DFCCIL

Executive S&T

Previous Year Paper

29 Sept 2021

Official Paper

Dedicated Freight Corridor Corporation of India Ltd.
A Government of India (Ministry of Railways) Enterprise
डेडीकेटेड फ्रेट कोरीडोर

Participant ID	
Participant Name	
Test Center Name	iON Digital Zone iDZ 1 Sector 62
Test Date	29/09/2021
Test Time	12:30 PM - 2:30 PM
Subject	Executive (Signal and Telecommunication)

Section : **General Knowledge**

Q.1 Which country has topped the United Nations' Human Development Index 2020?

Ans
✗ 1. United States of America
✗ 2. Russia
✓ 3. Norway
✗ 4. Denmark

Question ID : **54062621846**
Status : **Answered**
Chosen Option : **4**

Q.2 A vaccine for Covid-19 'Covaxin' is developed by _____.

Ans
✗ 1. Serum Institute of Technology
✗ 2. Glenmark Pharmaceuticals Limited
✗ 3. Cipla
✓ 4. Bharat Biotech

Question ID : **54062621847**
Status : **Answered**
Chosen Option : **4**

Q.3 What is the rank of India in World Press Freedom Index 2021?

Ans
✗ 1. 120
✗ 2. 133
✗ 3. 126
✓ 4. 142

Question ID : **54062621845**
Status : **Answered**
Chosen Option : **2**

Q.4 Which article of Indian constitution is related with Proclamation of emergency?

Ans
✗ 1. 374
✓ 2. 352
✗ 3. 360
✗ 4. 354

Question ID : **54062621849**
Status : **Answered**
Chosen Option : **1**

Q.5 Which of the following is not an animal tissue?

Ans
✗ 1. Connective
✗ 2. Muscular
✓ 3. Xylem
✗ 4. Epithelial

Question ID : **54062621841**
Status : **Answered**
Chosen Option : **3**

Q.6 Jyotirao Phule was born in the year _____.

Ans
✗ 1. 1838
✗ 2. 1821
✓ 3. 1827
✗ 4. 1831

Question ID : **54062621843**
Status : **Answered**
Chosen Option : **2**

Q.7 The Brahmaputra rises in _____.

Ans
✓ 1. Tibet
✗ 2. Jammu & Kashmir
✗ 3. Muzaffarabad
✗ 4. Arunachal Pradesh

Question ID : **54062621842**
Status : **Answered**
Chosen Option : **4**

Q.8 Which of the following is correct?

Ans
✗ 1. NNP = GNP + Depreciation
✗ 2. NNP – GNP = Depreciation
✗ 3. NNP + GNP = Depreciation
✓ 4. NNP = GNP – Depreciation

Question ID : **54062621840**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.9 ‘Pronuclear transfers’ technology recently developed by the U.K government is used _____.

Ans
✗ 1. to determine the medical history of a patient
✗ 2. to prevent transmission of mitochondrial DNA disease
✓ 3. for genetic modification of sperm producing cells
✗ 4. to expand the usefulness of hearing aids

Question ID : **54062621844**
Status : **Answered**
Chosen Option : **1**

Q.10 Which country has won the ICC Under 19 World Cup the most times?

Ans
✗ 1. Australia
✗ 2. England
✗ 3. South Africa
✓ 4. India

Question ID : **54062621850**
Status : **Answered**
Chosen Option : **1**

Q.11 Tihar festival is associated with _____.

Ans
✗ 1. Gujarat
✓ 2. Sikkim
✗ 3. Kerala
✗ 4. Uttarakhand

Question ID : **54062621839**
Status : **Answered**
Chosen Option : **1**

Q.12 _____ has launched its first military satellite named ‘Noor’ into the orbit.

Ans
✗ 1. Azerbaijan
✓ 2. Iran
✗ 3. Afghanistan
✗ 4. Iraq

Question ID : **54062621848**
Status : **Answered**
Chosen Option : **2**

Section : **General Aptitude or Reasoning**

Q.1 **In the following question below are given some statements followed by some conclusions based on those statements. Taking the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion logically follows the given statements.**

Statements:
I. Some B are D.
II. Some N are D.

