. less than the error when reading full scale

3. equal to the error when reading full scale

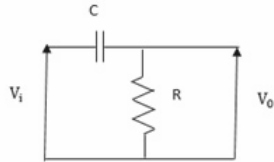
4.

equal to half of the error when reading full scale

Q.32 Transfer function of the circuit given below is:

Question ID : 7246222971

Chosen Option : 2



Ans 1. $\frac{RC}{1+sRC}$

2. $\frac{sRC}{1+sRC}$

3. $\frac{sRC}{1+RC}$

4. $\frac{sRC}{s+RC}$

Q.33 Transient response of a system is mainly due to:

Question ID : 7246223020

Chosen Option : 2

Ans 1. friction

2. stored energy

3. inertia forces

4. internal forces

Q.34 Potential difference between two points 'a' and 'b' which are at distances 0.5 m and 0.2 m respectively from a negative charge of 10×10^{-10} coulombs is:

Question ID : 7246222982

Chosen Option : --

Ans 1.

14 V, point 'a' at a higher potential than point 'b'

2.

27 V, point 'a' at a higher potential than point 'b'

3.

14 V, point 'b' at a higher potential than point 'a'

4.

27 V, point 'b' at a higher potential than point 'a'

Q.35 Gain margin is the factor by which gain of the system can be increased to make it:

Question ID : 7246223042

Chosen Option : 1

Ans 1. Stable

2. Unstable

3. Oscillatory

4. Damped

Q.36 A three phase induction motor rated for 500 kW, 400 V, 50 Hz and 6 poles runs at a speed of 960 rpm when fully loaded. Slip of the machine will be:

Question ID : 7246223036

Chosen Option : 1

Ans 1. 0.04

2. 0.01

3. 0.02

4. 0.03

Q.37 A circuit is disconnected by isolators when:

Question ID : 7246223040

Chosen Option : 2

Ans 1. circuit breaker is not open

2. there is no current in the line

3. line is on full load

4. line is energised

Q.38 A three phase induction motor is supplied with a 400 V, 50 Hz AC supply and has a full load speed of 940 revolutions per minute. The number of poles with which the magnetic field produced by stator current rotates are:

Ans 1. 8

2. 2

3. 4

4. 6

Question ID : 7246222984

Chosen Option : 4

Q.39 Arc in a circuit breaker is interrupted at:

Ans 1. Maximum current

2. Maximum voltage

3. Zero current

4. Minimum voltage

Question ID : 7246223041

Chosen Option : 3

Q.40 A unit step function on integration results in a:

Ans 1. unit doublet

2. unit step function

3. unit parabolic function

4. unit ramp function

Question ID : 7246223029

Chosen Option : 4

Q.41 In an inverting amplifier circuit built using OP-AMP, the input resistance is 10 k Ω and the feedback resistance is 240 k Ω . The closed loop gain of the amplifier is:

Ans 1. 24

2. 12

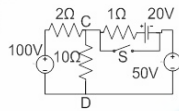
3. -12

4. -24

Question ID : 7246223021

Chosen Option : 4

Q.42



In the circuit shown above, voltage across CD when the switch S is closed is:

Ans 1. 150 V

2. 70 V

3. 50 V

4. 100 V

Question ID : 7246222967

Chosen Option : 3

Q.43 In a synchronous motor running with fixed excitation, if the load is increased three times, then its torque angle becomes nearly:

Ans 1. one-third

2. six times

3. nine times

4. thrice

Question ID : 7246223011

Chosen Option : --

Q.44 Angle between the rotor poles and stator poles in a synchronous motor is called the:

Ans 1. Synchronising angle

2. Torque angle

3. Retarding angle

4. Power Factor angle

Question ID : 7246223039

Chosen Option : 1

Q.45 Exciting current of a transformer has:

Ans 1. low magnitude and low power factor

2. low magnitude and high power factor

3. high magnitude and low power factor

Question ID : 7246222978

Chosen Option : 1

4. high magnitude and high power factor

Q.46 A synchronous condenser is virtually a/an:

- Ans 1. over-excited synchronous motor
 2. DC motor
 3. induction motor
 4. under-excited synchronous motor

Question ID : 7246223046

Chosen Option : 1

Q.47 Two alternators are running in parallel. If the field of one of the alternators is changed slightly, it will cause a change in:

- Ans 1. Load
 2. Frequency
 3. Speed
 4. Power Factor

Question ID : 7246223050

Chosen Option : 4

Q.48 The core of the transformer is laminated to:

- Ans 1. reduce copper loss
 2. reduce hysteresis loss
 3. reduce magnetic leakage
 4. reduce eddy current loss

