



Uttar Pradesh Metro Rail Corporation Limited

उत्तर प्रदेश मेट्रो रेल कॉर्पोरेशन लिमिटेड

A Joint Venture of Govt. of India and Govt. of Uttar Pradesh

Participants Id	
Participant Name	
Test Center Name	
Test Date	20/01/2020
Test Time	4:00 PM - 6:00 PM
Subject	NE 03 Jr Engineer (S&T)

Section : Technical

Q.1 Which of the following assumptions is true for armature controlled DC motor?

Ans A

Torque developed is inversely proportional to armature current.

B. Field is given variable excitation.

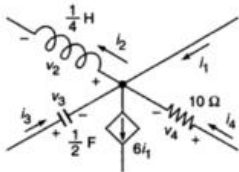
C. Back emf is proportional to speed.

D. Coefficient of friction varies with speed.

Question ID : 95506730

Chosen Option : 1

Q.2



In the given figure, $i_1 = -0.5e^{-2t}$; $v_3 = 2e^{-2t}$ and $v_4 = 5e^{-2t}$. Find v_2 .

Ans A $0.2e^{-2t}$

B. $5e^{-t}$

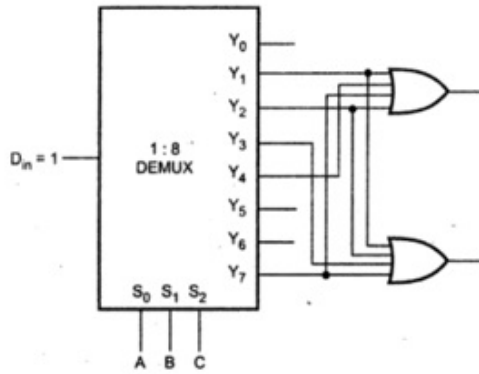
C. $0.5e^{-2t}$

D. $2e^{-2t}$

Question ID : 9550671

Chosen Option : --

Q.3



The circuit shown in the given figure represents a/an:

- Ans
- A. decoder
 - B. equality detector
 - C. full adder
 - D. full subtractor

Question ID : 95506754
Chosen Option : 1

Q.4 Which of the following is NOT true with reference to microprocessors?

- Ans
- A. Control unit controls the operation of the internal on-chip circuitry.
 - B. 8-bit microprocessors can transmit an address of 16-bit.
 - C. Microprocessors don't have an off-chip memory.
 - D. They contain tri-state output pins.

Question ID : 95506765
Chosen Option : 4

Q.5 The costs created from the effort to reduce poor quality are called:

- Ans
- A. external failure costs
 - B. internal failure costs
 - C. appraisal costs
 - D. prevention costs

Question ID : 95506790
Chosen Option : 2

Q.6 General Purpose Interface Bus (GPIB) has a typical maximum speed of:

- Ans A. 12 Mbits/s
 B. 10 Mbits/s
 C. 115 kbits/s
 D. 1 MB/s

Question ID : 95506784

Chosen Option : 1

Q.7 A 5-bit binary counter starts with 00000. Determine the count after 144 input pulses.

- Ans A. 10000
 B. 10100
 C. 10101
 D. 01001

Question ID : 95506756

Chosen Option : 4

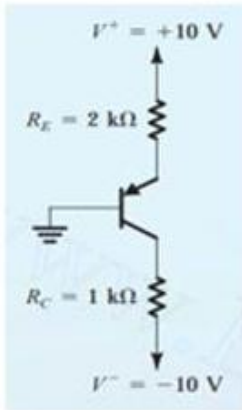
Q.8 Which of the following options is NOT an example of servomechanism?

- Ans A. Automobile power steering
 B. Machine tool position control
 C. Manual speed control
 D. Missile launchers

Question ID : 95506726

Chosen Option : 1

Q.9



In the given figure, find I_B ($\beta = 100$).

- Ans
- A. 0.5 mA
 - B. 0.02 μ A
 - C. 0.05 mA
 - D. 0.14 μ A

Question ID : 95506719
Chosen Option : 3

Q.10 Which of the following statements is INCORRECT?

- Ans
- A. Similar to the MOSFET, the IGBT has a low impedance gate.
 - B. Similar to the MOSFET, the IGBT has a high impedance gate.
 - C. Like the BJT, the IGBT has a small on-state voltage.
 - D. Similar to the GTO, the IGBT can be designed to block negative voltage.

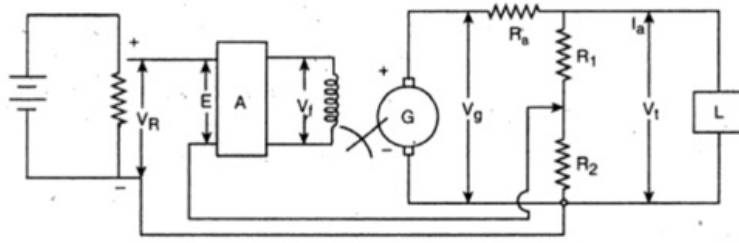
Question ID : 95506779
Chosen Option : 1

Q.11 For the same firing angle, the load voltage in the discontinuous conduction mode compared to the continuous conduction mode of operation, will be:

- Ans
- A. constant
 - B. lower
 - C. zero
 - D. higher

Question ID : 95506775
Chosen Option : 1

Q.12

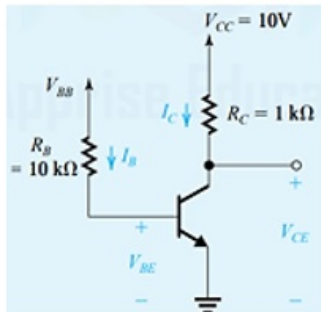


For the system shown in the given figure, the error voltage (E) is given by:

- Ans
- A. $V_R + \left(V_t \frac{R_2}{R_1 + R_2} \right)$
 - B. $\left(V_t \frac{R_2}{R_1 + R_2} \right)$
 - C. $V_R - \left(V_t \frac{R_2}{R_1 + R_2} \right)$
 - D. $V_R - V_t$

Question ID : 95506727
Chosen Option : 3

Q.13



Find V_{BB} if the circuit (in the given figure) has to operate at the edge of saturation (Use $V_{BE} = 0.7$ V and $\beta = 50$).

- Ans
- A. 1.25 V
 - B. 4.12 V
 - C. 2.64 V
 - D. 3.58 V

Question ID : 95506718
Chosen Option : --

Q.14 Shape of a Lissajous figure depends on the:

- Ans
- A. length of the deflection plates
 - B. amplitude of the two waves only
 - C. area of the deflection plates
 - D. amplitude, phase and frequency of the two waves

Question ID : 95506746
Chosen Option : 4

Q.15 Select the FALSE statement with respect to variable frequency operation control strategy in DC-DC converters.

