



Participant ID	
Participant Name	
Test Center Name	
Test Date	29/09/2024
Test Time	1:30 PM - 3:30 PM
Subject	Junior Engineering Assistant IV Instrumentation

Section : Subject Knowledge

Q.1 Which of the following statements is true about TRIAC?

- Ans A. It is a two-terminal unidirectional device.
 B. It is a two-terminal bidirectional device.
 C. It is a three-terminal bidirectional device.
 D. It is a three-terminal unidirectional device.

Question ID : 630680201311
Option 1 ID : 630680780594
Option 2 ID : 630680780592
Option 3 ID : 630680780591
Option 4 ID : 630680780593
Status : Answered
Chosen Option : C

Q.2 Which type of cameras are often used in a distributed control system (DCS) to monitor processes?

- Ans A. Thermovision cameras
 B. Security cameras
 C. High-speed cameras
 D. Digital cameras

Question ID : 630680963831
Option 1 ID : 6306803779875
Option 2 ID : 6306803779876
Option 3 ID : 6306803779877
Option 4 ID : 6306803779874
Status : Answered
Chosen Option : A

Q.3 _____ produces an EMF due the temperature difference at the junction of two dissimilar metals.

- Ans A. Thermocouple
 B. Strain gauge
 C. Resistance temperature detector
 D. Thermistor

Question ID : 630680195089
Option 1 ID : 630680756847
Option 2 ID : 630680756848
Option 3 ID : 630680756845
Option 4 ID : 630680756846
Status : Answered
Chosen Option : A

Q.4 In a series R-L-C circuit, the resonant frequency is 500 Hz. Which of the following statements is/are correct?
 (a) At frequency 400 Hz the circuit is capacitive in nature.
 (b) At frequency 300 Hz the circuit is inductive in nature.
 (c) The maximum voltage across the capacitor alone occurs at a frequency < 500 Hz.
 (d) The maximum voltage across the inductor alone occurs at a frequency > 500 Hz.

- Ans A. c and d only
 B. a, c and d
 C. a, b, c and d
 D. a, b and d

Question ID : 630680209217
 Option 1 ID : 630680811085
 Option 2 ID : 630680811084
 Option 3 ID : 630680811083
 Option 4 ID : 630680811086
 Status : Answered
 Chosen Option : B

Q.5 Which of the following is NOT a pattern of a ball valve?

- Ans A. Reduced Port
 B. Full Port
 C. Venture Port
 D. Rectangular Port

Question ID : 630680969338
 Option 1 ID : 6306803801857
 Option 2 ID : 6306803801856
 Option 3 ID : 6306803801855
 Option 4 ID : 6306803801858
 Status : Answered
 Chosen Option : B

Q.6 For which of the following substances under fire, can TEC powder based extinguisher NOT be used?

- Ans A. Natural gas
 B. Potassium
 C. Sodium
 D. Lithium

Question ID : 6306801000147
 Option 1 ID : 6306803924722
 Option 2 ID : 6306803924721
 Option 3 ID : 6306803924720
 Option 4 ID : 6306803924719
 Status : Answered
 Chosen Option : A

Q.7 In a radiation pyrometer, which of the following principles is utilised for temperature measurement?

- Ans A. Wien's displacement law
 B. Hall effect
 C. Stefan-Boltzmann law
 D. Thermocouple effect

Question ID : 630680392708
 Option 1 ID : 6306801531171
 Option 2 ID : 6306801531173
 Option 3 ID : 6306801531172
 Option 4 ID : 6306801531170
 Status : Answered
 Chosen Option : C

Q.8 Which of the following can be considered as an advantage of a transducer?

- Ans A. Limited applicability
 B. Low sensitivity to environmental conditions
 C. Very high power dissipation
 D. High efficiency of energy conversion

Question ID : 630680374875
 Option 1 ID : 6306801460668
 Option 2 ID : 6306801460670
 Option 3 ID : 6306801460669
 Option 4 ID : 6306801460667
 Status : Answered
 Chosen Option : D

Q.9 Ramp type digital voltmeter operates on the principle of _____ conversion.

- Ans A. voltage to time
 B. time to voltage
 C. frequency to voltage
 D. voltage to frequency

Question ID : 630680195052
 Option 1 ID : 630680756697
 Option 2 ID : 630680756699
 Option 3 ID : 630680756700
 Option 4 ID : 630680756698
 Status : Answered
 Chosen Option : C

Q.10 The maximum length of a Process Field Bus (PROFIBUS) network is _____.

- Ans A. 900 m
 B. 600 m
 C. 1500 m
 D. 1200 m

Question ID : 630680961864
 Option 1 ID : 6306803771650
 Option 2 ID : 6306803771649
 Option 3 ID : 6306803771652
 Option 4 ID : 6306803771651
 Status : Answered
 Chosen Option : D

Q.11 Which of the following options represents characteristic(s) of bellows?

- Ans A. Flexibility and ductility
 B. High tensile strength and solid nature
 C. High density
 D. Lustrous appearance and malleability

Question ID : 630680392695
 Option 1 ID : 6306801531119
 Option 2 ID : 6306801531118
 Option 3 ID : 6306801531121
 Option 4 ID : 6306801531120
 Status : Answered
 Chosen Option : B

Q.12 Which of the following types of PLC is a control system that uses programmable hardware components instead of a fixed-function controller?

- Ans A. Modular PLC
 B. Compact PLC
 C. Both modular PLC and compact PLC
 D. Neither modular PLC nor compact PLC

Question ID : 630680194451
 Option 1 ID : 630680754338
 Option 2 ID : 630680754337
 Option 3 ID : 630680754339
 Option 4 ID : 630680754340
 Status : Answered
 Chosen Option : B

Q.13 In the construction of a DC generator, the number of conductors that lie between the starting of one coil and the starting of the next coil is called _____.

- Ans A. front pitch
 B. resultant pitch
 C. full pitch
 D. back pitch

Question ID : 630680379029
 Option 1 ID : 6306801477163
 Option 2 ID : 6306801477165
 Option 3 ID : 6306801477166
 Option 4 ID : 6306801477164
 Status : Answered
 Chosen Option : B

Q.14 Using 2's complement, the value of $0011 - 0101$ is _____.

- Ans
- A. - (1110)
 - B. (1110)
 - C. - (0010)
 - D. (0010)

Question ID : 630680192214
 Option 1 ID : 630680745460
 Option 2 ID : 630680745459
 Option 3 ID : 630680745458
 Option 4 ID : 630680745457
 Status : Answered
 Chosen Option : C

Q.15 Which of the following is a constituent of dry chemical powder?