Conclusions:
I. No B is N.
II. Some D are not B.
III. Some D are N.

Ans
✗ 1. Neither conclusion follows
✗ 2. Both conclusions II and III follows
✓ 3. Only conclusion III follow
✗ 4. All conclusions follows

Question ID : **54062621857**
Status : **Answered**
Chosen Option : **2**

Q.2 **A series is given with one term wrong. Select that wrong term from the given alternatives.**
AT, BS, CR, DP, EP

Ans
✓ 1. DP
✗ 2. CR
✗ 3. EP
✗ 4. BS

Question ID : **54062621851**
Status : **Answered**
Chosen Option : **1**

Q.3 **In the following question, select the related letters from the given alternatives.**
MOB : ORG :: GRP : ?

Ans
✓ 1. IUU
✗ 2. JUU
✗ 3. IVU
✗ 4. JVU

Question ID : **54062621853**
Status : **Answered**
Chosen Option : **1**

Q.4 If '+' means '–', '÷' means '×', '×' means '+' and '–' means '÷', then which of the following equation is NOT correct?
I. 39 ÷ 3 – 12 ÷ 16 + 6 × 11 = 161
II. 45 × 57 – 29 ÷ 87 + 62 = 164
III. 29 × 53 – 31 ÷ 186 + 63 + 12 = 272

Ans
✔ 1. Only II
✘ 2. I, II and III
✘ 3. Only I
✘ 4. I and III

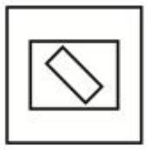
Question ID : **54062621858**
Status : **Answered**
Chosen Option : **1**

Q.5 In a certain code language, 'PAIN' is written as '149116', 'TERM' is written as '1318520'. What is the code for 'ABNG' in that code language?

Ans
✔ 1. 71421
✘ 2. 74112
✘ 3. 74121
✘ 4. 71412

Question ID : **54062621855**
Status : **Answered**
Chosen Option : **1**

Q.6 In the following question, select the odd figure from the given alternatives.

Ans
✘ 1. 
✘ 2. 
✘ 3. 
✔ 4. 

Question ID : **54062621861**
Status : **Answered**
Chosen Option : **4**

Q.7 **In the following question, select the missing number from the given series.**
29, 30, 62, 189, ?

Ans
✔ 1. 760
✘ 2. 756
✘ 3. 747
✘ 4. 744

Question ID : **54062621859**
Status : **Answered**
Chosen Option : **1**

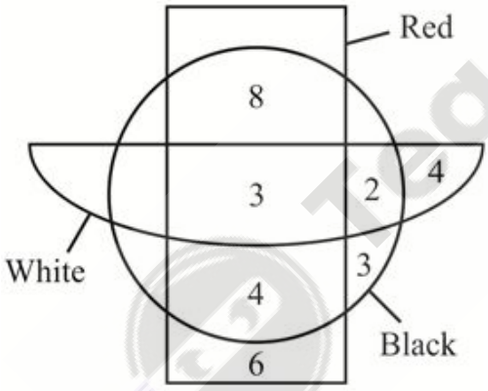
Q.8 **If 'J @ R' means 'R is the father of J', 'J # R' means 'R is the daughter of J', 'J % R' means 'R is the sister of J' and 'J + R' means 'R is the wife of J', then which of the following statement(s) is/are not correct?**

I. 'A # B @ K % C @ D' represents B as the daughter of K and C.
II. 'P + C # D % M' represents C can be the father of D and M.
III. 'A # M % B @ F' represents A is the mother of B.

Ans
✘ 1. Only I
✘ 2. Only II
✘ 3. II and III
✔ 4. I and II

Question ID : **54062621856**
Status : **Answered**
Chosen Option : **1**

Q.9 **How many red are neither black nor white?**



Ans
✘ 1. 10
✘ 2. 7
✘ 3. 4
✔ 4. 6

Question ID : **54062621860**
Status : **Answered**
Chosen Option : **4**

Q.10 In the following question, select the odd letter/letters from the given alternatives.