- Ans
- A. Very small OFF time makes load current continuous
 - B. Large OFF time in frequency modulation technique
 - C. Difficult filter design
 - D. Possibility of interference

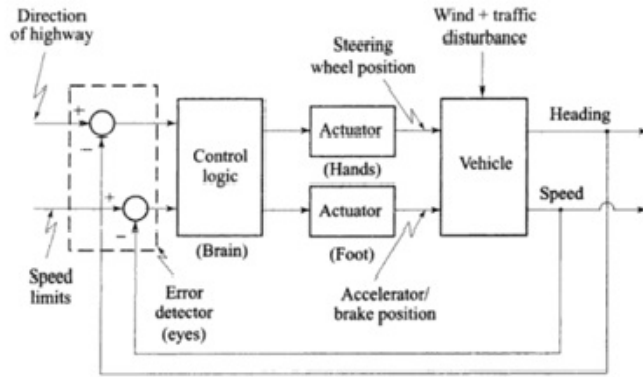
Question ID : 95506777
Chosen Option : 2

Q.16 The distortion factor for a 3-phase fully controlled bridge rectifier is:

- Ans
- A. $(\pi/3) \cos\alpha$
 - B. $\cos\alpha$
 - C. $3/\pi$
 - D. $(3/\pi) \cos\alpha$

Question ID : 95506774
Chosen Option : 1

Q.17



The control system illustrated in the figure is an example of a/an:

- Ans A. man-machine control system
 B. closed loop control system
 C. automatic closed loop control system
 D. open loop control system

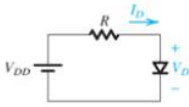
Question ID : 95506724
Chosen Option : 4

Q.18 A step input of 4 A is applied to an ammeter. The pointer swings to 4.18 A and finally comes to rest at 4.02 A. Determine the:
 a) overshoot of reading in ampere and in percentage of final reading
 b) percentage error in instrument

- Ans A. a) 0.12 A, 3.7% b) 0.4%
 B. a) 0.14 A, 3.8% b) 0.3%
 C. a) 0.16 A, 3.98% b) 0.5%
 D. a) 0.16 A, 3.2% b) 0.4%

Question ID : 95506762
Chosen Option : --

Q.19



For the circuit shown in the given figure, determine I_D , if $V_{DD} = 5 \text{ V}$ and $R = 1 \text{ k}\Omega$.

Assume that the diode has a current of 1 mA at a voltage of 0.7 V and uses the ideal-diode model.

- Ans
- A. 4.3 mA
 - B. 4 mA
 - C. 5 mA
 - D. 2.4 mA

Question ID : 95506712
Chosen Option : 1

Q.20 निम्नलिखित में से कौन सा कंपनियों के लिए गुणवत्ता लागत का आकलन करने का कारण नहीं है?

Ans A. लागत बढ़ाने के प्रमुख अवसरों की पहचान करना

B.

मुद्रा की भाषा में गुणवत्ता की समस्या के आकार को परिमाणित करने से मध्य प्रबंधकों और शीर्ष प्रबंधकों के बीच संचार में सुधार होता है

C. लागत में कमी के प्रमुख अवसरों की पहचान करना

D.

ग्राहक असंतोष को कम करने के अवसरों की पहचान करना

Question ID : 95506788
Chosen Option : 2

Q.21 The resistance of a wire, 1 m long and of 1 mm^2 cross section, is $1/58 \Omega$. Thus, the resistance of a 2 m long, 0.5 cm thick copper tube with an external diameter of 10 cm will be:

Ans A. $18.61 \mu\Omega$

B. 23.14Ω

C. 18.61Ω

D. $23.14 \mu\Omega$

Question ID : 9550673
Chosen Option : --

Q.22 The number of registers and flags in 8086 are:

- Ans A. thirteen 16-bit registers and 9 flags
 B. fifteen 14-bit registers and 8 flags
 C. twelve 14-bit registers and 7 flags
 D. eleven 8-bit registers and 6 flags

Question ID : 95506770
Chosen Option : 1

Q.23 ALU in a microprocessor executes:

- Ans A. a few arithmetic instructions only
 B. all arithmetic instructions only
 C. all arithmetic and logic instructions
 D. all arithmetic and few logic instructions

Question ID : 95506764
Chosen Option : 3

Q.24 Find the frequency of sustained oscillation (in rad/sec) for the system $s^4 + 9s^3 + 11s^2 + 6s + k = 0$

- Ans A. 0.14 rad/sec
 B. 0.36 rad/sec
 C. 0.82 rad/sec
 D. 0.22 rad/sec

Question ID : 95506748
Chosen Option : --

Q.25 For a copper wire with circular cross section (diameter = 1.03 mm) with resistivity = $2.5 \times 10^{-4} \Omega/\text{m}$, concentration of free $e^- = 8.4 \times 10^{28}/\text{m}^3$ and current density = $2.1 \times 10^6 \text{A}/\text{m}^2$, determine the mobility of electrons.

- Ans A. $3.567 \times 10^{-3} \text{m}^2/\text{V} - \text{sec}$
 B. $4.67 \times 10^{-2} \text{m}^2/\text{V} - \text{sec}$
 C. $2.173 \times 10^{-5} \text{m}^2/\text{V} - \text{sec}$
 D. $1.542 \times 10^{-4} \text{m}^2/\text{V} - \text{sec}$

Question ID : 95506711
Chosen Option : --

Q.26 A decoder having an enable input is termed as:

- Ans
- A. enabled-decoder
 - B. selective decoder
 - C. decoder-converter
 - D. decoder-demultiplexer

Question ID : 95506751
Chosen Option : 1

Q.27 Interrupt OUT Transaction in USB 2.0 functions when:

- Ans
- A. the host sends an IN token, the function responds with a DATA packet, and the host acknowledges
 - B. the host will periodically poll the interrupt endpoint
 - C. the host wants to send the device interrupt data
 - D. the polling rate is specified in the endpoint descriptor

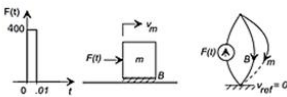
Question ID : 95506782
Chosen Option : --

Q.28 Which of the following is NOT true of a limit cycle?

- Ans
- A. Easily recognised in the phase plane.
 - B. Oscillation peculiar to linear systems.
 - C. Characterised by constant amplitude and frequency.
 - D. Amplitude of oscillations independent of initial conditions.