Question ID : 7246222975

Chosen Option : 4

Q.49 A uniformly loaded DC distributor is fed at both ends with equal voltages. As compared to a similar distributor fed at one end only, the drop at the middle point is:

- Ans 1. twice
 2. half
 3. one-fourth
 4. one-third

Question ID : 7246223003

Chosen Option : 2

Q.50 In a power MOSFET, pinch-off occurs when (V_{DS} is the drain to source voltage, V_{GS} is the gate to source voltage V_T is the threshold voltage):

- Ans 1. $V_{DS} = V_{GS} - V_T$
 2. $V_{DS} \leq V_{GS} - V_T$
 3. $V_{GS} \leq V_T$
 4. $V_{DS} \geq V_{GS} - V_T$

Question ID : 7246223008

Chosen Option : --

Q.51 Addition of the hexadecimal numbers $(DEF.12)_{16}$ and $(12EF.C)_{16}$ gives:

- Ans 1. $(20DE.E2)_{16}$
 2. $(20DE.D2)_{16}$
 3. $(20DE.C2)_{16}$
 4. $(20DE.B2)_{16}$

Question ID : 7246223022

Chosen Option : 4

Q.52 The injected emf in the rotor of an induction motor must have:

- Ans 1. same frequency as the slip frequency
 2. low value for satisfactory speed control
 3. high value for satisfactory speed control
 4. zero frequency

Question ID : 7246223013

Chosen Option : 1

Q.53 A moving coil instrument has a resistance of $5\ \Omega$ and gives a full-scale reading of 100 mA. It is desired to use this meter as a voltmeter for a range of 0 to 500 V. The resistance required is:

- Ans 1. $4995\ \Omega$ in parallel
 2. $5\ \Omega$ in parallel
 3. $5\ \Omega$ in series
 4. $4995\ \Omega$ in series

Question ID : 7246222964

Chosen Option : 1

Q.54 Simplified form of the Boolean expression $Y = \overline{A}BC + \overline{A}(B)\overline{C} + (A)\overline{B}\overline{C}$ is:

- Ans 1. $Y = \overline{C}(\overline{A} + B)$

Question ID : 7246223026

Chosen Option : 3

2. $Y = C(\bar{A} + \bar{B})$

3. $Y = \bar{C}(\bar{A} + \bar{B})$

4. $Y = \bar{C}(A + \bar{B})$

Q.55 In power flow analysis for a voltage controlled bus, which of the following is the unknown quantity?

Ans 1. Real power

2. Phase angle of voltage

3. Absolute value of voltage

4. Reactive power

Question ID : 7246223038

Chosen Option : 4

Q.56 A 22 kV, 400 MVA generator has the reactance of 0.3 pu. The value of reactance on the new base of 25 kV and 200 MVA will be:

Ans 1. 0.116 pu

2. 0.32 pu

3. 0.58 pu

4. 0.232 pu

Question ID : 7246223037

Chosen Option : 1

Q.57 The following Boolean expression

$$Y = (A + \bar{B} + \bar{C})(A + \bar{B} + C)$$

can be realised using:

Ans 1. one AND gate

2. one NOT gate and one OR gate

3. one NOT gate and one AND gate

4. one OR gate

Question ID : 7246223023

Chosen Option : --

Q.58 Power generation cost reduces as:

Ans 1.

both diversity factor as well as load factor increase

2.

diversity factor decreases and load factor increases

3.

diversity factor increases and load factor decreases

4.

both diversity factor as well as load factor decrease

Question ID : 7246223002

Chosen Option : 1

Q.59 In a transformer having a turns ratio of 1 : 5 and a resistance of 1000 Ω connected across the secondary terminals, the resistance offered to current flowing in the primary will be:

Ans 1. 40 Ω

2. 60 Ω

3. 20 Ω

4. 200 Ω

Question ID : 7246223012

Chosen Option : 1

Q.60 A 3 phase inverter operates with 180 degree conduction mode. It is fed from a 500 V DC source and is supplying a purely resistive Y connected load. RMS values of the fundamental component of line and phase voltage, respectively, at the inverter output is:

Ans 1. 408 V, 225.16 V

2. 390 V, 235.56 V

3. 408 V, 235.56 V

4. 390 V, 225.16 V

Question ID : 7246223024

Chosen Option : --

Q.61 SCR can be turned off by reducing the anode current below:

Ans 1. latching current

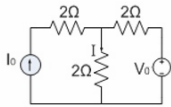
2. zero

Question ID : 7246223009

Chosen Option : 3

3. holding current
 4. any positive current

Q.62 In the circuit below, when $V_0 = 0$, $I = 4$ A. Find the current when $V_0 = 20$ V.