Ans
✗ 1. ACEG
✗ 2. JLNP
✗ 3. XZBD
✓ 4. EGJK

Question ID : **54062621852**
Status : **Answered**
Chosen Option : **4**

Q.11 Three positions of a dice are given below. What will come opposite to face containing '7' and '@' respectively on it?

Ans
✗ 1. G, 8
✗ 2. A, R
✓ 3. R, A
✗ 4. B, G

Question ID : **54062621862**
Status : **Answered**
Chosen Option : **3**

Q.12 In a certain code language, 'Tyres are not black' is written as '# lm pr kg', 'blue car not' is written as 'at fa lm', 'car white black' is written as 'fa # ar'. What is the code for 'are white tyres' in that code language?

Ans
✗ 1. ar lm kg
✗ 2. pr lm kg
✗ 3. fa ar kg
✓ 4. pr kg ar

Question ID : **54062621854**
Status : **Answered**
Chosen Option : **4**

Section : **Domain Knowledge**

Q.1 _____ have fixed AND gates and programmable OR gates.

Ans
✗ 1. PALs
✗ 2. MBM
✓ 3. PROMs
✗ 4. FPLAs

Question ID : **54062621919**
Status : **Answered**
Chosen Option : **1**

Q.2 _____ step is NOT involved in pulse code modulation system.

Ans

✗ 1. Sampling

✓ 2. Generating

✗ 3. Quantising

✗ 4. Encoding

Question ID : **54062621940**
Status : **Answered**
Chosen Option : **2**

Q.3 Which of the following codes uses a number of parity bits located at certain positions in the codeword and uses the relations between redundancy bits and the data bits?

Ans

✗ 1. Unicode

✗ 2. Morse code

✓ 3. Hamming code

✗ 4. Baudot code

Question ID : **54062621949**
Status : **Answered**
Chosen Option : **3**

Q.4 The exponential $x(t) = e^{-at}$ can be written as $x(t) = e^{-at}u(t) + e^{-at}u(-t)$ where the first term represents the:

Ans

✗ 1. anti- causal part of $x(t)$

✓ 2. causal part of $x(t)$

✗ 3. non- causal part of $x(t)$

✗ 4. formal part of $x(t)$

Question ID : **54062621878**
Status : **Answered**
Chosen Option : **2**

Q.5 The type of transistor configuration which has current gain but has no voltage gain is known as:

Ans

✗ 1. common emitter configuration

✗ 2. common base configuration

✗ 3. compound configuration

✓ 4. common collector configuration

Question ID : **54062621886**
Status : **Answered**
Chosen Option : **4**

Q.6 When the $pnpn$ diode is biased such that the p side is more positive than the n side, the junctions J_1 and J_3 are:

Ans

✗ 1. reverse biased

✓ 2. forward biased

✗ 3. control biased

✗ 4. feedback biased

Question ID : **54062621888**
Status : **Answered**
Chosen Option : **2**

Q.7 Which of the following is NOT the advantage of closed-loop control systems?

Ans

✗ 1. They are more accurate.

✗ 2. The speed of the response can be greatly increased.

✓ 3. They require lower forward path gains.

✗ 4. The effect of external disturbance signals can be made very small.

Question ID : **54062621921**
Status : **Answered**
Chosen Option : **2**

Q.8 Which of the following types of ADC is also known as continuous conversion type ADC?

Ans

✗ 1. Dual-slope ADC

✗ 2. Counter-type ADC

✗ 3. Tracking-type ADC

✓ 4. Successive approximation ADC

Question ID : **54062621920**
Status : **Answered**
Chosen Option : **2**

Q.9 Which of the following properties of an electromagnetic wave is classified as linear, circular, and elliptical?

Ans

✓ 1. Polarisation

✗ 2. Reflection

✗ 3. Propagation

✗ 4. Refraction

Question ID : **54062621952**
Status : **Answered**
Chosen Option : **1**

Q.10 Evaluate $\int e^{sin^{-1}x} \frac{1}{\sqrt{1-x^2}} dx$:

Ans

✗ 1. $e^{sinx} + c$

✗ 2. $2e^{sin^{-1}x} + c$

✓ 3. $e^{sin^{-1}x} + c$

✗ 4. $e^{sin^{-1}x} + 2c$

Question ID : **54062621863**
Status : **Answered**
Chosen Option : **2**

Q.11 A characteristic impedance does NOT satisfy which of the following statements?