Question ID : 95506733
Chosen Option : --

Q.29 A mass $m = 20$ kg is at rest on a horizontal plane with viscous friction coefficient $B = 40$ N-s/m, as shown in the Fig. below:



A short impulsive force of amplitude 400 N and duration 0.01s is applied. The system time constant will be:

- Ans
- A. 1 sec
 - B. 2 secs
 - C. 5 secs
 - D. 0.5 secs

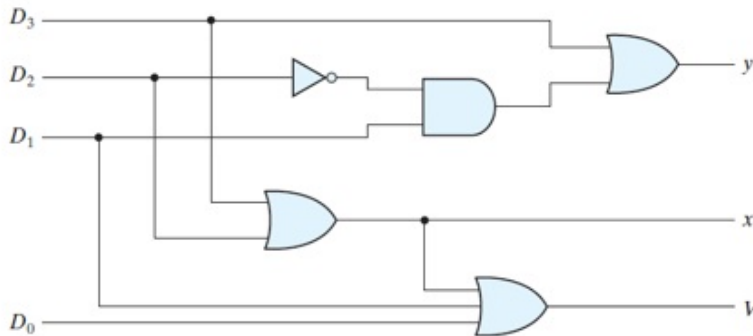
Question ID : 95506735
Chosen Option : --

Q.30 For a varactor diode with diffused junction at reverse bias voltage of 7.3 V, if the junction potential is 0.7 V and transition capacitance is 40pF, then the constant K will be:

- Ans A. 80×10^{-12}
 B. 40×10^{-10}
 C. 64×10^{-14}
 D. 20×10^{-11}

Question ID : 95506715
Chosen Option : --

Q.31



The logic shown in the given figure works as:

- Ans A. decoder
 B. binary to XS-3 converter
 C. priority encoder
 D. binary to gray converter

Question ID : 95506752
Chosen Option : 2

Q.32 The most suitable material for manufacturing of LED is:

- Ans A. IgZO
 B. ZnP
 C. ZnO
 D. GaAsP

Question ID : 95506716
Chosen Option : 4

Q.33 JMP addr16 is a:

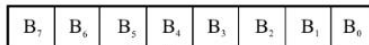
(Note: addr16 is any 16 bit address)

- Ans
- A. 2-byte instruction
 - B. 1-byte instruction
 - C. 3-byte instruction
 - D. 4-byte instruction

Question ID : 95506769

Chosen Option : 3

Q.34



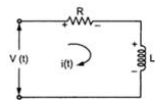
For an 8237 control word format as shown in the figure, the bit(s) used to read/write/verify transfer is/are:

- Ans
- A. B₁ and B₀
 - B. Only B₂
 - C. Only B₅
 - D. B₂ and B₃

Question ID : 95506767

Chosen Option : 4

Q.35



In the given figure, find the current in s-domain if L = 25 mH, R = 1000 Ω and circuit is subjected to 50 V step input.

- Ans
- A. $\frac{0.05}{s - 4 \times 10^4}$
 - B. $\frac{5}{s + 4}$
 - C. $\frac{0.05}{s}$
 - D. $\frac{0.05}{s} - \frac{0.05}{s + 4 \times 10^4}$

Question ID : 95506728

Chosen Option : --

Q.36 Which of the following options is the correct sequential order of a four-level model of the evolution of quality management?

Ans A.

1-Quality Assurance 2- Quality Control 3- Total Quality Management 4- Inspection

B.

1-Quality Assurance 2-Total Quality Management 3- Inspection 4- Quality Control

C.

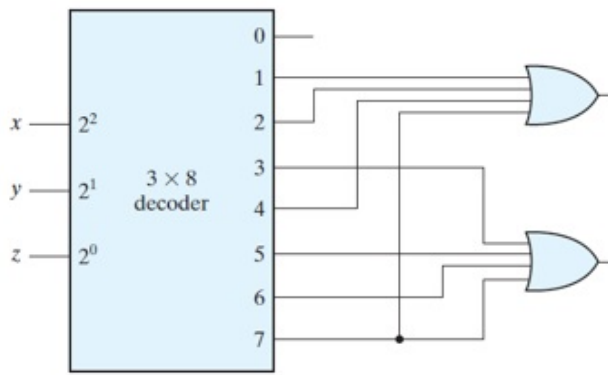
1-Inspection 2- Quality Assurance 3- Quality Control 4- Total Quality Management

D.

1-Inspection 2- Quality Control 3- Quality Assurance 4- Total Quality Management

Question ID : **95506787**
Chosen Option : 4

Q.37



The circuit shown in the given figure represents a/an:

Ans A. full subtractor

B. equality detector

C. inequality detector

D. full adder

Question ID : **95506753**
Chosen Option : --

Q.38 A vibration galvanometer is used as a detector in a:

Ans A. high voltage Schering bridge

B. low voltage Schering bridge

C. Wheatstone bridge

D. Maxwell bridge

Question ID : **95506745**
Chosen Option : 1

Q.39 Operating modes of 8255A are:

Ans A.

mode 0 – advanced input/output, mode 1 – strobed input/output, mode 2 – unidirectional data bus

B.

mode 0 – basic input/output, mode 1 – strobed input/output, mode 2 – bidirectional data bus

C.

mode 0 – control input/output, mode 1 – strobed input/output, mode 2 – basic data bus

D.

mode 0 – basic input/output, mode 1 – control input/output, mode 2 – strobed data bus

Question ID : 95506766

Chosen Option : 2

Q.40 A 1-mA meter movement with internal resistance of $100\ \Omega$ is to be converted into a 0-100 mA ammeter. Calculate the shunt resistance required and specify particulars of the shunt.

Ans A. $1.0\ \Omega$, 100 mA or $1.0\ \Omega$, 100 mV

B. $1.0\ \Omega$, 150 mA or $1.0\ \Omega$, 100 mV

C. $1.5\ \Omega$, 100 mA or $1.0\ \Omega$, 100 mV

D. $1.5\ \Omega$, 100 mA or $1.5\ \Omega$, 100 mV

Question ID : 95506743

Chosen Option : --

Q.41 Which of the following options is a 3-terminal majority carrier device?

Ans A. BJT

B. Thyristor

C. JFET

D. IGBT

Question ID : 95506780

Chosen Option : 3

Q.42 Beyond a certain temperature, for insulators the forbidden gap can be crossed when dielectric strength of solid breaks down under:

Ans A. low voltage

B. low pressure

C. high pressure

D. high voltage

Question ID : 95506734

Chosen Option : 4

Q.43 For a particular circuit base, current = $14.46 \mu\text{A}$, the emitter current = 1.460 mA , and the base-emitter voltage = 0.7 V . Calculate the saturation current.

- Ans A. 10^{-15} A
 B. 10^{-10} A
 C. 10^{-12} A
 D. 10^{-11} A

Question ID : **95506717**
Chosen Option : --

Q.44 What value would come in place of the question mark (?) in the given equation?

$$(173.513)_{10} = (?)_8$$

- Ans A. 255.4065
 B. 211.4214
 C. 231.4065
 D. 255.0101

Question ID : **95506749**
Chosen Option : 1

Q.45 Calculate the number of electrons that pass through the cross section/hour of the filament of a 60 W bulb which has a current of 0.5 A flowing through it (in electrons / hour).

- Ans A. 3.1×10^{22}
 B. 1.1×10^{18}
 C. 3.1×10^{18}
 D. 1.1×10^{22}

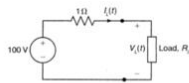
Question ID : **9550672**
Chosen Option : --

Q.46 Determine the average emf induced in a coil of 200 turns wound on a magnetic circuit having reluctance 2000 AT / Wb , if a current of 1 A flowing in the coil is reversed in 10 ms .