- Ans
- A. Mono Ammonium Phosphate
 - B. Aluminum Nitrate
 - C. Ammonium Hydroxide
 - D. Aluminum Phosphate

Question ID : 630680999357
 Option 1 ID : 6306803921360
 Option 2 ID : 6306803921358
 Option 3 ID : 6306803921359
 Option 4 ID : 6306803921361
 Status : Answered
 Chosen Option : A

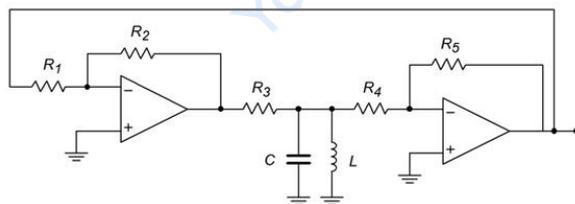
Q.16 Which of the following statements are correct for ideal transformer?

- I. At no load condition primary draws the magnetising current only.
- II. The magnetising current is zero and in phase with the supply voltage V_1 .
- III. Self-induced EMF E_1 is equal at every instant and opposite to mutually induced E_2 .
- IV. Self-induced EMF E_1 is equal at every instant and opposite to supply voltage V .

- Ans
- A. Statements I, II and IV are correct
 - B. Statements I and IV are correct
 - C. Statements I and III are correct
 - D. Statements I, II and III are correct

Question ID : 630680227803
 Option 1 ID : 630680883890
 Option 2 ID : 630680883889
 Option 3 ID : 630680883888
 Option 4 ID : 630680883887
 Status : Answered
 Chosen Option : C

Q.17 Consider an OP-AMP-based basic oscillator circuit shown in the figure which has network 1 followed by network 2. Identify the configurations of both the networks.



- Ans
- A. Network 1: Non-inverting configuration; Network 2: Non-inverting configuration
 - B. Network 1: Non-inverting configuration; Network 2: Inverting configuration
 - C. Network 1: Inverting configuration; Network 2: Non-inverting configuration
 - D. Network 1: Inverting configuration; Network 2: Inverting configuration

Question ID : 630680952524
 Option 1 ID : 6306803734730
 Option 2 ID : 6306803734731
 Option 3 ID : 6306803734729
 Option 4 ID : 6306803734732
 Status : Answered
 Chosen Option : B

Q.18 ट्रांसफॉर्मर kVA में रेटेड होते हैं। ट्रांसफॉर्मर की रेटिंग के संबंध में निम्नलिखित में से कौन-सा कथन सही नहीं है?

- Ans
- A. ट्रांसफॉर्मर में होने वाली हानियां लोड के शक्ति गुणक पर निर्भर नहीं करती हैं।
 - B. हानियां केवल ताम्र हानियों पर निर्भर करती हैं।
 - C. ट्रांसफॉर्मर में होने वाली हानियां वोल्टेज और धारा पर निर्भर करती हैं।
 - D. ट्रांसफॉर्मर में कौड़ी हानि वोल्टेज पर निर्भर करती है और ताम्र हानि धारा पर निर्भर करती है।

Question ID : 630680227804
 Option 1 ID : 630680883891
 Option 2 ID : 630680883892
 Option 3 ID : 630680883893
 Option 4 ID : 630680883894
 Status : Answered
 Chosen Option : B

Q.19 What does an editor do in a programme for presentations?

- Ans
- A. Formats graphic images
 - B. Enhances network security
 - C. Inserts and formats text
 - D. Writes and executes presentation scripts

Question ID : 630680791326
 Option 1 ID : 6306803101021
 Option 2 ID : 6306803101020
 Option 3 ID : 6306803101022
 Option 4 ID : 6306803101023
 Status : Answered
 Chosen Option : A

Q.20 Which of the following is the correct definition of the resolution of an instrument?

- Ans
- A. It is a measure of repeatability.
 - B. It is the degree of exactness of measurement.
 - C. It is the deviation from the true value.
 - D. It is the smallest change in the measured variable to which an instrument responds.

Question ID : 630680205105
 Option 1 ID : 630680795286
 Option 2 ID : 630680795284
 Option 3 ID : 630680795283
 Option 4 ID : 630680795285
 Status : Answered
 Chosen Option : C

Q.21 The material used for shunt required to extend the range of MI instrument should have

- Ans
- A. high temperature coefficient of resistance
 - B. high shunt resistance
 - C. low thermo dielectric voltage drop
 - D. high thermo dielectric voltage drop

Question ID : 630680396167
 Option 1 ID : 6306801544782
 Option 2 ID : 6306801544783
 Option 3 ID : 6306801544781
 Option 4 ID : 6306801544780
 Status : Answered
 Chosen Option : A

Q.22 Which of the following is the advantage of an electromagnetic flow meter?

- Ans
- A. The output is unaffected by changes in the characteristics of liquid.
 - B. The output is non linearly related to the flow rate.
 - C. It is used to measure temperature.
 - D. It is used to measured flow in pipes of large size only.

Question ID : 630680958537
 Option 1 ID : 6306803758146
 Option 2 ID : 6306803758147
 Option 3 ID : 6306803758148
 Option 4 ID : 6306803758149
 Status : Answered
 Chosen Option : A

Q.23 With which of the following types of controller is hysteresis associated?

- Ans
- A. Proportional controller
 - B. Derivative controller
 - C. Integral controller
 - D. ON-OFF controller

Question ID : 630680194468
 Option 1 ID : 630680754406
 Option 2 ID : 630680754408
 Option 3 ID : 630680754407
 Option 4 ID : 630680754405
 Status : Answered
 Chosen Option : D

Q.24 What is the primary role of a remote terminal unit (RTU) in a SCADA system?

- Ans
- A. To collect real-time data and information from sensors
 - B. To serve as a computing station
 - C. To act as an interface
 - D. To act as a wired connecting network

Question ID : 630680963846
 Option 1 ID : 6306803779935
 Option 2 ID : 6306803779936
 Option 3 ID : 6306803779934
 Option 4 ID : 6306803779937
 Status : Answered
 Chosen Option : A

Q.25 An SCR turns off from conducting state to blocking state upon _____.

- Ans
- A. reducing gate current
 - B. reversing gate voltage
 - C. reducing anode current below the holding current value
 - D. applying AC to the gate

Question ID : 630680201308
 Option 1 ID : 630680780579
 Option 2 ID : 630680780580
 Option 3 ID : 630680780581
 Option 4 ID : 630680780582
 Status : Answered
 Chosen Option : A

Q.26 A rectifier type instrument uses a full wave bridge rectifier and has its scale calibrated in terms of RMS value of a sine wave. It indicates a current of 3.33 A. When measuring a voltage having triangular wave shape, the peak value of the current is _____.