Ans

✗ 1.
It is defined by the geometric dimensions of the transmission line.

✓ 2.
The ratio of the amplitudes of the voltage and current of a dual-wave, propagating down the line.

✗ 3.
It is an impedance response to an instantaneous pulse, or wave front.

✗ 4.
It is not a DC property, so it cannot be measured by a multimeter resistance function.

Question ID : **54062621947**
Status : **Answered**
Chosen Option : **4**

Q.12 Which of the following points CANNOT be observed about a unit impulse function if it is assumed in the form of a pulse?

Ans

✗ 1. The area under the pulse curve is always unity.

✗ 2.
The height of the arrow indicates the total area under the impulse.

✗ 3. The height of the pulse goes to infinity.

✓ 4. The width of the pulse is half of its height.

Question ID : **54062621876**
Status : **Answered**
Chosen Option : **4**

Q.13 Which of the following statements about *pnpn* diode is FALSE?

Ans ✔ 1.
This device works as a switch and is fabricated to have current ratings of several hundred volts.

✘ 2. It is the first member of thyristor family.

✘ 3. It has three junctions identified as J_1, J_2 and J_3.

✘ 4.
It consists of four layers of semiconductor of material of *pnpn* structure.

Question ID : **54062621887**
Status : **Answered**
Chosen Option : **4**

Q.14 Which of the following is NOT the advantage of lead compensator in a control system?

Ans ✔ 1.
With a decrease in gain due to compensation of attenuation, there is no such requirement of more elements and therefore it remains cost economical.

✘ 2. The addition of a lead network improves the phase margin.

✘ 3.
It introduces a dominant zero and a pole to the transfer function. Hence this improves the damping of the overall system.

✘ 4. It maximizes the velocity constant of the system.

Question ID : **54062621935**
Status : **Answered**
Chosen Option : **1**

Q.15 Which of the following is referred to as majority carriers in a p-type material?

Ans ✘ 1. Discrete energy

✔ 2. Holes

✘ 3. Electrons

✘ 4. Donor impurities

Question ID : **54062621883**
Status : **Answered**
Chosen Option : **2**

Q.16 Which of the following requires a centre-tapped transformer and is used in vacuum tubes?

Ans ✔ 1. Two diodes full-wave rectifier circuit

✘ 2. Inverted bridge rectifier circuit

✘ 3. Bridge rectifier circuit

✘ 4. Single diode full-wave rectifier circuit

Question ID : **54062621899**
Status : **Answered**
Chosen Option : **3**

Q.17 How many variables do 16 squares eliminate?

Ans
✗ 1. 7
✓ 2. 4
✗ 3. 11
✗ 4. 1

Question ID : **54062621908**
Status : **Answered**
Chosen Option : **2**

Q.18 Evaluate $\int_0^{\pi/2} sinx\ dx$:

Ans
✓ 1. 1
✗ 2. $\frac{1}{2}$
✗ 3. 2
✗ 4. 0

Question ID : **54062621866**
Status : **Answered**
Chosen Option : **1**

Q.19 Which of the following is NOT the advantage of Routh-Hurwitz criterion of control systems?

Ans
✗ 1.
By this method, we can also determine the point of intersection for root locus with an imaginary axis.
✗ 2.
By this method, we can determine the range of K for stability.
✗ 3. We can easily determine the relative stability of the system.
✓ 4.
The criterion is applicable for both linear and non-linear system.

Question ID : **54062621929**
Status : **Answered**
Chosen Option : **4**

Q.20 Which of the following statements about the Op-Amp differentiator circuit is INCORRECT?

Ans
✓ 1.
The capacitor in differentiator blocks any AC content so there is no current flow to the amplifier subtracting point.
✗ 2.
Capacitive input makes it very susceptible to random noise signals and any noise present in the source circuit will be amplified more than the input signal itself.
✗ 3.
The input signal to the differentiator is applied to the capacitor.
✗ 4. It suffers from instability at high frequencies.