- Ans A. 6 V
 B. 4 V
 C. 10 V
 D. 2 V

Question ID : **9550674**
Chosen Option : --

Q.47



In the circuit shown in the given figure for a full load current of 10 A, source loading occurs at what value of resistance?

- Ans
- A. 8 Ω
 - B. 7 Ω
 - C. 4 Ω
 - D. beyond 9 Ω

Question ID : 9550677

Chosen Option : 4

Q.48 Electric field is zero:

- Ans
- A. at the edges of a conductor
 - B. within a conductor
 - C. within an insulator
 - D. at the surface of a conductor

Question ID : 9550679

Chosen Option : 3

Q.49 The loop T states are:

LXI B, 2384H

LOOP : DCX B

MOV A, C

ORA B

JNZ LOOP

- Ans
- A. 98
 - B. 35
 - C. 92
 - D. 24

Question ID : 95506763

Chosen Option : --

Q.50 किसी मापन प्रणाली के पहले चरण को _____ के रूप में जाना जाता है।

- Ans
- A. रूपांतरण चरण
 - B. संपर्क चरण
 - C. डिजिटल चरण
 - D. डिटेक्टर-ट्रांसड्यूसर चरण

Question ID : 95506757
Chosen Option : 2

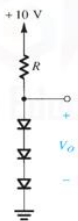
Q.51 When the main purpose of a control system is to reject disturbance effect and desired value of controlled output is almost fixed, such a control system is also called a:

- Ans
- A. tracker
 - B. regulator
 - C. manipulator
 - D. rectifier

Question ID : 95506723
Chosen Option : 2

Q.52 For the circuit shown in the given figure, find the value of R so as to obtain an output voltage of 2.4 V.

(Assume diodes have a drop of 0.7 V at 1 mA.)



- Ans
- A. 220 Ω
 - B. 190 Ω
 - C. 120 Ω
 - D. 139 Ω

Question ID : 95506713
Chosen Option : 3

Q.53 A PWM inverter can producing output voltage as:

- Ans A. variable in magnitude and frequency
 B. fixed voltage, fixed frequency
 C. variable voltage, fixed frequency
 D. fixed voltage, variable frequency

Question ID : 95506772
Chosen Option : 1

Q.54 When a rubber test sample is subjected to an increase in ambient temperature:

- Ans A. there is decrease in conductivity
 B. there is no change in volumetric resistance
 C. volumetric resistance increases
 D. volumetric resistance decreases

Question ID : 95506738
Chosen Option : 2

Q.55 SH1 code in GPIB capabilities functions as:

- Ans A. basic talker
 B. source handshake capability
 C. acceptor handshake capability
 D. basic listener

Question ID : 95506785
Chosen Option : --

Q.56 Which of the following options is a thermosetting polymer?

- Ans A. PVC
 B. Nylon
 C. Teflon
 D. Bakelite

Question ID : 95506737
Chosen Option : 4

Q.57 The inductor of the buck-boost converter, in a flyback converter, has been replaced by a:

- Ans A. flyback capacitor
 B. flyback transistor
 C. flyback transformer
 D. flyback resistor

Question ID : 95506778

Chosen Option : 4

Q.58 The gain-bandwidth product, thermal stability and relation between input and output of an FET as compared to a BJT is, respectively:

- Ans A. high, low, linear
 B. low, low, non-linear
 C. low, high, linear
 D. low, high, non-linear

Question ID : 95506721

Chosen Option : 4

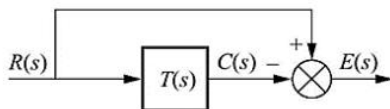
Q.59 The most expensive category of quality costs is:

- Ans A. prevention costs
 B. internal failure costs
 C. appraisal costs
 D. external failure costs

Question ID : 95506789

Chosen Option : 4

Q.60



For the figure given above if, $T(s) = \frac{5}{s^2 + 7s + 10}$ and $R(s) = \frac{1}{s}$, then the steady state error will be:

- Ans A. 0
 B. infinity
 C. 1
 D. $\frac{1}{2}$

Question ID : 95506722

Chosen Option : 4

Q.61 The element which manipulates the signal presented to it, preserving the nature of the original signal is the:

- Ans A. fixed manipulator
 B. variable conversion element
 C. variable manipulation element
 D. fixed converter

Question ID : 95506758

Chosen Option : --

Q.62 Which of the following statements is INCORRECT in respect of a processor-memory bus?

- Ans A. Matched to the memory system to maximize the memory-processor bandwidth
 B. Short and high speed
 C. Optimised for cache block transfers
 D. Is usually lengthy and slower

Question ID : 95506786

Chosen Option : 2

Q.63 A separately excited 220 V, 10A, 1000 RPM dc motor with armature resistance of $2\ \Omega$ is supplied from a 230V, 50Hz, single phase supply through a fully controlled bridge converter. So, the no-load speed of the motor will be:

- Ans A. 1000 RPM
 B. 1500 RPM
 C. 1626 RPM
 D. 1226 RPM

Question ID : 95506776

Chosen Option : --

Q.64 The coil of a moving coil voltmeter is 40 mm long, 20 mm wide and has 100 turns on it. Control spring exerts a torque of 220×10^{-6} N-m when the deflection is 100 divisions on full scale. If the flux density of magnetic field in air gap is $1.0\ \text{Wb/m}^2$, then estimate the resistance to be put in series with coil to give one volt per division. (Neglect coil resistance)

- Ans A. 40 k Ω
 B. 36.36 k Ω
 C. 50 k Ω
 D. 20 k Ω

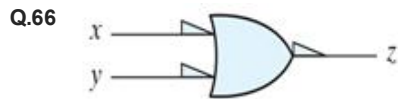
Question ID : 95506742

Chosen Option : --

Q.65 The disadvantage of using a bridge rectifier configuration is its:

- Ans
- A. rectification efficiency
 - B. lower number of turns in secondary
 - C. increase in total voltage drop
 - D. smaller power transformer

Question ID : 95506714
Chosen Option : 3



The given gate represents:

- Ans
- A. positive logic OR
 - B. positive logic NAND
 - C. negative logic OR
 - D. negative logic XOR

Question ID : 95506750
Chosen Option : 3

Q.67 FETs are preferred in amplifiers for their:

- Ans
- A. high input impedance
 - B. small size
 - C. temperature dependence
 - D. unipolar nature

Question ID : 95506720
Chosen Option : 1

Q.68 A coil has a mean area of 200 cm^2 and the number of turns is 1000. It is held perpendicular to a uniform field of 0.2 Gauss and turned through 180° in $1/10$ second; the average induced emf will be:

- Ans
- A. 2.3 V
 - B. 2 V
 - C. 1.25 V
 - D. 0.08 V

Question ID : 9550675
Chosen Option : --

Q.69 Which of the following statements is true?

Ans A. Dead zone in a graph signifies linearity.

B.

A linear system does not satisfy the superposition property.

C.

If a differential equation describing the system has constant coefficients, then the system is linear.