- Ans
- A. 6 A
 - B. 4 A
 - C. $3/\sqrt{2}$ A
 - D. $3\sqrt{2}$ A

Question ID : 630680955093
 Option 1 ID : 6306803744446
 Option 2 ID : 6306803744447
 Option 3 ID : 6306803744449
 Option 4 ID : 6306803744448
 Status : Answered
 Chosen Option : C

Q.27 Three resistances, each of $10\ \Omega$, are connected to form a star connection. The star connected load is connected to a 3-phase star connected supply. The phase current is 10 A. If the resistances are reconnected to form a delta connection and connected to the same 3-phase supply, what is the phase current in this case?

- Ans
- A. $10\sqrt{3}$ A
 - B. $100\sqrt{3}$ A
 - C. 0.10 A
 - D. 10 A

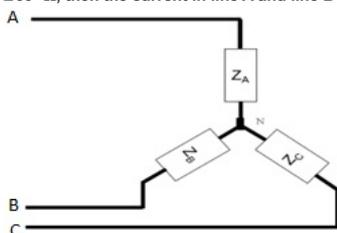
Question ID : 630680209221
 Option 1 ID : 630680811101
 Option 2 ID : 630680811099
 Option 3 ID : 630680811100
 Option 4 ID : 630680811102
 Status : Answered
 Chosen Option : B

Q.28 Which type of solenoid valves are used to operate spring-return actuators?

- Ans A. Two-way solenoids
 B. One-way solenoids
 C. Three-way solenoids
 D. Four-way solenoids

Question ID : 630680969320
 Option 1 ID : 6306803801785
 Option 2 ID : 6306803801786
 Option 3 ID : 6306803801783
 Option 4 ID : 6306803801784
 Status : Answered
 Chosen Option : B

Q.29 The unbalanced star (Y) load is connected across a balanced three-phase system of $V_{AN} = 100 \angle 0^\circ$ V. The phase sequence is ACB. If $Z_A = 10 \Omega$, $Z_B = 10 \angle 30^\circ \Omega$ and $Z_C = 20 \angle 60^\circ \Omega$, then the current in line A and line B will be _____.



- Ans A. $10\sqrt{3} \angle 0^\circ$ A and $10\sqrt{3} \angle -270^\circ$ A, respectively
 B. $10\sqrt{3} \angle 0^\circ$ A and $10\sqrt{3} \angle -150^\circ$ A, respectively
 C. $10 \angle 0^\circ$ A and $10 \angle -270^\circ$ A, respectively
 D. $10 \angle 0^\circ$ A and $10 \angle -150^\circ$ A, respectively

Question ID : 630680209227
 Option 1 ID : 630680811126
 Option 2 ID : 630680811125
 Option 3 ID : 630680811123
 Option 4 ID : 630680811124
 Status : Answered
 Chosen Option : B

Q.30 A non-linear system always consists of _____ equilibrium points.

- Ans A. one
 B. multiple
 C. cannot say
 D. zero

Question ID : 630680200945
 Option 1 ID : 630680779128
 Option 2 ID : 630680779129
 Option 3 ID : 630680779130
 Option 4 ID : 630680779127
 Status : Answered
 Chosen Option : A

Q.31 The symbolic method of solving single-phase AC parallel circuits is also called:

- Ans A. admittance method
 B. J-operator method
 C. phasor method
 D. vector method

Question ID : 630680383093
 Option 1 ID : 6306801493280
 Option 2 ID : 6306801493281
 Option 3 ID : 6306801493282
 Option 4 ID : 6306801493279
 Status : Answered
 Chosen Option : B

Q.32 Forced response is generated due to the _____ of the input function.

- Ans
- A. impulse force
 - B. natural response
 - C. zero
 - D. pole

Question ID : 630680194486
 Option 1 ID : 630680754479
 Option 2 ID : 630680754480
 Option 3 ID : 630680754478
 Option 4 ID : 630680754477
 Status : Answered
 Chosen Option : A

Q.33 Lissajous patterns are used for the measurement of _____ .

- Ans
- A. standing wave ratio
 - B. phase difference between two waves
 - C. reflection coefficient
 - D. power of the wave

Question ID : 630680205117
 Option 1 ID : 630680795334
 Option 2 ID : 630680795331
 Option 3 ID : 630680795333
 Option 4 ID : 630680795332
 Status : Answered
 Chosen Option : B

Q.34 If a differential amplifier has a differential voltage gain of 1000 and a common mode gain of 0.1, then the value of common mode rejection ratio (CMRR) in dB is _____.

- Ans
- A. 40 dB
 - B. 100 dB
 - C. 80 dB
 - D. 10^4 dB

Question ID : 630680333344
 Option 1 ID : 6306801296649
 Option 2 ID : 6306801296652
 Option 3 ID : 6306801296650
 Option 4 ID : 6306801296651
 Status : Answered
 Chosen Option : D

Q.35 Find the value of 'X' in the following expression.
 $(25.625)_{10} = (X)_8$

- Ans
- A. 33.25
 - B. 26.50
 - C. 24.25
 - D. 31.50

Question ID : 630680388648
 Option 1 ID : 6306801515057
 Option 2 ID : 6306801515055
 Option 3 ID : 6306801515054
 Option 4 ID : 6306801515056
 Status : Answered
 Chosen Option : D

Q.36 How many opcodes are there in an 8-bit microprocessor?

- Ans
- A. 246
 - B. 250
 - C. 266
 - D. 220

Question ID : 630680339830
 Option 1 ID : 6306801321842
 Option 2 ID : 6306801321843
 Option 3 ID : 6306801321844
 Option 4 ID : 6306801321841
 Status : Answered
 Chosen Option : A

Q.37 Which of the following process variables is measured by the Bourdon tube element?

- Ans A. Flow
 B. Pressure
 C. Temperature
 D. Concentration

Question ID : 630680963880
 Option 1 ID : 6306803780072
 Option 2 ID : 6306803780073
 Option 3 ID : 6306803780070
 Option 4 ID : 6306803780071
 Status : Answered
 Chosen Option : B

Q.38 Which of the following statements are correct about clean agent fire extinguishers?

1. Gaseous total flooding systems may be used to suppress fires of Class A type.
2. Clean agent gas extinguishing systems are useful in extinguishing fires in specific hazards or equipment and in occupancies.
3. The fire extinguishing clean agents are electrically non-conducting and leave no residue upon evaporation.
4. For unoccupiable areas, the maximum concentration may exceed the LOAEL for the extinguishant used, without the need for a lock-off valve to be fitted.