- Ans 1. 7 A
 2. 9 A
 3. 4 A
 4. 5 A

Question ID : 7246222962
 Chosen Option : 4

Q.63 Copper loss of a transformer at full load is 2800 W. At half load, the copper loss will be:

- Ans 1. 700 W
 2. 5600 W
 3. 1400 W
 4. 350 W

Question ID : 7246222986
 Chosen Option : 1

Q.64 In an Anderson bridge, unknown inductance is measured in terms of:

- Ans 1. known inductance
 2. known capacitance and resistance
 3. known resistance
 4. known inductance and resistance

Question ID : 7246223014
 Chosen Option : 4

Q.65 A 10 V reference source is designed from a 30 V supply using a Zener diode and a resistance. The test current of the Zener diode is 20 mA. If the supply voltage drops to 20 V, the Zener current will be:

- Ans 1. 5 mA
 2. 15 mA
 3. 20 mA
 4. 10 mA

Question ID : 7246222968
 Chosen Option : --

Q.66 What will be the value of capacitance that must be connected in parallel with a 50 pF capacitor to make an equivalent capacitance of 150 pF?

- Ans 1. 25 pF
 2. 50 pF
 3. 10 pF
 4. 100 pF

Question ID : 7246223032
 Chosen Option : 4

Q.67 Slope of the asymptote in Bode plot for a second-order system is:

- Ans 1. 18 dB per octave
 2. 6 dB per octave
 3. 3 dB per octave
 4. 12 dB per octave

Question ID : 7246223010
 Chosen Option : 4

Q.68 Which of the following capacitors have the least breakdown voltage?

- Ans 1. Ceramic
 2. Paper
 3. Mica
 4. Electrolytic

Question ID : 7246222998
 Chosen Option : 4

Q.69 Magnetising current of an induction motor is much larger than a two-winding transformer of the same rating. This is due to:

- Ans 1. small leakage
 2. rotating parts
 3. air gap
 4. laminations

Question ID : 7246222989
 Chosen Option : 3

<p>Q.70 Two parallel conducting plates 2 cm apart situated in air are connected to a source of constant voltage of 50 kV. The electric field intensity between the plates is:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. 100 kV/cm <input checked="" type="checkbox"/> 2. 200 kV/cm <input checked="" type="checkbox"/> 3. 25 kV/cm <input checked="" type="checkbox"/> 4. 50 kV/cm 	<p>Question ID : 7246222987 Chosen Option : 3</p>
<p>Q.71 Open circuit test is conducted on a transformer to get:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. core loss <input checked="" type="checkbox"/> 2. copper loss <input checked="" type="checkbox"/> 3. insulation resistance <input checked="" type="checkbox"/> 4. total loss 	<p>Question ID : 7246222996 Chosen Option : 1</p>
<p>Q.72 Which of the following devices does NOT require a continuous base drive?</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. MOSFET <input checked="" type="checkbox"/> 2. IGBT <input checked="" type="checkbox"/> 3. BJT <input checked="" type="checkbox"/> 4. SCR 	<p>Question ID : 7246223000 Chosen Option : --</p>
<p>Q.73 A domestic load consists of 10 lamps of 100 W each, three fans of 60 W each and two heaters of 1 kW each, all the loads operating for 1 hour. Energy consumed is measured using an energy-meter having a constant of 1500 revolutions per kWh. The number of revolutions recorded by the meter is 4500. The percentage error in the energy-meter reading is:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. -5.66% <input checked="" type="checkbox"/> 2. 5.66% <input checked="" type="checkbox"/> 3. 15.66% <input checked="" type="checkbox"/> 4. -15.66% 	<p>Question ID : 7246222965 Chosen Option : --</p>
<p>Q.74 Two inductive coils which are close to each other have a mutual inductance of 0.3 H. Current through one coil is increased from 1 A to 4 A in 0.03 s. The voltage induced in the other coil is:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. 15 V <input checked="" type="checkbox"/> 2. 3 V <input checked="" type="checkbox"/> 3. 1.5 V <input checked="" type="checkbox"/> 4. 30 V 	<p>Question ID : 7246222974 Chosen Option : 4</p>
<p>Q.75 A three phase 20 MVA, 10 kV alternator has internal reactance of 5% and negligible resistance. What is the external reactance per phase required to be connected in series with the alternator so that the steady current on short circuit does NOT exceed 8 times the full load current?</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. 2.38 Ω <input checked="" type="checkbox"/> 2. 1.38 Ω <input checked="" type="checkbox"/> 3. 0.38 Ω <input checked="" type="checkbox"/> 4. 3.38 Ω 	<p>Question ID : 7246223004 Chosen Option : --</p>
<p>Q.76 Impulse response of an LTI system is $h(t) = e^{-t}u(t)$. Suppose if the input $x(t) = u(t)$, then the output would be:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. $Y(t) = (1 - 2e^{-t})u(t)$ <input checked="" type="checkbox"/> 2. $Y(t) = (1 - e^{-2t})u(t)$ <input checked="" type="checkbox"/> 3. $Y(t) = (1 - e^{-t})u(t)$ <input checked="" type="checkbox"/> 4. $Y(t) = (1 - 2e^{-2t})u(t)$ 	<p>Question ID : 7246222966 Chosen Option : 3</p>
<p>Q.77 A single phase semi-converter is operated from 120 V, 50 Hz AC supply at a firing angle of 30 degrees. Load is such that the load current is continuous and ripple free. Displacement factor of the converter is:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. 0.77 <input checked="" type="checkbox"/> 2. 0.97 <input checked="" type="checkbox"/> 3. 0.67 <input checked="" type="checkbox"/> 4. 0.57 	<p>Question ID : 7246222997 Chosen Option : --</p>
<p>Q.78 Laplace transform of $(t \sin \omega t)$ is:</p> <p>Ans</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> 1. $\frac{\omega s}{(s^2 + \omega^2)^2}$ <input checked="" type="checkbox"/> 2. $\frac{2\omega s}{(s^2 + \omega^2)}$ 	<p>Question ID : 7246222980 Chosen Option : 1</p>