D. Most of the physical systems are non-linear systems.

Question ID : 95506725

Chosen Option : --

Q.70 Inactive time for RS-232 frame format is:

Ans A. + 12 V logic level high

B. - 12 V logic level high

C. - 5 V logic level high

D. + 5 V logic level high

Question ID : 95506783

Chosen Option : 1

Q.71 $I(s) = \frac{C(s)}{1+sRC} V(s)$ is the current passing through a series RC circuit. Find initial value of current if $R = 3 \text{ M}\Omega$, $C = 1 \mu\text{F}$ and supply is 100 V step voltage

Ans A. 33.33 μA

B. 28.68 μA

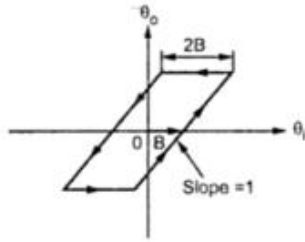
C. 26.67 μA

D. 14.26 μA

Question ID : 95506729

Chosen Option : --

Q.72

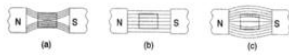


The given figure represents:

- Ans A. jump resonance
 B. Backlash
 C. Linearity
 D. limit cycle

Question ID : 95506732
 Chosen Option : 4

Q.73 With respect to the flux shown in the figure, select the correct option corresponding to a, b and c, respectively.



- Ans A. Diamagnetic, paramagnetic and ferromagnetic
 B. Paramagnetic, ferromagnetic and diamagnetic
 C. Ferromagnetic, paramagnetic and diamagnetic
 D. Paramagnetic, diamagnetic and ferromagnetic

Question ID : 95506739
 Chosen Option : 1

Q.74 Calculate the drift velocity of electrons for an n type Si having length of 5 cm and circular cross section of 10 mm² when it is subjected to a voltage of 1 V across its length. Current flowing through it is 5 mA. Assume charge of $e^- = 1.6 \times 10^{-19}$ and mobility of $e^- = 1300 \text{ cm}^2/\text{V} - \text{s}$.

- Ans A. 2.6 m / s
 B. 12 m / s
 C. 6.4 m / s
 D. 4 m / s

Question ID : 95506710
 Chosen Option : --

Q.75 The peak value of the line voltage in case of 120° mode of operation of a three-phase bridge inverter is:

- Ans A. $V_s/3$
 B. V_s
 C. $2V_s/3$
 D. $V_s/2$

Question ID : 95506781
Chosen Option : 3

Q.76 What is the number of T-states required to execute the following instruction?

LHLD addr16

(Note: addr16 is any 16-bit address)

- Ans A. 10T
 B. 6T
 C. 7T
 D. 13T

Question ID : 95506768
Chosen Option : 3

Q.77 A moving coil voltmeter has a uniform scale with 100 divisions, the full scale reading is 300 V and 1 / 10 of a scale division can be estimated with a fair degree of certainty. Determine the resolution of the instrument.

- Ans A. 0.2 V
 B. 0.4 V
 C. 0.5 V
 D. 0.3 V

Question ID : 95506759
Chosen Option : 4

Q.78 For a magnetic material, when majority of domains get aligned, the material is said to be:

- Ans A. linear
 B. saturated
 C. corrected
 D. rolled

Question ID : 95506740
Chosen Option : 2

Q.79 A highly sensitive galvanometer can detect a current as low as 0.1 nA. This galvanometer is used in a Wheatstone bridge as a detector. Each arm of the bridge has a resistance of 2 kΩ. The input voltage applied to the bridge is 20 V. Calculate the smallest change in resistance which can be detected.

- Ans
- A. 50 μΩ
 - B. 20 μΩ
 - C. 40 μΩ
 - D. 80 μΩ

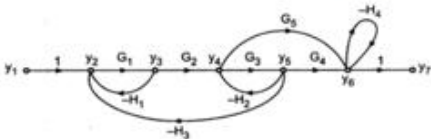
Question ID : **95506744**
Chosen Option : --

Q.80 In 8086 addressing when \overline{BHE} and A_0 are 0 and 1, respectively, what is read/written?

- Ans
- A. One 16-bit word
 - B. 1 byte from/to odd address
 - C. Nothing is read/written
 - D. 1 byte from/to even address

Question ID : **95506771**
Chosen Option : 4

Q.81 In the given figure, find $\frac{y_7}{y_2}$



- Ans
- A. $\frac{G_1 G_2 G_3 G_4 - G_2 G_5 H_2}{1 + G_3 H_2 + H_4 + G_3 H_2 H_4}$
 - B. $\frac{G_1 G_2 G_4 + G_1 G_2 G_5 (1 + G_3 H_2)}{1 - G_3 H_2 + H_4 + G_3 H_2 H_4}$
 - C. $\frac{G_1 G_2 G_3 G_4 + G_1 G_2 G_5 (1 + G_3 H_2)}{1 + G_3 H_2 + H_4 + G_3 H_2 H_4}$
 - D. $\frac{G_1 G_2 G_3 G_4 + G_1 G_5 (1 + G_3 H_2)}{1 + G_3 H_2 + H_4 + G_3 H_2 H_4}$

Question ID : **95506731**
Chosen Option : 2

Q.82 The moving coil in an electro-dynamometer wattmeter is called:

- Ans
- A. power coil
 - B. current coil
 - C. meter coil
 - D. pressure coil

Question ID : 95506741

Chosen Option : 4

Q.83 The power factor of a single-phase half controlled bridge converter is given as:

- Ans
- A. $\frac{\sqrt{2}}{\sqrt{(\pi - a)}} (1 + \cos a)$
 - B. $\frac{\sqrt{2}}{\sqrt{(\pi - a)}} \cos a$
 - C. $\frac{\sqrt{2}}{\sqrt{\pi(\pi - a)}} (1 + \cos a)$
 - D. $\frac{\sqrt{2}}{\sqrt{\pi(\pi - a)}} \cos a$

Question ID : 95506773

Chosen Option : --

Q.84 Calculate the precision of 3rd measurement from the data given below:

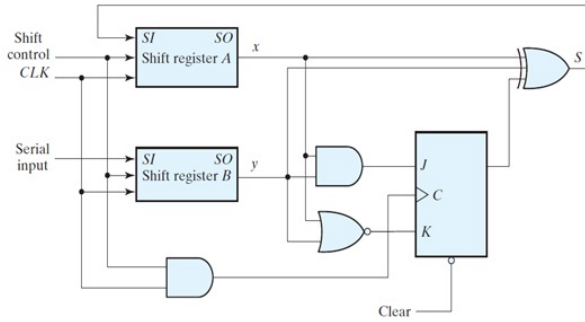
Measurement no.	Value
1	48
2	50
3	51
4	49
5	48

- Ans
- A. 95.46%
 - B. 96.40%
 - C. 96.34%
 - D. 95.34%

Question ID : 95506760

Chosen Option : --

Q.85



In the given figure, what will be the binary value in register A after two shifts for the serial adder which uses two four-bit registers? Register A holds the binary number 0101 and register B holds 0111. The carry flip-flop is initially reset to 0.