- Ans A. Only 1, 2 and 3
 B. 1, 2, 3 and 4
 C. Only 2 and 3
 D. Only 2, 3 and 4

Question ID : 6306801010348
 Option 1 ID : 6306803964897
 Option 2 ID : 6306803964895
 Option 3 ID : 6306803964894
 Option 4 ID : 6306803964896
 Status : Answered
 Chosen Option : B

Q.39 The IS code for dry chemical powders for fire fighting is _____.

- Ans A. IS 15493
 B. IS 15220
 C. IS 4308
 D. IS 10204

Question ID : 6306801010462
 Option 1 ID : 6306803965342
 Option 2 ID : 6306803965343
 Option 3 ID : 6306803965344
 Option 4 ID : 6306803965345
 Status : Answered
 Chosen Option : B

Q.40 Which of the following controllers is used to improve the stability and to decrease the steady-state error in control systems?

- Ans A. Derivative controller
 B. Proportional integral controller
 C. Proportional derivative controller
 D. Proportional integral derivative controller

Question ID : 630680200959
 Option 1 ID : 630680779186
 Option 2 ID : 630680779183
 Option 3 ID : 630680779184
 Option 4 ID : 630680779185
 Status : Answered
 Chosen Option : B

Q.41 A Permanent Magnet Moving Coil (PMMC) type can be used for:

- Ans A. direct current measurement only
 B. either alternating current measurement or direct current measurement
 C. both alternating current measurement and direct current measurement
 D. alternating current measurement only

Question ID : 630680953180
 Option 1 ID : 6306803737349
 Option 2 ID : 6306803737352
 Option 3 ID : 6306803737351
 Option 4 ID : 6306803737350
 Status : Answered
 Chosen Option : A

Q.42 Which of the following methods is NOT used for the measurement of low resistance?

- Ans A. Kelvin double bridge method
 B. Ammeter-voltmeter method
 C. Potentiometer method
 D. Wheatstone bridge method

Question ID : 630680198598
 Option 1 ID : 630680770354
 Option 2 ID : 630680770351
 Option 3 ID : 630680770353
 Option 4 ID : 630680770352
 Status : Answered
 Chosen Option : B

Q.43 The dynamic input resistance of a transistor in common-emitter configuration is the ratio of the _____.

- Ans A. collector emitter voltage to the collector current at constant collector emitter voltage
 B. base emitter voltage to the base current at constant collector emitter voltage
 C. base emitter voltage to the emitter current at constant collector base voltage
 D. base emitter voltage to the collector current at constant collector emitter voltage

Question ID : 630680217869
 Option 1 ID : 630680845385
 Option 2 ID : 630680845383
 Option 3 ID : 630680845386
 Option 4 ID : 630680845384
 Status : Answered
 Chosen Option : B

Q.44 Which type of delay occurs between a sensor and a controller?

- Ans A. Network delay
 B. Feedback delay
 C. Computational delay
 D. Communication delay (sensor-controller)

Question ID : 630680963775
 Option 1 ID : 6306803779653
 Option 2 ID : 6306803779652
 Option 3 ID : 6306803779650
 Option 4 ID : 6306803779651
 Status : Answered
 Chosen Option : D

Q.45 Consider the statements for DIAC and select the appropriate option.

Statement (1):
It's an AC switch and its unidirectional semiconductor switch.
 Statement (2):
DIAC turns on when applied voltage is more than breakover voltage.

- Ans A. Statement (1) is true, and statement (2) is false
 B. Both statements (1) and (2) are false
 C. Both statements (1) and (2) are true
 D. Statement (2) is true, and statement (1) is false

Question ID : 630680201348
 Option 1 ID : 630680780739
 Option 2 ID : 630680780742
 Option 3 ID : 630680780741
 Option 4 ID : 630680780740
 Status : Answered
 Chosen Option : A

Q.46 How is the efficiency (η) of a DC motor evaluated?

- Ans A. $\eta = (\text{Input Power} - \text{Output Power}) \times 100$
 B. $\eta = \text{Output Power} + \text{Input Power}$
 C. $\eta = (\text{Output Power} / \text{Input Power}) \times 100$
 D. $\eta = (\text{Output Power} - \text{Input Power}) \times 100$

Question ID : 630680380901
 Option 1 ID : 6306801484592
 Option 2 ID : 6306801484593
 Option 3 ID : 6306801484591
 Option 4 ID : 6306801484594
 Status : Answered
 Chosen Option : C

Q.47 What is the term used to describe the ratio of change in resistance to the applied strain in a strain gauge?

- Ans A. Resistance ratio
 B. Strain coefficient
 C. Gauge factor
 D. Sensitivity coefficient

Question ID : 630680392701
Option 1 ID : 6306801531145
Option 2 ID : 6306801531144
Option 3 ID : 6306801531142
Option 4 ID : 6306801531143
Status : Answered
Chosen Option : C

Q.48 The core loss in a transformer includes which of the following losses?

- Ans A. Copper loss and stray losses
 B. Eddy current and windage losses
 C. Eddy current and stray losses
 D. Eddy current and hysteresis losses

Question ID : 630680227801
Option 1 ID : 630680883879
Option 2 ID : 630680883880
Option 3 ID : 630680883882
Option 4 ID : 630680883881
Status : Answered
Chosen Option : D

Q.49 What is the advantage of using a combination of pressure-measuring devices in critical applications?

- Ans A. It increases the overall cost of the measurement system.
 B. It requires less frequent calibration.
 C. It reduces the complexity of the measurement system.
 D. It provides a higher level of measurement accuracy and reliability.

Question ID : 630680392698
Option 1 ID : 6306801531131
Option 2 ID : 6306801531133
Option 3 ID : 6306801531130
Option 4 ID : 6306801531132
Status : Answered
Chosen Option : D

Q.50 In MS Excel, how can you create a chart based on data in a worksheet?

- Ans A. By using the 'Chart Wizard' tool in the 'View' tab
 B. By typing the data directly into the chart
 C. By copying and pasting the data into a separate chart template
 D. By using the 'Insert' tab and selecting the desired chart type

Question ID : 630680782119
Option 1 ID : 6306803065387
Option 2 ID : 6306803065386
Option 3 ID : 6306803065385
Option 4 ID : 6306803065384
Status : Answered
Chosen Option : A

Q.51 Which of the following statements about a non-inverting op-amp is/are correct?

- S1: The non-inverting terminal is directly connected to the power supply.
S2: The input impedance of a non-inverting op-amp is large.
S3: The output impedance of a non-inverting op-amp is large.