✓ 3. $\frac{2\omega s}{(s^2 + \omega^2)^2}$

✗ 4. $\frac{\omega s}{(s^2 + \omega^2)}$

Q.79 To a unity feedback system whose open loop transfer function is $G(s) = \frac{K_1(2s+1)}{s(4s+1)(s+1)^2}$, Input $R(t) = 1 + 5t$ is applied. It is required that steady state error should be less than or equal to 0.1. Minimum value of K_1 to satisfy this condition is:

Question ID : 7246222983

Chosen Option : 3

- Ans
- ✗ 1. $K_1 \geq 5$
 - ✗ 2. $K_1 \geq 20$
 - ✓ 3. $K_1 \geq 50$
 - ✗ 4. $K_1 \geq 10$

Q.80 If the damping factor of a control system is unity, its response will be:

Question ID : 7246223001

Chosen Option : 4

- Ans
- ✗ 1. oscillatory
 - ✗ 2. un-damped
 - ✗ 3. under-damped
 - ✓ 4. critically damped

Q.81 Input to a controller is the following signal:

Question ID : 7246223016

Chosen Option : 1

- Ans
- ✓ 1. Error signal
 - ✗ 2. Servo signal
 - ✗ 3. Desired Variable value
 - ✗ 4. Sensed signal

Q.82 In a synchronous generator, the effect of armature reaction is completely magnetising if the power factor of the load is:

Question ID : 7246223043

Chosen Option : 3

- Ans
- ✗ 1. Unity
 - ✗ 2. Zero lagging
 - ✓ 3. Zero leading
 - ✗ 4. 0.5

Q.83 A conductor due to a sag between the two supports takes the form of:

Question ID : 7246223045

Chosen Option : 3

- Ans
- ✗ 1. Ellipse
 - ✗ 2. Semicircle
 - ✓ 3. Catenary
 - ✗ 4. Triangle

Q.84 Two charges $6 \cdot 10^{-8}$ coulombs and $3 \cdot 10^{-8}$ coulombs are located 20 cm apart in a vacuum. If these charges are separated by the same distance in kerosene having a relative permittivity of 2, then the ratio of force of interaction between them in kerosene to the force in vacuum is:

Question ID : 7246222981

Chosen Option : --

- Ans
- ✗ 1. 0.81
 - ✗ 2. 1.62
 - ✗ 3. 0.41
 - ✓ 4. 0.5

Q.85 For a unity feedback system whose open loop transfer function is given by $G(s) = \frac{50}{(s+0.1s)(1+2s)}$, its position error constant is:

Question ID : 7246222977

Chosen Option : 1

- Ans
- ✓ 1. 50
 - ✗ 2. 25
 - ✗ 3. 0
 - ✗ 4. 1

Q.86 Any signal that tends to affect the controlled variable other than the reference command signal is termed as:

Question ID : 7246223025

Chosen Option : 2

- Ans
- ✓ 1. Disturbance signal
 - ✗ 2. Control signal
 - ✗ 3. Command signal

✗ 4. Reference Input signal

Q.87 A sinusoidal voltage of $v(t) = 100\cos(377t)$ is applied to a nonlinear load, resulting in a current which is expressed in Fourier series form as $i(t) = 8 + 15\cos(377t + 30^\circ) + 6\cos[2(377)t + 45^\circ] + 2\cos[3(377)t + 60^\circ]$. Effective value of the current is:

- Ans
- ✗ 1. 10 A
 - ✓ 2. 14 A
 - ✗ 3. 16 A
 - ✗ 4. 12 A

Question ID : 7246222993

Chosen Option : --

Q.88 If an instrument has cramped scale for larger values, then it follows:

- Ans
- ✓ 1. Logarithmic law
 - ✗ 2. Linear law
 - ✗ 3. Square law
 - ✗ 4. Uniform law

Question ID : 7246223048

Chosen Option : 3

Q.89 A half wave rectifier built using a diode is connected to a sinusoidal voltage of 120 V (rms) at a frequency of 50 Hz. The load resistance is 5 Ω . The power absorbed by the resistor is:

- Ans
- ✗ 1. 1220 W
 - ✗ 2. 610 W
 - ✗ 3. 720 W
 - ✓ 4. 1440 W

Question ID : 7246222994

Chosen Option : --

Q.90 Four positive charges 10^{-9} coulombs each are located on the x-y plane at points (0,0), (0,1), (1,1) and (1,0) m. The electric field and potential at (0.5, 0.5) m is respectively:

- Ans
- ✓ 1. 0 and 51 V
 - ✗ 2. 0 and 12.5 V
 - ✗ 3. 0 and 18 V
 - ✗ 4. 0 and 25.5 V

Question ID : 7246222990

Chosen Option : --

Section : General English

Q.1 Select the option that gives the correct indirect form of the given sentence.

She said, "I will do my work myself."

She said that

- Ans
- ✗ 1. she will do her work herself.
 - ✗ 2. I would do my work myself.
 - ✗ 3. she would do my work herself.
 - ✓ 4. she would do her work herself.

Question ID : 7246223060

Chosen Option : 4

Q.2 Select the correct passive form of the given sentence.

The river water flooded the fields and damaged the crops.

- Ans
- ✗ 1. The crops were flooded and the fields were damaged by the river water.
 - ✓ 2. The fields were flooded and the crops were damaged by the river water.
 - ✗ 3. The river water has flooded the fields and the crops were damaged.
 - ✗ 4. The fields have been flooded and the crops are damaged by the river water.

Question ID : 7246223059

Chosen Option : 1

Q.3 In the following sentences four words or phrases have been underlined. One of them is incorrect. Choose the incorrect word or phrase from the given options.

So quickly he ran that he reached the bus stop just in time for his bus to office.

- Ans
- ✗ 1. that
 - ✗ 2. So quickly
 - ✗ 3. in time
 - ✓ 4. he ran

Question ID : 7246223057

Chosen Option : 1

Q.4

Question ID : 7246223055

Chosen Option : --

Select the antonym of the given word.

EXPEDITE

- Ans
- 1. advance
 - 2. assist
 - 3. press
 - 4. delay

Q.5 Select the most appropriate option to fill in the blank.

The teacher cannot leave the school _____ every child has left for home.

- Ans
- 1. for
 - 2. by
 - 3. until
 - 4. after

Question ID : 7246223052

Chosen Option : 3

Q.6 Select the most appropriate option which means the same as the given word / group of words.

to make a person do something by giving reasons

- Ans
- 1. order
 - 2. appeal
 - 3. request
 - 4. persuade

Question ID : 7246223056

Chosen Option : 2

Q.7 Select the wrongly spelt word.

- Ans
- 1. gripes
 - 2. grievance
 - 3. grevieous
 - 4. greasy

Question ID : 7246223058

Chosen Option : 3

Q.8 Select the most appropriate option to fill in the blank.

_____ gentleman who lives across the road is _____ architect.

- Ans
- 1. A ; an
 - 2. The ; an
 - 3. The ; the
 - 4. A ; a

Question ID : 7246223051

Chosen Option : 1

Q.9 Select the most appropriate option to fill in the blank.

He won the match quite easily _____ he was out of practice.

- Ans
- 1. even though
 - 2. in case
 - 3. even if
 - 4. so that

Question ID : 7246223054

Chosen Option : 2

Q.10 Select the most appropriate option to fill in the blank.

After the driver _____ the car out of the bush, we climbed back into the car.

- Ans
- 1. backs
 - 2. is backing
 - 3. has backed
 - 4. had backed

Question ID : 7246223053

Chosen Option : 4

Section : Quantitative Aptitude

Q.1 The value of $\frac{0.5555 \times 20.25 \times 3.555}{2.25 \times 0.17775 \times 2.222} \div \frac{\frac{1}{5} + \frac{1}{5} \text{ of } \frac{1}{5}}{\frac{1}{5} + \frac{1}{5} \times \frac{1}{5}}$ lies between:

Question ID : 7246223061

Chosen Option : --

- Ans 1. 1.41 and 1.81
 2. 0.41 and 0.81
 3. 0.11 and 0.41
 4. 0.81 and 1.41

Q.2 Twelve persons can construct a 320 m long wall in 32 days working 8 hours a day. In how many days can 40 persons construct a 250 m long wall working 10 hours a day?