- Ans
- A. 0010
 - B. 0001
 - C. 1000
 - D. 1100

Question ID : 95506755
Chosen Option : --

Q.86 The efficiency of a lead acid cell does NOT depend on the:

- Ans
- A. internal resistance
 - B. rate of charge and discharge
 - C. pressure
 - D. temperature

Question ID : 9550676
Chosen Option : 3

Q.87 The composition of constantan is:

- Ans
- A. Cu = 60% and Ni = 40%
 - B. Cu = 43%, Ni = 17% and Mn = 40%
 - C. Sn = 23.43%, Cu = 43.67% and Ni = 32.9%
 - D. Mn = 65% and Zn = 35%

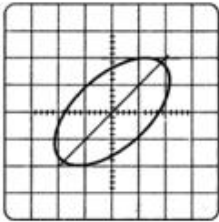
Question ID : 95506736
Chosen Option : 3

Q.88 The method in which the test instrument is compared with the response of a standard instrument of the same type is called:

- Ans A. standard calibration methodology
 B. indirect comparison calibration methodology
 C. comparative calibration methodology
 D. direct comparison calibration methodology

Question ID : 95506761
Chosen Option : 1

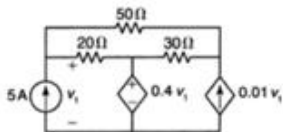
Q.89 For the given Lissajous figure, find the phase difference.



- Ans A. 44.64°
 B. 27.67°
 C. 53.13°
 D. 26.56°

Question ID : 95506747
Chosen Option : 1

Q.90



Determine the power supplied by the dependent current source.

- Ans A. 178.32 W
 B. 120.37 W
 C. 212.4 W
 D. 141.2 W

Question ID : 9550678
Chosen Option : --

Section : Quantitative Aptitude & Logical Ability

Q.1 If '+' means 'divided by', '-' means 'add', '×' means 'minus' and '÷' means 'multiplied by', then what will be the value of the following expression?

$$[\{(22 \times 12) \div 3\} + (3 - 7)]/2$$

- Ans
- A. 4
 - B. 6
 - C. 8
 - D. 2

Question ID : 955067105

Chosen Option : 2

Q.2 If $A^3 + B^3 = 200$ and $AB = 13$, the value of $A+B$ is

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

Question ID : 95506797

Chosen Option : 3

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

5, 10, 30, 120, 600, ?

- Ans
- A. 2400
 - B. 1800
 - C. 4000
 - D. 3600

Question ID : 955067102

Chosen Option : 4

Q.4 100 मीटर ऊंचाई वाले एक टॉवर के शीर्ष से, टॉवर की ओर आने वाली कार का अवनमन कोण 10

सेकंड में 30 डिग्री से बदलकर 60 डिग्री हो जाता है। कार की चाल लगभग _____ km/hr है।

- Ans
- A. 30
 - B. 60
 - C. 20
 - D. 40

Question ID : 95506799

Chosen Option : 1

Q.5 उत्पाद 'X' के प्रति पैक का नियमित मूल्य ₹25 है। यदि प्रति पैक नियमित मूल्य पर 25 प्रतिशत की छूट दी जाए, तो ऐसे 80 उत्पादों का मूल्य क्या होगा?

- Ans A. 2000
 B. 1500
 C. 1050
 D. 1250

Question ID : 955067101
Chosen Option : 2

Q.6 दो कारें, A और B से एक ही समय पर एक-दूसरे की ओर चलना शुरू करती हैं, जहां AB = 50 km है। वे एक घंटे के बाद एक दूसरे को पार करती हैं। A से चलने वाली कार को स्थान B पर पहुंचने में, स्थान B से चलने वाली कार के स्थान A पर पहुंचने की तुलना 5/6 घंटे कम समय लगता है। A से चलने वाली कार की चाल _____ km/hr है।

- Ans A. 20
 B. 15
 C. 25
 D. 30

Question ID : 95506796
Chosen Option : --

Q.7 निम्नलिखित प्रश्न में चार शब्द दिए गए हैं, जिनमें से तीन किसी प्रकार से संगत हैं, जबकि चौथा असंगत है। असंगत शब्द का चयन कीजिए।

- Ans A. लोमड़ी
 B. बाघ
 C. शेर
 D. हिरण

Question ID : 955067110
Chosen Option : 4

Q.8 दो वृत्तों की त्रिज्याएं 5 और 6 हैं, और उनके केंद्रों के बीच की दूरी 10 है। दोनों वृत्तों पर खींची जा सकने वाली उभयनिष्ठ स्पर्श रेखाओं की संख्या कितनी है?

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

Question ID : 95506798
Chosen Option : 4

Q.9 M और N, 0 से 9 के बीच के कोई दो अंक हैं। M और N के क्रमशः वे न्यूनतम मान बताइए, जिनके लिए संख्या 23M5N, 12 से पूर्णतया विभाज्य हो।

- Ans
- A. 2 और 2
 - B. 2 और 0
 - C. 0 और 2
 - D. 0 और 0

Question ID : 95506791

Chosen Option : 3

Q.10 राम और श्याम क्रमशः ₹5 लाख और ₹4 लाख के निवेश के साथ एक व्यवसाय शुरू करते हैं। 8 महीने के बाद, राम ₹1 लाख निकाल लेता है और मोहन ₹2 लाख के निवेश के साथ व्यवसाय में प्रवेश करता है। वर्ष के अंत में लाभ ₹2,80,000 है। लाभ में मोहन का हिस्सा ज्ञात कीजिए।

- Ans
- A. ₹28,000
 - B. ₹20,000
 - C. ₹14,000
 - D. ₹24,000

Question ID : 95506793

Chosen Option : --

Q.11 1 अप्रैल 2025 को कौन सा दिन होगा?

- Ans
- A. रविवार
 - B. मंगलवार
 - C. बुधवार
 - D. सोमवार

Question ID : 95506792

Chosen Option : 2

Q.12 सुपरमैन, अपने छिपने के स्थान से पूर्व की ओर 400 m उड़ा। फिर वह बाईं ओर मुड़ा और 400 m उड़ा। इसके बाद वह फिर से बाईं ओर मुड़ा और 200 m उड़ा। फिर से वह बाईं ओर मुड़ा और 200 m उड़ा। अब सुपरमैन के सामने की ओर कौन सा दिशा है?

- Ans
- A. उत्तर
 - B. दक्षिण
 - C. पश्चिम
 - D. पूर्व

Question ID : 955067108

Chosen Option : 2

Q.13 The given table shows the number of students from five different universities, A, B, C, D and E, who have volunteered at a blood donation camp over 5 months.

Universities Months	A	B	C	D	E
January	300	500	250	410	350
February	400	400	280	500	430
March	450	360	240	450	320
April	500	300	400	320	450
May	430	440	540	500	510

The number of students who volunteered from university B in February is what percentage (approximate) of the total number of students who volunteered from university B for all the 5 months together?