- Ans A. Only S1
 B. Only S2 and S3
 C. Only S1 and S2
 D. S1, S2 and S3

Question ID : 630680333351
Option 1 ID : 6306801296679
Option 2 ID : 6306801296678
Option 3 ID : 6306801296677
Option 4 ID : 6306801296680
Status : Answered
Chosen Option : C

Q.52 Which of the following statements is correct about an electromagnetic flowmeter?

S1: The principle of electromagnetic induction is applied in an electromagnetic flowmeter.

S2: The output (voltage) is linearly rated to the input (flow rate).

S3: If the characteristics of liquid change, the output remains unaffected.

S4: The operating cost is very low if slurries are handled.

- Ans
- A. Only S1 and S3
 - B. Only S2 and S4
 - C. Only S1, S2 and S3
 - D. S1, S2, S3 and S4

Question ID : 630680958510
 Option 1 ID : 6306803758044
 Option 2 ID : 6306803758043
 Option 3 ID : 6306803758042
 Option 4 ID : 6306803758045
 Status : Answered
 Chosen Option : D

Q.53 The total active power of a 3-phase system is given by _____.

- Ans
- A. $P = 3.V_p.I_p.\cos \theta$
 - B. $P = 6.V_p.I_p.\cos \theta$
 - C. $P = 6.V_p.I_p.\sin \theta$
 - D. $P = 3.V_p.I_p.\sin \theta$

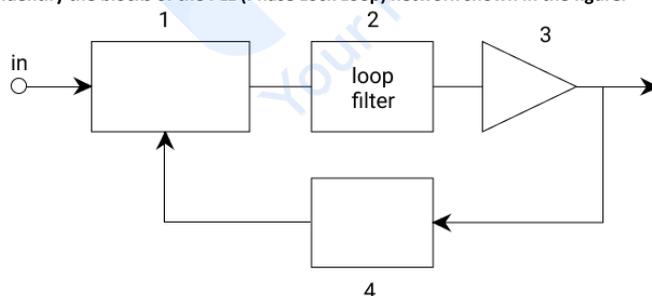
Question ID : 6306801011231
 Option 1 ID : 6306803968356
 Option 2 ID : 6306803968357
 Option 3 ID : 6306803968359
 Option 4 ID : 6306803968358
 Status : Answered
 Chosen Option : C

Q.54 The electromagnetic flow meter measures the rate of flow of a conductive fluid by _____.

- Ans
- A. measurement of pressure of the fluid
 - B. ultrasonic waves
 - C. measurement of temperature of the fluid
 - D. inducing voltage in the fluid based on its velocity

Question ID : 630680374850
 Option 1 ID : 6306801460569
 Option 2 ID : 6306801460567
 Option 3 ID : 6306801460568
 Option 4 ID : 6306801460570
 Status : Answered
 Chosen Option : D

Q.55 Identify the blocks of the PLL (Phase Lock Loop) network shown in the figure.



- Ans
- A. 1: VCO; 3: Phase comparator; 4: Amplifier
 - B. 1: VCO; 3: Amplifier; 4: Phase comparator
 - C. 1: Amplifier; 3: Phase comparator; 4: VCO
 - D. 1: Phase comparator; 3: Amplifier; 4: VCO

Question ID : 630680952531
 Option 1 ID : 6306803734759
 Option 2 ID : 6306803734758
 Option 3 ID : 6306803734757
 Option 4 ID : 6306803734760
 Status : Answered
 Chosen Option : D

Q.56 Which of the following quantities can be measured by using a bellow diaphragm?

- Ans
- A. Flow rate of fluid
 - B. Liquid level
 - C. Pressure
 - D. Temperature

Question ID : 630680374858
 Option 1 ID : 6306801460602
 Option 2 ID : 6306801460601
 Option 3 ID : 6306801460600
 Option 4 ID : 6306801460599
 Status : Answered
 Chosen Option : C

Q.57 Which of the following statements is correct about Radiation Pyrometers used in temperature measurement?

- S1: A radiation pyrometer is used for the measurement of high temperature.
 S2: It measures the radiant heat emitted by the hot object.
 S3: In a radiation pyrometer, the sensing device, a sensitive thermocouple, is kept in touch with the test object.

- Ans
- A. Only S1 and S2
 - B. S1, S2 and S3
 - C. Only S1 and S3
 - D. Only S2 and S3

Question ID : 630680958386
 Option 1 ID : 6306803757550
 Option 2 ID : 6306803757551
 Option 3 ID : 6306803757553
 Option 4 ID : 6306803757552
 Status : Answered
 Chosen Option : A

Q.58 A hexadecimal number $(F41)_{16}$ has _____ number of binary bits.

- Ans
- A. 3
 - B. 4
 - C. 12
 - D. 16

Question ID : 630680377943
 Option 1 ID : 6306801472831
 Option 2 ID : 6306801472832
 Option 3 ID : 6306801472833
 Option 4 ID : 6306801472834
 Status : Answered
 Chosen Option : C

Q.59 Identify the significance of low pass filter used in phase lock loop.

- Ans
- A. The low pass filter filters the energy content given by the amplifier circuit and passes it to the phase detector.
 - B. The low-pass filter passes only the lower frequency component of the signal given by the phase detector, so that the loop can obtain lock between input and VCO signals.
 - C. The output of the low pass filter ensures that VCO output frequency is always independent of the input signal given to the PLL.
 - D. The low pass filter rejects all the frequencies within the lock range.

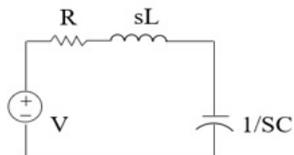
Question ID : 630680952540
 Option 1 ID : 6306803734793
 Option 2 ID : 6306803734794
 Option 3 ID : 6306803734796
 Option 4 ID : 6306803734795
 Status : Answered
 Chosen Option : B

Q.60 General-purpose microprocessors adhere to which architecture and instruction set?

- Ans
- A. Von Neumann architecture with CISC instruction set
 - B. Harvard architecture with CISC instruction set
 - C. Harvard architecture with RISC instruction set
 - D. Von Neumann architecture with RISC instruction set

Question ID : 630680339827
 Option 1 ID : 6306801321831
 Option 2 ID : 6306801321830
 Option 3 ID : 6306801321832
 Option 4 ID : 6306801321829
 Status : Answered
 Chosen Option : B

Q.61 Determine the transfer function of the circuit shown below.