- Ans 1. 9
 2. 10
 3. 8
 4. 6

Question ID : 7246223074

Chosen Option : 4

Q.3 In a class of 140 students, the ratio of the number of boys to that of girls is 3 : 4. The ratio of number of students who passed in a test to those who failed is 3 : 2. Among the boys, the ratio of the number of those passed to those who failed is 1 : 2. What is the ratio of the number of girls who passed to those who failed?

- Ans 1. 3 : 1
 2. 3 : 2
 3. 3 : 4
 4. 4 : 1

Question ID : 7246223071

Chosen Option : 4

Q.4 A certain sum amounts to ₹ 34400 in 6 years and to ₹ 24800 in 2 years at simple interest. The same sum will amount to ₹ x in $2\frac{1}{2}$ years at the same rate, when the interest is compounded yearly. What is the value of x (nearest to a whole number)?

- Ans 1. ₹ 27095
 2. ₹ 25088
 3. ₹ 26690
 4. ₹ 26593

Question ID : 7246223068

Chosen Option : 4

Q.5 A boat travels 18 km upstream and 14 km downstream in 4 hours. It travels 3 km upstream and $10\frac{1}{2}$ km downstream in $1\frac{1}{2}$ hours. What is the speed (in km/h) of the stream?

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

Question ID : 7246223073

Chosen Option : --

Q.6 A, B and C enter into a partnership with their capital in the ratio $\frac{2}{5} : \frac{3}{4} : \frac{5}{8}$. After 4 months A increased his capital by 50%, B increased his capital by 25% and C decreased his capital by 20%. At the end of a year, there was a profit of ₹ 7800. What is the share of B in the profit?

- Ans 1. ₹ 2560
 2. ₹ 4200
 3. ₹ 3500
 4. ₹ 3700

Question ID : 7246223072

Chosen Option : --

Q.7 A can complete a certain work in 30 days. A started the work and B joined him after 4 days and the work was completed in total 20 days. In how many days can B alone complete the work?

- Ans 1. 48
 2. 42
 3. 50
 4. 45

Question ID : 7246223069

Chosen Option : --

Q.8 In a constituency 60% of voters are males and rest are females. 40% of male-voters are literate and 20% of female voters are literates. By what percent is the number of literate males less than that of illiterate females?

- Ans 1. 20
 2. 25
 3. 30
 4. 40

Question ID : 7246223062

Chosen Option : 2

Q.9 Three friends A, B and C invest their capitals in a business in the ratio 8:3:9. At the end of every quarter A halves his capital, whereas B doubles his capital and C leaves his capital as it is. At the end of year, if share of profit of B is ₹ 1.8 lakh then what is the total profit (in lakh)?

- Ans 1. ₹ 3.64
 2. ₹ 3.36
 3. ₹ 3.84

Question ID : 7246223065

Chosen Option : 4

4. ₹ 3.48

Q.10 The value of a stone varies directly as the square of its weight. If a stone worth ₹ 12100 is divided into two pieces in the ratio 3:5, the loss in value is closest to:

- Ans 1. 40.1%
 2. 41.3%
 3. 39.7%
 4. 40.2%

Question ID : 7246223064

Chosen Option : --

Q.11 A person marks his goods 30% above the cost price. He sells 60% of the goods at the marked price and the rest at 15% loss. What is his gain percent on the whole transactions?

- Ans 1. 15
 2. 12
 3. 9
 4. $10\frac{1}{2}$

Question ID : 7246223063

Chosen Option : --

Q.12 The value of $\left[\frac{7\sqrt{2}-4\sqrt{3}}{5\sqrt{2}-4\sqrt{3}} + \frac{6\sqrt{2}-3\sqrt{3}}{6\sqrt{2}-5\sqrt{3}} \right] \times \frac{7}{3+\sqrt{2}}$, correct to two decimal places, is:

- Ans 1. 3.12
 2. 3.17
 3. 3.23
 4. 3.29

Question ID : 7246223066

Chosen Option : --

Q.13 Amit travelled at 48 km/h from a place A to B in a certain time. In the return journey, he covered $33\frac{1}{3}\%$ of the journey in $66\frac{2}{3}\%$ of the initial time. What should be his speed for the rest of journey so that he can cover the entire return journey in the same time that he took for the onward journey?