- Ans**
- A. 10%
 - B. 20%
 - C. 25%
 - D. 30%

Question ID : 955067103
Chosen Option : --

Q.14 निर्देश: नीचे दी गई जानकारी ध्यानपूर्वक पढ़ें और दिए गए प्रश्न का उत्तर दें।

पांच मित्र L, M, N, O और P का वजन असमान है। L का वजन M से अधिक है, लेकिन P से कम है। O का वजन केवल N से अधिक है। जिसका वजन 30 kg है, उसका वजन इन सभी में से सर्वाधिक है। M का वजन 15 kg है।

इनमें से किसका वजन संभवतः 20 kg है?

- Ans**
- A. P
 - B. N
 - C. L
 - D. O

Question ID : 955067104
Chosen Option : 1

Q.15 A एक कार्य को 20 दिनों में पूरा कर सकता है। A और B एक साथ मिलकर उसी कार्य को 15 दिनों में पूरा कर सकते हैं, तथा A, B, और C एक साथ मिलकर उसे 10 दिनों में पूरा कर सकते हैं। तो A और C एक साथ मिल कर उस कार्य को कितने दिनों में पूरा कर सकते हैं?

- Ans**
- A. 13
 - B. 12
 - C. 11
 - D. 14

Question ID : 95506794
Chosen Option : 2

Q.16 उस विकल्प का चयन करें, जिसका 'Deer' के साथ वही संबंध है, जो 'Man' का 'Child' से है।

- Ans A. Doe
 B. Fawn
 C. Cub
 D. Stag

Question ID : 955067106
Chosen Option : --

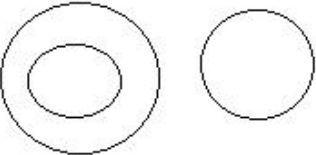
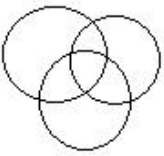
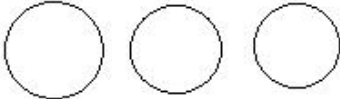
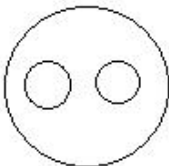
Q.17 In a certain code language, 'WITCH' is coded as '126'. How will 'WIZARD' be coded as in that code language?

- Ans A. 189
 B. 154
 C. 162
 D. 178

Question ID : 955067107
Chosen Option : 3

Q.18 Select the Venn diagram that best represents the relationship between the following classes.

Physics, Chemistry, Science

- Ans A. 
 B. 
 C. 
 D. 

Question ID : 955067109
Chosen Option : 4

Q.19 पाइप A एक टैंक को 40 घंटे में भर सकता है। पाइप A और B मिलकर इसे 24 घंटे में भर सकते हैं। एक रिसाव के कारण, B टैंक को 80 घंटे में भर सकता है। यह रिसाव भरे हुए टैंक को कितने घंटे में खाली कर सकता है?

- Ans
- A. 260
 - B. 240
 - C. 220
 - D. 200

Question ID : 95506795
Chosen Option : 2

Q.20 एक वृत्त की वह जीवा, जिसकी लंबाई वृत्त की त्रिज्या के बराबर है, उस वृत्त के केंद्र पर _____ रेडियन मान का कोण अंतरित करती है।

- Ans
- A. $\pi/4$
 - B. $2\pi/3$
 - C. $\pi/3$
 - D. $\pi/2$

Question ID : 955067100
Chosen Option : 1

Section : General English

Q.1 Select the most appropriate option to fill in the blank.

Visitors are required to _____ about who they want to meet.

- Ans
- A. inform us
 - B. informed
 - C. inform
 - D. informing

Question ID : 955067114
Chosen Option : 3

Q.2 Select the option that expresses the given sentence in passive voice.

The government is planning a new tax on services.

Ans A.

A new tax on services are being planned by the government.

B.

A new tax on services is being planning by the government.

C.

A new tax on services was being planned by the government.

D.

A new tax on services is being planned by the government.

Question ID : 955067112
Chosen Option : 1

Q.3 Select the most appropriate meaning of the underlined idiom in the given sentence.

We come from different departments but now we are all in the same boat.

Ans A. facing the same unpleasant situation

B. having to row together

C. forced together

D. going to a new destination

Question ID : 955067118
Chosen Option : 1

Q.4 Parts of the following sentence are given as options. Identify the part that has an error.

Sam may not to join the selection committee after all.

Ans A. the selection committee

B. to join

C. Sam may not

D. after all

Question ID : 955067111
Chosen Option : 3

Q.5 Select the option that can be used as a one-word substitute for the given phrase.

A person who studies the buildings and objects of people who lived in the past

- Ans** **A.** an archaeologist
 B. a sociologist
 C. a historian
 D. an anthropologist

Question ID : **955067120**
Chosen Option : **1**

Q.6 Select the option that expresses the given sentence in indirect speech.

Amir asked me, "Why didn't you answer the phone?"

- Ans** **A.** Amir asked me why I didn't answer the phone.
 B. Amir asked me why I haven't answered the phone.
 C. Amir asked me why I hadn't answered the phone.
 D. Amir asked me why I answered the phone.

Question ID : **955067113**
Chosen Option : **3**

Q.7 Parts of a sentence are given below in jumbled order. Arrange the parts in the right order to form a meaningful sentence.

like/ like/ brothers/ strangers/ get/ together/ together/ but/ work

- Ans** **A.**
Strangers get together like brothers but like work together.
 B.
Get together like brothers but work together like strangers.
 C.
Like brothers work together but get like strangers together.
 D.
Together get like brothers but together work like strangers.

Question ID : **955067119**
Chosen Option : **2**

Q.8 Select the correctly spelt word.

- Ans A. beggining
 B. beginning
 C. biginning
 D. begining

Question ID : 955067117
Chosen Option : 4

Q.9 Select the most appropriate synonym of the given word.

MARVEL

- Ans A. ignore
 B. ordinary
 C. wonder
 D. normal

Question ID : 955067115
Chosen Option : 3

Q.10 Select the most appropriate ANTONYM of the given word.

NEAT

- Ans A. arranged
 B. meticulous
 C. messy
 D. tidy

Question ID : 955067116
Chosen Option : 3

Section : General Awareness

Q.1 भारतीय संविधान के प्रस्तावना के अनुसार, भारत एक _____ है।

- Ans
- A. संप्रभु कम्यूनिस्ट धर्म निरपेक्ष प्रजातांत्रिक गणराज्य
 - B. भारतीय लोक गणराज्य
 - C. स्वतंत्र, संप्रभु लोक गणराज्य
 - D. संप्रभु समाजवादी धर्म निरपेक्ष प्रजातांत्रिक गणराज्य

Question ID : 955067125
Chosen Option : 1

Q.2 इनमें से किसे 2019 में कुश्ती के लिए राजीव गांधी खेल रत्न पुरस्कार से सम्मानित किया गया?