Ans

✓ A. $H(S) = \frac{SC}{LCS^2 + RCS + 1}$

✗ B. $H(S) = \frac{C}{S^2LC + RCS + 1}$

✗ C. $H(S) = \frac{C}{LCS^2 + RCS^2}$

✗ D. $H(S) = \frac{SC}{LCS^2 + RCS^2 + 1}$

Question ID : 630680194445
 Option 1 ID : 630680754316
 Option 2 ID : 630680754313
 Option 3 ID : 630680754315
 Option 4 ID : 630680754314
 Status : Answered
 Chosen Option : B

Q.62 In PLC programmes, the ANB function is used to:

Ans ✗ A. connect NO of contact in series

✗ B. connect NC of contact in series

✓ C. connect a block in series

✗ D. connect a block in parallel

Question ID : 630680194461
 Option 1 ID : 630680754379
 Option 2 ID : 630680754380
 Option 3 ID : 630680754377
 Option 4 ID : 630680754378
 Status : Answered
 Chosen Option : C

Q.63 What happens when a user enters data into a cell that exceeds the column width in MS Excel?

Ans ✓ A. The data is truncated and not fully visible.

✗ B. An error message is displayed.

✗ C. The column width automatically adjusts to fit the data.

✗ D. The excess data is displayed in the adjacent cells.

Question ID : 630680782185
 Option 1 ID : 6306803065648
 Option 2 ID : 6306803065650
 Option 3 ID : 6306803065649
 Option 4 ID : 6306803065651
 Status : Answered
 Chosen Option : C

Q.64 Dual Trace CRO operates in two modes _____ and _____ .

Ans ✗ A. Alternate; Double

✓ B. Alternate; Chop

✗ C. Horizontal; Vertical

✗ D. Single beam; Dual beam

Question ID : 630680205123
 Option 1 ID : 630680795358
 Option 2 ID : 630680795356
 Option 3 ID : 630680795355
 Option 4 ID : 630680795357
 Status : Answered
 Chosen Option : B

Q.65 As per the IEC 61131 standard, which of the following programming languages is used to programme a PLC?

- Ans A. C++
 B. Scala
 C. Ladder Logic
 D. Perl

Question ID : 630680961684
 Option 1 ID : 6306803770933
 Option 2 ID : 6306803770936
 Option 3 ID : 6306803770935
 Option 4 ID : 6306803770934
 Status : Answered
 Chosen Option : C

Q.66 Which of the following is a common application of the piezoelectric transducer?

- Ans A. Solar cell
 B. Thermometer
 C. Microphone
 D. Electric heater

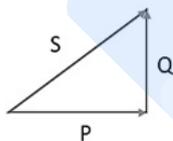
Question ID : 630680374872
 Option 1 ID : 6306801460658
 Option 2 ID : 6306801460655
 Option 3 ID : 6306801460657
 Option 4 ID : 6306801460656
 Status : Answered
 Chosen Option : A

Q.67 Which packing material is used for control valve packings?

- Ans A. Liquidised Nitrogen Oxide
 B. Laminated and Filament Graphite
 C. Laminated PVC
 D. Liquidised Iron Oxide

Question ID : 630680969302
 Option 1 ID : 6306803801714
 Option 2 ID : 6306803801711
 Option 3 ID : 6306803801712
 Option 4 ID : 6306803801713
 Status : Answered
 Chosen Option : D

Q.68 Which of the following statements is/are correct regarding the power triangle shown here?



- (a) S represents active power.
 (b) S represents apparent power and is measured in watt.
 (c) S represents apparent power and is measured in Volt-amperes.
 (d) Q represents reactive power and is measured in watt.

- Ans A. Only (b), (c) and (d)
 B. (a), (b), (c) and (d)
 C. Only (c)
 D. Only (d)

Question ID : 630680209201
 Option 1 ID : 630680811020
 Option 2 ID : 630680811019
 Option 3 ID : 630680811021
 Option 4 ID : 630680811022
 Status : Answered
 Chosen Option : A

Q.69 In a junction of an electrical network, the algebraic sum of the current entering is 15 A. What will be the algebraic sum of the current going out from that junction?

- Ans A. 15 A
 B. 30 A
 C. 7.5 A
 D. 45 A

Question ID : 630680340711
Option 1 ID : 6306801325286
Option 2 ID : 6306801325287
Option 3 ID : 6306801325285
Option 4 ID : 6306801325288
Status : Answered
Chosen Option : C

Q.70 Which of the following can be used as a sensing element in case of the RTD?

- Ans A. Copper
 B. Aluminium
 C. Iron
 D. Platinum

Question ID : 630680374867
Option 1 ID : 6306801460636
Option 2 ID : 6306801460635
Option 3 ID : 6306801460637
Option 4 ID : 6306801460638
Status : Answered
Chosen Option : D

Q.71 The MOSFET structure along with gate and substrate as two terminals forms a/an _____.

- Ans A. capacitor
 B. resistor
 C. inductor
 D. dielectric

Question ID : 630680201301
Option 1 ID : 630680780553
Option 2 ID : 630680780551
Option 3 ID : 630680780552
Option 4 ID : 630680780554
Status : Answered
Chosen Option : C

Q.72 Which PLC mode is used to execute a user programme and energise output devices?

- Ans A. Program mode
 B. Test mode
 C. Single-scan test mode
 D. Run mode

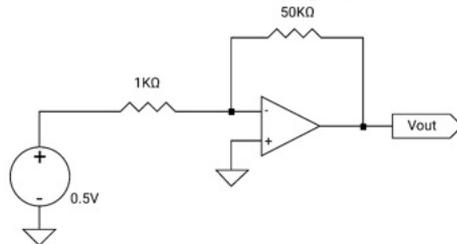
Question ID : 630680961779
Option 1 ID : 6306803771317
Option 2 ID : 6306803771318
Option 3 ID : 6306803771320
Option 4 ID : 6306803771319
Status : Answered
Chosen Option : C

Q.73 An error in a current transformer may be reduced by _____.

- Ans A. keeping the magnetising current low
 B. keeping the loss component high
 C. high leakage reactance
 D. keeping the primary current small

Question ID : 630680956390
Option 1 ID : 6306803749567
Option 2 ID : 6306803749568
Option 3 ID : 6306803749570
Option 4 ID : 6306803749569
Status : Answered
Chosen Option : D

Q.74 Calculate the scale factor of the inverting amplifier circuit shown below.



- Ans A. -50
 B. -1
 C. -0.5
 D. -500

Question ID : 630680212630
 Option 1 ID : 630680824661
 Option 2 ID : 630680824660
 Option 3 ID : 630680824659
 Option 4 ID : 630680824662
 Status : Answered
 Chosen Option : B

Q.75 What is a two-point starter primarily used for in electrical systems?