Question ID : **54062621897**
Status : **Answered**
Chosen Option : **2**

Q.21 Which of the following modes is used for propagation of very high frequencies?

Ans

✗ 1. Surface wave propagation

✗ 2. Skywave propagation

✓ 3. Space wave propagation

✗ 4. Ground wave propagation

Question ID : **54062621956**
Status : **Answered**
Chosen Option : **3**

Q.22 The system that is sometimes represented symbolically as $x[n] \rightarrow y[n]$ is called:

Ans

✗ 1. unit step system

✗ 2. unit impulse system

✗ 3. continuous-time system

✓ 4. discrete-time system

Question ID : **54062621874**
Status : **Answered**
Chosen Option : **4**

Q.23 The given mathematical representation belongs to:

$y(t) = x(t - T)$

Ans

✗ 1. time multiplication

✓ 2. time shifting

✗ 3. time scaling

✗ 4. time reversal

Question ID : **54062621873**
Status : **Answered**
Chosen Option : **2**

Q.24 Which of the following BCD code, is a sequential code and therefore can be used for arithmetic operations as well as has six invalid states 0000, 0001, 0010, 1101, 1110 and 1111?

Ans

✓ 1. The excess three code

✗ 2. Error detecting code

✗ 3. The 8421 BCD code

✗ 4. The Gray code

Question ID : **54062621906**
Status : **Answered**
Chosen Option : **1**

Q.25 In the time domain, unit step signal is represented by:

Ans

✗ 1. $r(t)$

✗ 2. $\partial(t)$

✓ 3. $u(t)$

✗ 4. $\frac{t^2}{2}$

Question ID : **54062621931**
Status : **Answered**
Chosen Option : **3**

Q.26 The given truth table of a logic gate belongs to:

Truth Table	
A	Q
0	1
1	0

Ans

✗ 1. the NAND gate

✓ 2. the NOT gate

✗ 3. the NOR gate

✗ 4. the XOR gate

Question ID **54062621916**
Status : **Answered**
Chosen Option : **2**

Q.27 Which of the following is a very high gain differential amplifier which has a high input impedance and a single ended output?

Ans

✗ 1. Simple bridge differential amplifier

✗ 2. Light activated differential amplifier

✓ 3. Instrumentation differential amplifier

✗ 4. Wheatstone bridge differential amplifier

Question ID : **54062621901**
Status : **Answered**
Chosen Option : **3**

Q.28 Which of the following statements about the K-maps is INCORRECT?

Ans

✗ 1.
In K-maps, don't care terms are used only if they help in reducing the expression. Otherwise, they need not be considered.

✓ 2.
The five-variable map may contain 2-squares, 4-squares, 8-squares, or other combinations involving four blocks of K-map having 16 squares each.

✗ 3.
The binary number designations of the rows and columns of the K-map are in Gray code.

✗ 4.
A two-variable K-map expression can have 4 possible combinations of the input variables.

Question ID : **54062621909**
Status : **Answered**
Chosen Option : **2**

Q.29 _____ is a device commonly used as a feedback element and is highly reliable for measuring linear or angular motion.

Ans

✗ 1. Tachometer

✗ 2. Stepper meter

✓ 3. Potentiometer

✗ 4. Synchro meter

Question ID : **54062621922**
Status : **Answered**
Chosen Option : **3**

Q.30 "Time-varying magnetic field will always produce an electric field".

The given statement is true for:

Ans

✗ 1. Maxwell's first equation

✗ 2. Maxwell's second equation

✗ 3. Maxwell's fourth equation

✓ 4. Maxwell's third equation

Question ID : **54062621958**
Status : **Answered**
Chosen Option : **1**

Q.31 For what value of 'x' will the function $y = x^2 - 4x$ have the maximum or minimum value?