- Ans
- A. देवेन्द्र झाझारिया
 - B. जीतू राय
 - C. बजरंग पुनिया
 - D. दीपा मलिक

Question ID : 955067134
Chosen Option : 3

Q.3 जुलाई-सितंबर 2019 की अवधि के दौरान भारतीय सकल घरेलू उत्पाद (जी.डी.पी.) ने _____ की विकास दर प्रदर्शित की थी।

- Ans
- A. 4.5%
 - B. 5.4%
 - C. 5.7%
 - D. 6.2%

Question ID : 955067140
Chosen Option : 1

Q.4 Which of the following rivers does not flow through Punjab?

- Ans
- A. Sutlej
 - B. Yamuna
 - C. Ravi
 - D. Jhelum

Question ID : 955067128
Chosen Option : 2

Q.5 2018 में सफलतापूर्वक पुरुष हॉकी विश्व कप की मेजबानी करने के पश्चात इनमें से कौन सा भारतीय राज्य 2023 में एक बार पुनः इस टूर्नामेंट की मेजबानी करेगा?

- Ans A. ओडिशा
 B. तमिलनाडु
 C. पश्चिम बंगाल
 D. कर्नाटक

Question ID : 955067136
Chosen Option : 1

Q.6 अबुर्दा पर्वत की गुरु शिखर नामक चोटी भारत के किस राज्य में स्थित है?

- Ans A. महाराष्ट्र
 B. कर्नाटक
 C. राजस्थान
 D. हिमाचल प्रदेश

Question ID : 955067129
Chosen Option : 3

Q.7 2001 की जनगणना के अनुसार सर्वाधिक जनसंख्या वाला भारतीय राज्य कौन सा है?

- Ans A. बिहार
 B. उत्तर प्रदेश
 C. महाराष्ट्र
 D. मध्य प्रदेश

Question ID : 955067131
Chosen Option : 2

Q.8 भारत सरकार 2019 के अंत तक इनमें से किस सार्वजनिक क्षेत्र उपक्रम (पीएसयू) में अपनी हिस्सेदारी को घटाकर 51% से कम करने का विचार कर रही है?

- Ans A. भारतीय स्टेट बैंक (एस.बी.आई.)
 B. इंडियन ऑयल कॉर्पोरेशन (आई.ओ.सी.)
 C. हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एच.यू.एल.)
 D. रक्षा अनुसंधान एवं विकास संगठन (डी.आर.डी.ओ.)

Question ID : 955067123
Chosen Option : 2

Q.9 निम्नलिखित में से कौन सी हस्ती राष्ट्रीय कांग्रेस पार्टी से संबंधित हैं?

- Ans A. सुप्रिया सुले
 B. वैभव गहलोत
 C. ललित मोदी
 D. शरद यादव

Question ID : 955067135
Chosen Option : --

Q.10 भारत के भावी संविधान पर विचार करने के लिए ब्रिटिश सरकार द्वारा तीन सर्तों में बुलाई गई बैठकों की श्रृंखला का नाम क्या था?

- Ans A. भारतीय संवैधानिक सम्मेलन
 B. सामूहिक सम्मेलन
 C. गोलमेज सम्मेलन
 D. भारतीय विधायिका सम्मेलन

Question ID : 955067139
Chosen Option : 3

Q.11 निम्नलिखित में से कौन सा विटामिन C का अच्छा स्रोत नहीं है?

- Ans A. दूध
 B. शकरकंद
 C. हरी शिमला मिर्च (Green pepper)
 D. स्ट्रॉबेरी

Question ID : 955067127
Chosen Option : 1

Q.12 निम्नलिखित में से कौन एक प्रसिद्ध कथक नर्तक हैं?

- Ans A. डॉ बालामुरलीकृष्णा
 B. पंडित भीमसेन जोशी
 C. बिरजू महाराज
 D. पंडित कुमार गंधर्व

Question ID : 955067121
Chosen Option : 3

Q.13 इनमें से किस वैज्ञानिक ने रासायनिक तत्वों को परमाणु द्रव्यमान के आधार पर व्यवस्थित करने वाली आवर्त सारणी विकसित की?

- Ans
- A. गैलिलियो गैलिली
 - B. आइजैक न्यूटन
 - C. स्टीफन हॉकिंग
 - D. दमित्री मेंडलीफ

Question ID : 955067126
Chosen Option : 4

Q.14 भारतीय संविधान का कौन सा अनुच्छेद राज्यपाल को राज्य के मुख्यमंत्री की नियुक्ति करने का अधिकार देता है?

- Ans
- A. अनुच्छेद 166
 - B. अनुच्छेद 167
 - C. अनुच्छेद 164
 - D. अनुच्छेद 165

Question ID : 955067137
Chosen Option : --

Q.15 पारसी, जिनके नाम का अर्थ 'पर्सियंस' होता है, पर्सियन जोरोष्ट्रियंस के वंशज हैं, वे मुख्यतः _____ से भारत में आए थे।

- Ans
- A. रूस
 - B. अफगानिस्तान
 - C. ईरान
 - D. ईराक

Question ID : 955067133
Chosen Option : 3

Q.16 निम्नलिखित में से कौन सा जीवाणु मिट्टी में नाइट्रोजन यौगिक में सुधार करने में मदद करता है?

- Ans
- A. स्टैफ ऑरीयस (Staph aureus)
 - B. राइजोबियम (Rhizobium)
 - C. लुगडेनेनिस (Lugdenenis)
 - D. फीसियम (Faecium)

Question ID : 955067130
Chosen Option : 2

Q.17 काठमांडू में स्थित पशुपतिनाथ मंदिर को काठमांडू का प्राचीनतम हिंदू मंदिर माना जाता है। स्थानीय किंवदंती के अनुसार, पशुपतिनाथ किस भगवान के अवतार हैं?

- Ans A. शिव
 B. विष्णु
 C. कृष्ण
 D. ब्रह्मा

Question ID : 955067132

Chosen Option : 1

Q.18 बैंकिंग की भाषा में, NPA का पूर्ण रूप क्या है?

- Ans A. Notable Performing Asset (नोटेबल परफार्मिंग असेट)
 B. Net Performing Asset (नेट परफार्मिंग असेट)
 C. Null Performing Asset (नल परफार्मिंग असेट)
 D. Non Performing Asset (नॉन परफार्मिंग असेट)

Question ID : 955067124

Chosen Option : 4

Q.19 निम्नलिखित में से कौन सा राज्य/केंद्र शासित प्रदेश सेब उत्पादन के लिए प्रसिद्ध नहीं है?

- Ans A. हिमाचल प्रदेश
 B. जम्मू और कश्मीर
 C. उत्तराखंड
 D. ओडिशा

Question ID : 955067138

Chosen Option : 4

Q.20 निम्नलिखित में से कौन एक प्रसिद्ध ठुमरी गायिका थीं?

- Ans A. गिरिजा देवी
 B. मणि देवी
 C. लक्ष्मी देवी
 D. संतोषी देवी

Question ID : 955067122

Chosen Option : 1