- Ans 1. 96 km/h
 2. 80 km/h
 3. 108 km/h
 4. 64 km/h

Question ID : 7246223067

Chosen Option : --

Q.14 If $x+y+z=1$, $xy+yz+zx=-1$ and $xyz=-1$ then the value of $\sqrt{x^3+y^3+z^3}$ is:

- Ans 1. -1
 2. -2
 3. 1
 4. 2

Question ID : 7246223070

Chosen Option : 4

Q.15 If $x+y=1$, and $x^2y^2-2xy=12$, then the value of $\sqrt{x^4+y^4}$ is:

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

Question ID : 7246223075

Chosen Option : --

Section : Logical Ability

Q.1 Select the figure that correctly completes the image given below:



- Ans 1.
 2.
 3.

Question ID : 7246223080

Chosen Option : 4

X 4.



Q.2 Lalit scored 72 marks in 100-mark test. Shubham scored 8 marks more than Lalit but 6 marks less than Sunil. Ravi scored 6 marks less than Daniel, and 7 marks more than Sunil. Who scored the second lowest marks in the given test?

- Ans**
- X 1. Daniel
 - X 2. Sunil
 - ✓ 3. Shubham
 - X 4. Ravi

Question ID : 7246223082
Chosen Option : 3

Q.3 An address is given below which has been reproduced against the four alternatives. Of them, three have some mistakes or the other, while one is exactly the same. Select the option that is exactly the same as the given address.

Shri. Laxman Prasad Sharma
H. No. 401, Chorangi Bazar,
Dadari, Fatehpur,
Rajasthan- 230015

- Ans**
- ✓ 1. Shri. Laxman Prasad Sharma
H. No. 401, Chorangi Bazar,
Dadari, Fatehpur,
Rajasthan – 230015
 - X 2. Shri. Laxman Prasad Sharma
H. No. 401, Chorangi Bazar,
Dadari, Fatehpur,
Rajasthan – 230005
 - X 3. Shri. Laxman Prasad Sharma
H. No. 401, Chourangi Bazar,
Dadari, Fatehpur,
Rajasthan – 230015
 - X 4. Shri. Laxman Prasad Sharma
H. No. 401, Chorangi Bazar,
Dadari, Fatehpur,
Rajasthan – 230015

Question ID : 7246223084
Chosen Option : 1

Q.4 What will come in place of the blank in the series?

23, 31, 41, 47, _____

- Ans**
- X 1. 54
 - X 2. 50
 - X 3. 52
 - ✓ 4. 59

Question ID : 7246223081
Chosen Option : 4

Q.5 If 'S' stands for 'Addition', '@' stands for 'Subtraction', '#' stands for 'Multiplication', and 'C' stands for 'Division', then $81 \text{ C } 9 \# 2 \text{ S } 7 \text{ @ } 0 = ?$

- Ans**
- X 1. 18
 - X 2. 12
 - X 3. 34
 - ✓ 4. 25

Question ID : 7246223079
Chosen Option : 4

Q.6 If book is called pen; pen is called ruler; ruler is called pen-stand; and pen-stand is called compass, what will be used for writing?

- Ans**
- X 1. Book
 - X 2. Pen-stand
 - X 3. Compass
 - ✓ 4. Ruler

Question ID : 7246223083
Chosen Option : 4

Q.7 Select the pair of words from the given options that shares the same relationship as the word pair below does.

Contrary : Conflicting

- Ans**
- X 1. Right : Angle
 - X 2. Thunder : Lightning
 - ✓ 3. Contemporary: Modern
 - X 4. Criminal : Stubborn

Question ID : 7246223077
Chosen Option : 2

Q.8

Select the option that is related to the third term in the same way as the second term is related to the first term.

Gold : Carat :: Cloth : ?

- Ans
- 1. Miligram
 - 2. Meter
 - 3. Weaver
 - 4. Ream

Question ID : 7246223076

Chosen Option : 2

Q.9 Three out of the four words below are similar in a certain way and one is different. Select the option that is different from the others.

- Ans
- 1. Shampoo
 - 2. Soap
 - 3. Bathrobe
 - 4. Conditioner

Question ID : 7246223078

Chosen Option : 3

Q.10 Rutuja is Narang's only sibling. Narang's wife, Reena, has a brother, Dinesh. Sunita is Rutuja's only niece. How is Sunita related to Dinesh?

- Ans
- 1. Sister
 - 2. Niece
 - 3. Sister-in-law
 - 4. Cannot be determined

Question ID : 7246223085

Chosen Option : 2

Section : General Awareness

Q.1 As per Constitution of India, how many persons can be nominated to the Rajya Sabha?

- Ans
- 1. 26
 - 2. 33
 - 3. 19
 - 4. 12

Question ID : 7246223090

Chosen Option : 4

Q.2 Girija Devi was the exponent of which type of Hindustani classical music?

- Ans
- 1. Dhamar
 - 2. Khyal
 - 3. Ghazal
 - 4. Thumri

Question ID : 7246223100

Chosen Option : --

Q.3 _____ of the Constitution of India provides the Directive Principles of State Policy.