Ans

✗ 1. $\frac{1}{2}$

✓ 2. 2

✗ 3. 4

✗ 4. 1

Question ID : **54062621870**
Status : **Answered**
Chosen Option : **2**

Q.32 A second order control system is NOT required to satisfy the following specification:

Ans

✔ 1. variations in step output

✗ 2. settling time

✗ 3. peak overshoot to a step input

✗ 4. steady state accuracy

Question ID : **54062621923**
Status : **Answered**
Chosen Option : **4**

Q.33 Which of the following statements about the working of SCR is INCORRECT?

Ans

✗ 1.
An SCR has two states i.e., either it does not conduct, or it conducts heavily. Therefore, SCR behaves like a switch.

✗ 2.
Applying small positive voltage to the gate is the normal way to close an SCR because breakover voltage is usually much greater than supply voltage.

✗ 3. To open the SCR, reduce the supply voltage to zero.

✔ 4.
There are two ways to turn on the SCR. One of the methods is to keep the gate open and make supply voltage lesser to the breakover voltage.

Question ID : **54062621892**
Status : **Answered**
Chosen Option : **3**

Q.34 In _____, a carrier is transmitted for a 1-bit, and nothing is transmitted for 0-bit, this is analogous to flashing light communication.

Ans

✗ 1. M-ary digital modulation

✗ 2. Phase shift keying

✗ 3. 8-point phase shift keying

✔ 4. On-off keying

Question ID : **54062621943**
Status : **Answered**
Chosen Option : **4**

Q.35 Which of the following types of displays are called passive displays, classified under the method of conversion of electrical data to visible light?

Ans

✗ 1. Gas discharge plasma

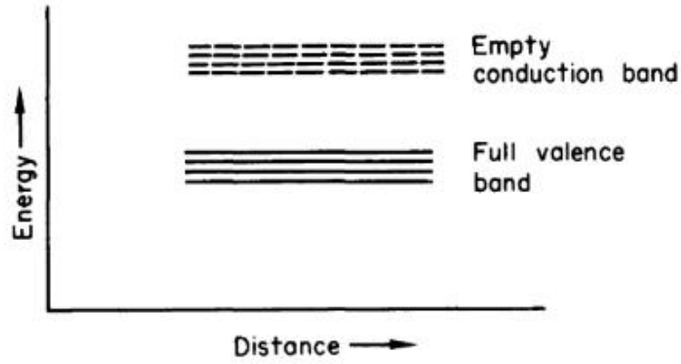
✗ 2. CRTs

✔ 3. LCDs

✗ 4. LEDs

Question ID : **54062621910**
Status : **Answered**
Chosen Option : **2**

Q.36 The following represents the energy band diagram for:



Ans
✗ 1. an intrinsic semiconductor
✗ 2. a p-type semiconductor
✗ 3. a conductor
✓ 4. an insulator

Question ID : **54062621890**
Status : **Answered**
Chosen Option : **4**

Q.37 Which of the following feedback systems are also known as series voltage feedback system?

Ans
✓ 1. Series-shunt feedback system
✗ 2. Shunt-shunt feedback system
✗ 3. Shunt-series feedback system
✗ 4. Series-series feedback system

Question ID : **54062621893**
Status : **Answered**
Chosen Option : **3**

Q.38 Which of the following statements about the demultiplexers is INCORRECT?

Ans
✗ 1.
1-line to 8-line demultiplexer consist of eight AND gates, all of them connected to a single line data input.

✗ 2. It takes single input and distributes it over several outputs.

✓ 3.
It is used as anti-clock demultiplexers in synchronous data transmission systems in the receivers and security monitoring systems etc.

✗ 4.
It takes one input data source and selectively distributes it to 1-of-N output channels just like a multi-position switch.

Question ID : **54062621911**
Status : **Answered**
Chosen Option : **4**

Q.39 Which of the following equations is based on Ampere's circuit law?

Ans
✗ 1. Maxwell's third equation
✓ 2. Maxwell's fourth equation
✗ 3. Maxwell's second equation
✗ 4. Maxwell's first equation

Question ID : **54062621951**
Status : **Answered**
Chosen Option : **4**

Q.40 Which of the following advantages of superheterodyne radio over other forms of radio is INCORRECT?