- Ans A. Protection against over current
 B. Soft starting of DC motors
 C. Speed control of DC motors
 D. Reversing the direction of DC motors

Question ID : 630680380912
 Option 1 ID : 6306801484637
 Option 2 ID : 6306801484636
 Option 3 ID : 6306801484635
 Option 4 ID : 6306801484638
 Status : Answered
 Chosen Option : C

Section : Numerical Ability

Q.76

The value of $\frac{\left(\frac{18}{3} + \frac{17}{8} \text{ of } \frac{8}{3}\right)}{\left(15 - \frac{18}{8} \div \frac{3}{8}\right)}$ is

- Ans A. $\frac{35}{27}$
 B. $\frac{30}{30}$
 C. $\frac{34}{35}$
 D. $\frac{33}{35}$

Question ID : 630680676986
 Option 1 ID : 6306802651399
 Option 2 ID : 6306802651400
 Option 3 ID : 6306802651402
 Option 4 ID : 6306802651401
 Status : Answered
 Chosen Option : C

Q.77 A person saves 20% of his monthly income. If his monthly income increases by 30%, then he saves 10% more than the previous savings. The percentage increase in his expenditure is _____

- Ans
- A. 38.5
 - B. 45.5
 - C. 35
 - D. 31.5

Question ID : 630680591671
Option 1 ID : 6306802315152
Option 2 ID : 6306802315154
Option 3 ID : 6306802315151
Option 4 ID : 6306802315153
Status : Answered
Chosen Option : B

Q.78 The value of x in the proportion equation $11 : 44 :: 89 : x$ is:

- Ans
- A. 353
 - B. 356
 - C. 350
 - D. 361

Question ID : 630680948621
Option 1 ID : 6306803719258
Option 2 ID : 6306803719256
Option 3 ID : 6306803719259
Option 4 ID : 6306803719257
Status : Answered
Chosen Option : B

Q.79 The sum of 6 numbers is 588. Find their average.

- Ans
- A. 98
 - B. 97
 - C. 99
 - D. 96

Question ID : 630680551900
Option 1 ID : 6306802157825
Option 2 ID : 6306802157826
Option 3 ID : 6306802157827
Option 4 ID : 6306802157828
Status : Answered
Chosen Option : A

Q.80 $11.337 - [3 + 0.5 \text{ of } (3.1 - 2.3 \times 1.02)] = ?$

- Ans
- A. 8.77
 - B. -8.77
 - C. 8
 - D. 8.3

Question ID : 63068061325
Option 1 ID : 630680236682
Option 2 ID : 630680236683
Option 3 ID : 630680236685
Option 4 ID : 630680236684
Status : Answered
Chosen Option : B

Q.81 The HCF of 204,1190 and 1445 is:

- Ans
- A. 19
 - B. 21
 - C. 17
 - D. 18

Question ID : 630680137335
Option 1 ID : 630680531936
Option 2 ID : 630680531937
Option 3 ID : 630680531934
Option 4 ID : 630680531935
Status : Answered
Chosen Option : C

Q.82 हार्दिक ने ₹92900 को अर्ध-वार्षिक रूप से चक्रवृद्धित होने वाली 20% वार्षिक ब्याज दर पर 1 वर्ष के लिए निवेश किया। उसके द्वारा प्राप्त मिश्रधन कितना होगा?

- Ans A. ₹112251
 B. ₹112409
 C. ₹113264
 D. ₹113084

Question ID : 630680886100
 Option 1 ID : 6306803470085
 Option 2 ID : 6306803470084
 Option 3 ID : 6306803470086
 Option 4 ID : 6306803470087
 Status : Answered
 Chosen Option : C

Q.83 What sum (in ₹) will earn a simple interest of ₹600 in 3 years at 8% per year rate of interest?

- Ans A. 2500
 B. 1250
 C. 5000
 D. 4000

Question ID : 630680612215
 Option 1 ID : 6306802395592
 Option 2 ID : 6306802395593
 Option 3 ID : 6306802395594
 Option 4 ID : 6306802395595
 Status : Answered
 Chosen Option : B

Q.84 A bike is moving at a speed of 94 km/h. If its speed is reduced by 41%, the new speed of the bike (in km/h) will be:

- Ans A. 54.95
 B. 55.46
 C. 54.46
 D. 56.05

Question ID : 630680948636
 Option 1 ID : 6306803719318
 Option 2 ID : 6306803719316
 Option 3 ID : 6306803719317
 Option 4 ID : 6306803719319
 Status : Answered
 Chosen Option : C

Q.85 96% of the population of a village is 24000. The total population of the village is:

- Ans A. 33256
 B. 25936
 C. 26640
 D. 25000

Question ID : 630680573973
 Option 1 ID : 6306802244763
 Option 2 ID : 6306802244761
 Option 3 ID : 6306802244762
 Option 4 ID : 6306802244760
 Status : Answered
 Chosen Option : B

Q.86 इलेक्ट्रॉनिक वस्तुओं की एक क्लीयरेंस सेल में, ₹12200 के अंकित मूल्य वाली एक वस्तु ₹11468 में बेची जाती है। वस्तु पर $d\%$ की छूट है। d का मान ज्ञात कीजिए।

- Ans A. 8
 B. 6
 C. 5
 D. 7

Question ID : 630680948612
 Option 1 ID : 6306803719223
 Option 2 ID : 6306803719220
 Option 3 ID : 6306803719221
 Option 4 ID : 6306803719222
 Status : Answered
 Chosen Option : B

Q.87 आदित्य किसी कार्य को अकेले 12 दिनों में पूरा कर सकता है और भगवान उसी कार्य को अकेले 8 दिनों में पूरा कर सकता है। उन्होंने एक साथ कार्य करना शुरू किया, लेकिन कार्य पूरा होने से 7 दिन पहले आदित्य को कार्य छोड़ना पड़ा। कार्य कितने दिनों में पूरा होगा?

- Ans
- A. $7\frac{6}{5}$ दिन
 - B. $7\frac{8}{5}$ दिन
 - C. $7\frac{4}{5}$ दिन
 - D. $7\frac{3}{5}$ दिन

Question ID : 630680900487
 Option 1 ID : 6306803527715
 Option 2 ID : 6306803527716
 Option 3 ID : 6306803527714
 Option 4 ID : 6306803527713
 Status : Answered
 Chosen Option : C

Q.88 एक नाव को धारा के विपरीत दिशा में एक निश्चित दूरी तय करने में 8 hrs 48 min लगते हैं, जबकि धारा की दिशा में समान दूरी को तय करने में उसे 4 hrs लगते हैं। नाव की चाल और धारा की चाल के बीच क्या अनुपात है?