- Ans
- 1. Part I
 - 2. Part XII
 - 3. Part VIII
 - 4. Part IV

Question ID : 7246223091

Chosen Option : 2

Q.4 After being withdrawn in March 1931, Civil Disobedience Movement was re-launched in the year:

- Ans
- 1. 1944
 - 2. 1941
 - 3. 1932
 - 4. 1937

Question ID : 7246223087

Chosen Option : --

Q.5 Which virus makes changes to a disk's file system?

- Ans
- 1. Stealth virus
 - 2. Cluster virus
 - 3. Polymorphic virus
 - 4. Macro virus

Question ID : 7246223096

Chosen Option : --

Q.6 Who among the following had not served ever as Minister of Finance?

- Ans
- 1. Indira Gandhi
 - 2. Manmohan Singh
 - 3. Rajiv Gandhi
 - 4. Lal Krishna Advani

Question ID : 7246223093

Chosen Option : 1

<p>Q.7 The persons appointed by king Ashoka to report to him the general and public affairs, leading the king to take necessary steps, were called as:</p> <p>Ans <input checked="" type="checkbox"/> 1. Rajukas <input checked="" type="checkbox"/> 2. Amatyas <input checked="" type="checkbox"/> 3. Panyadhakshas <input checked="" type="checkbox"/> 4. Pativedakas</p>	<p>Question ID : 7246223086 Chosen Option : --</p>
<p>Q.8 On which of the following rivers Bhakra Nangal Dam is constructed?</p> <p>Ans <input checked="" type="checkbox"/> 1. Sutlej <input checked="" type="checkbox"/> 2. Ganga <input checked="" type="checkbox"/> 3. Mahanadi <input checked="" type="checkbox"/> 4. Beas</p>	<p>Question ID : 7246223089 Chosen Option : --</p>
<p>Q.9 India secured _____ rank on Global Innovation Index 2017.</p> <p>Ans <input checked="" type="checkbox"/> 1. 70th <input checked="" type="checkbox"/> 2. 60th <input checked="" type="checkbox"/> 3. 100th <input checked="" type="checkbox"/> 4. 80th</p>	<p>Question ID : 7246223094 Chosen Option : --</p>
<p>Q.10 Which of the following allergens causes hay fever?</p> <p>Ans <input checked="" type="checkbox"/> 1. Sea-food <input checked="" type="checkbox"/> 2. Penicillin <input checked="" type="checkbox"/> 3. Pollen <input checked="" type="checkbox"/> 4. Nuts</p>	<p>Question ID : 7246223098 Chosen Option : --</p>
<p>Q.11 Which of the following is correct?</p> <p>Ans <input checked="" type="checkbox"/> 1. Two members of the Lok Sabha are nominated by the Speaker of the Lok Sabha. <input checked="" type="checkbox"/> 2. Six members of the Lok Sabha are nominated by the Prime Minister. <input checked="" type="checkbox"/> 3. Two members of the Lok Sabha are nominated by the President. <input checked="" type="checkbox"/> 4. Four members of the Lok Sabha are nominated by the President.</p>	<p>Question ID : 7246223092 Chosen Option : --</p>
<p>Q.12 Who among the following has the sole right to mint coins in India?</p> <p>Ans <input checked="" type="checkbox"/> 1. The Reserve Bank of India <input checked="" type="checkbox"/> 2. State Bank of India <input checked="" type="checkbox"/> 3. The Government of India <input checked="" type="checkbox"/> 4. Union Bank of India</p>	<p>Question ID : 7246223095 Chosen Option : 1</p>
<p>Q.13 Which among the following is a Saprophytic Fungus?</p> <p>Ans <input checked="" type="checkbox"/> 1. Cucuta <input checked="" type="checkbox"/> 2. Algae <input checked="" type="checkbox"/> 3. Tapeworm <input checked="" type="checkbox"/> 4. Penicillium</p>	<p>Question ID : 7246223097 Chosen Option : --</p>
<p>Q.14 In which of the following states is Stakna Monastery situated?</p> <p>Ans <input checked="" type="checkbox"/> 1. Himachal Pradesh <input checked="" type="checkbox"/> 2. Odisha <input checked="" type="checkbox"/> 3. Sikkim <input checked="" type="checkbox"/> 4. Jammu and Kashmir</p>	<p>Question ID : 7246223099 Chosen Option : --</p>
<p>Q.15 Where is Kaziranga National Park located?</p> <p>Ans</p>	<p>Question ID : 7246223088 Chosen Option : 2</p>

- 1. Manipur
- 2. Assam
- 3. Delhi
- 4. Gujarat