Ans
✗ 1. Its flexibility and capabilities have meant that it was adopted for many uses from broadcast reception
✗ 2. Reception for scientific applications
✗ 3. It can be used as a test receiver for EMI/EMC testing
✓ 4. Ground to air communications

Question ID : **54062621939**
Status : **Answered**
Chosen Option : **2**

Q.41 One easy way of creating biased diode clipping circuits without the need for an additional EMF supply is to use _____.

Ans
✓ 1. Zener diodes
✗ 2. PIN diodes
✗ 3. Tunnel diodes
✗ 4. Varactor diodes

Question ID : **54062621898**
Status : **Answered**
Chosen Option : **1**

Q.42 _____ is also known as Hertz antenna.

Ans
✗ 1. Concave plane antenna
✗ 2. Horn antenna
✗ 3. Parabolic reflector antenna
✓ 4. Half-wave dipole antenna

Question ID : **54062621953**
Status : **Answered**
Chosen Option : **3**

Q.43 Evaluate $\int x \, logx \, dx$:

Ans

✔ 1. $\frac{x^2 \, logx}{2} - \frac{x^2}{4} + c$

✘ 2. $\frac{x^2 \, logx}{2} - \frac{x^2}{2} + 2c$

✘ 3. $\frac{x^2 \, logx}{2} - \frac{x^2}{2} + c$

✘ 4. $\frac{x^2 \, logx}{2} - \frac{x^4}{4} + c$

Question ID : **54062621864**
Status : **Answered**
Chosen Option : **1**

Q.44 What does $h(n)$ represents in discrete time LTI system?

Ans

✘ 1. Unit impulse function

✔ 2. Unit impulse response

✘ 3. Unit step response

✘ 4. Unit step input

Question ID : **54062621879**
Status : **Answered**
Chosen Option : **2**

Q.45 Which of the following memory-based addressing mode satisfies the below statements?

1. The address of the memory location that holds the operand is included in the instruction.
2. The effective address is the address part of the instruction.
3. It is used to access the static variables.

Ans

✘ 1. Relative addressing mode

✔ 2. Direct addressing mode

✘ 3. Indirect addressing mode

✘ 4. Indexed addressing mode

Question ID : **54062621957**
Status : **Answered**
Chosen Option : **2**

Q.46 Which of the following statements about the arithmetic circuit is INCORRECT?

Ans

✗ 1.
A half-adder is an arithmetic circuit that adds to binary digits.

✗ 2.
A half-subtractor is an arithmetic circuit that subtracts one binary digit from another.

✗ 3.
A full-subtractor is an arithmetic circuit that subtracts one binary digit from another considering a borrow.

✓ 4.
A full adder is an arithmetic circuit that adds one binary digit and a carry i.e., 3 bits.

Question ID : **54062621914**
Status : **Answered**
Chosen Option : **1**

Q.47 Find the area bounded by the curve $x = 2y^2$, the axis and the lines $y = 0$ and $y = 3$.

Ans

✗ 1. $e^6 - 1$ square units

✗ 2. 54 square units

✗ 3. -1 square units

✓ 4. 18 square units

Question ID : **54062621871**
Status : **Answered**
Chosen Option : **4**

Q.48 In practice, power spectral density is used to:

Ans

✓ 1. quantify random vibration fatigue

✗ 2. quantify harmonics generated by engines

✗ 3. quantify sinusoidal data

✗ 4. quantify harmonics generated by Pumps and gears

Question ID : **54062621933**
Status : **Answered**
Chosen Option : **1**

Q.49 Which of the following statements about the signal flow graph of control systems is INCORRECT?

Ans

✗ 1.
The transfer function is referred to as transmittance in a signal flow graph.

✗ 2.
The representation of equation y = Kx, is represented by a signal flow graph as: 

✓ 3.
It is a further simplification the of K-graph of a control system.

✗ 4.
The blocks of transfer function, summing symbols and take off points are eliminated by branches and nodes in this graph.

Question ID : **54062621927**
Status : **Answered**
Chosen Option : **1**

Q.50 Which of the following is NOT the advantage of half-wave rectifier?