- Ans
- A. 2 : 1
 - B. 3 : 8
 - C. 2 : 3
 - D. 8 : 3

Question ID : 630680435949
 Option 1 ID : 6306801701743
 Option 2 ID : 6306801701742
 Option 3 ID : 6306801701744
 Option 4 ID : 6306801701741
 Status : Answered
 Chosen Option : B

Q.89 राकेश ने एक ट्रैकसूट को ₹3,955 में बेचने पर 13% का लाभ कमाया। ट्रैकसूट का क्रय मूल्य ज्ञात कीजिए।

- Ans
- A. ₹3,400
 - B. ₹3,450
 - C. ₹3,550
 - D. ₹3,500

Question ID : 630680103487
 Option 1 ID : 630680402194
 Option 2 ID : 630680402193
 Option 3 ID : 630680402191
 Option 4 ID : 630680402192
 Status : Answered
 Chosen Option : C

Q.90 The distance between two points on a map is 3 cm. The scale of the map is 1 : 355269. The actual distance between the two points (in km) is:

- Ans
- A. 10.66
 - B. 6.17
 - C. 12.94
 - D. 7.13

Question ID : 630680948630
 Option 1 ID : 6306803719292
 Option 2 ID : 6306803719293
 Option 3 ID : 6306803719294
 Option 4 ID : 6306803719295
 Status : Answered
 Chosen Option : B

Section : General Awareness

Q.91 What was the literacy rate of India as per Census 2011?

- Ans A. Between 60% and 70%
- B. Between 71% and 75%
- C. More than 80%
- D. Less than 60%

Question ID : 630680957802
 Option 1 ID : 6306803755209
 Option 2 ID : 6306803755210
 Option 3 ID : 6306803755211
 Option 4 ID : 6306803755208
 Status : Answered
 Chosen Option : D

Q.92 पुस्तक, 'मास्टर ऑफ द गेम, मास्टर ऑफ द हार्ट: द मेकिंग ऑफ इंडियाज क्रिकेट लीजेंड', भारत के क्रिकेट आइकन _____ की असाधारण यात्रा पर प्रकाश डालती है।

- Ans A. सुनील गावस्कर
- B. विराट कोहली
- C. रोहित शर्मा
- D. सचिन तेंदुलकर

Question ID : 630680943934
 Option 1 ID : 6306803700574
 Option 2 ID : 6306803700573
 Option 3 ID : 6306803700571
 Option 4 ID : 6306803700572
 Status : Answered
 Chosen Option : D

Q.93 भारत की कौन-सी शास्त्रीय भाषा कश्मीर के ऐतिहासिक इतिहास 'राजतरंगिणी' सहित अपने संरक्षित प्राचीन ग्रंथों के लिए प्रसिद्ध है?

- Ans A. प्राकृत
- B. हिंदी
- C. संस्कृत
- D. कन्नड़

Question ID : 630680971417
 Option 1 ID : 6306803809686
 Option 2 ID : 6306803809684
 Option 3 ID : 6306803809683
 Option 4 ID : 6306803809685
 Status : Answered
 Chosen Option : C

Q.94 What was the percentage increase in India's annual defense production from FY 2022-23 to FY 2023-24?

- Ans A. 16.7%
- B. 20.5%
- C. 25.3%
- D. 12.5%

Question ID : 630680978702
 Option 1 ID : 6306803838792
 Option 2 ID : 6306803838793
 Option 3 ID : 6306803838794
 Option 4 ID : 6306803838791
 Status : Answered
 Chosen Option : B

Q.95 Which of the following Amendment Acts inserted the Fundamental Duty related to providing opportunities for education to children between the ages of six and fourteen years?

- Ans A. 86th Amendment
- B. 44th Amendment
- C. 73rd Amendment
- D. 42nd Amendment

Question ID : 630680936478
 Option 1 ID : 6306803670319
 Option 2 ID : 6306803670317
 Option 3 ID : 6306803670320
 Option 4 ID : 6306803670318
 Status : Answered
 Chosen Option : C

Q.96 राष्ट्रपति द्वारा मांगे जाने पर संघ के मामलों के प्रशासन से संबंधित सूचना और कानूनों हेतु प्रस्तावों को प्रस्तुत करना, कार्यपालिका के किस अंग का कर्तव्य है?

- Ans A. प्रधानमंत्री
 B. उप-राष्ट्रपति
 C. मुख्यमंत्री
 D. राज्यपाल

Question ID : 630680990484
 Option 1 ID : 6306803886316
 Option 2 ID : 6306803886319
 Option 3 ID : 6306803886317
 Option 4 ID : 6306803886318
 Status : Answered
 Chosen Option : D

Q.97 A cockroach belongs to which of the following taxonomic classifications?

- Ans A. Annelida
 B. Mollusca
 C. Arthropoda
 D. Nematoda

Question ID : 630680935040
 Option 1 ID : 6306803664825
 Option 2 ID : 6306803664826
 Option 3 ID : 6306803664827
 Option 4 ID : 6306803664824
 Status : Answered
 Chosen Option : C

Q.98 Which vitamin is synthesised naturally by the skin upon exposure to ultraviolet (UV) rays from sunlight?

- Ans A. Vitamin A
 B. Vitamin D
 C. Vitamin K
 D. Vitamin E

Question ID : 630680935050
 Option 1 ID : 6306803664865
 Option 2 ID : 6306803664864
 Option 3 ID : 6306803664867
 Option 4 ID : 6306803664866
 Status : Answered
 Chosen Option : B

Q.99 Cherrapunji, which recorded the third highest rainfall over 24 hours in 122 years in June 2022, is situated in which state of India?

- Ans A. West Bengal
 B. Meghalaya
 C. Mizoram
 D. Assam

Question ID : 630680957762
 Option 1 ID : 6306803755049
 Option 2 ID : 6306803755051
 Option 3 ID : 6306803755050
 Option 4 ID : 6306803755048
 Status : Answered
 Chosen Option : B

Q.100 राष्ट्रीय अपराध रिकॉर्ड ब्यूरो (NCRB) की 2022 की वार्षिक रिपोर्ट के अनुसार, लगातार तीन वर्षों में, भारत के किन दो राज्यों में सबसे अधिक भ्रष्टाचार के मामले दर्ज हुए हैं?

- Ans A. राजस्थान और महाराष्ट्र
 B. कर्नाटक और तमिलनाडु
 C. गुजरात और पंजाब
 D. उत्तर प्रदेश और बिहार

Question ID : 6306801052897
 Option 1 ID : 6306804134137
 Option 2 ID : 6306804134136
 Option 3 ID : 6306804134138
 Option 4 ID : 6306804134135
 Status : Answered
 Chosen Option : D