Ans

✗ 1. Simple connections

✗ 2. Number of components used are less

✗ 3. Affordable

✓ 4. Utilisation of transformer is enough

Question ID : **54062621896**
Status : **Answered**
Chosen Option : **4**

Q.51 Which of the following is the true application of wire antennas?

Ans

✓ 1. Automobiles, spacecraft

✗ 2. Missiles, satellites

✗ 3 Very high gain applications

✗ 4. Microwave communication

Question ID : **54062621950**
Status : **Answered**
Chosen Option : **3**

Q.52 How can we use the X-NOR gate as an inverter?

Ans

✗ 1.
By connecting two input terminals to logic 1 and feeding the signal to be inverted to the remaining channel

✓ 2.
By connecting one input terminal to logic 0 and feeding the signal to be inverted to the other terminal

✗ 3.
By tying all input terminal to logic 0 and feeding the system to be inverted to the other terminal

✗ 4.
By tying all but one input terminal to logic 1 and feeding the signal to be inverted to the remaining terminal

Question ID : **54062621915**
Status : **Answered**
Chosen Option : **2**

Q.53 Which of the following statements about the Op-Amp differential amplifiers is INCORRECT?

Ans

✓ 1.
The output of the Op-Amp must be zero when the voltages applied at its terminal are different to each other.

✗ 2.
An Op-Amp operating in differential mode can readily act as a subtractor amplifier.

✗ 3. These devices are used as motor or servo controllers.

✗ 4.
The basic circuit can be modified in many ways resulting in various circuit designs including Wheatstone bridge differential amplifier.

Question ID : **54062621894**
Status : **Answered**
Chosen Option : **1**

Q.54 Which of the following is NOT one of the types of amplitude modulation?

Ans

✗ 1. Vestigial sideband

✓ 2. Single-sideband with carrier

✗ 3. Single-sideband suppressed carrier

✗ 4. Double-sideband suppressed carrier

Question ID : **54062621934**
Status : **Answered**
Chosen Option : **2**

Q.55 Which of the following is NOT one of the representations of discrete-time signals?

Ans

✗ 1. Sequence representation

✗ 2. Graphical representation

✓ 3. Analytical representation

✗ 4. Tabular representation

Question ID : **54062621872**
Status : **Answered**
Chosen Option : **3**

Q.56 Which of the following is NOT the disadvantage of lag compensator in a control system?

Ans

✗ 1.
In lag compensator, the attenuation offered by it shifts the gain crossover frequency to a lower point, thereby decreasing the bandwidth.

✓ 2.
The lag network offers a reduction in bandwidth, and this gives shorter rise time and settling time and so the transient response.

✗ 3.
A lag compensator somewhat acts as a proportional plus integral controller, hence adversely affects the stability of the system.

✗ 4.
Though the system response is longer due to decreased bandwidth, the response is quite slow.

Question ID : **54062621932**
Status : **Not Answered**
Chosen Option : **--**

Q.57 Which of the following applications about the oscillators is FALSE?

Ans

✗ 1. It is used in alarm and buzzes.

✗ 2.
It is used to generate clock pulses for micro-processors and micro-controllers.

✓ 3. It is also used as switch debouncing.

✗ 4. It is used in metal detectors, sun guns and ultrasonic.

Question ID : **54062621905**
Status : **Answered**
Chosen Option : **1**

Q.58 Diode junction breakdowns above 5 V are caused by:

Ans

✗ 1. Zener effect

✗ 2. Diffusion effect

✗ 3. Combination of two effects

✓ 4. Avalanche effect

Question ID : **54062621882**
Status : **Answered**
Chosen Option : **4**

Q.59 Which of the following flip-flops has a single control input?

Ans

✗ 1. The edge triggered J-K flip-flop

✗ 2. The gated D-latch

✓ 3. The edge triggered T flip-flop

✗ 4. The edge triggered S-R flip-flop

Question ID : **54062621918**
Status : **Answered**
Chosen Option : **2**

Q.60 Which of the following is NOT one of the sampling techniques?

Ans

✗ 1. Natural sampling

✗ 2. Ideal sampling

✓ 3. Simultaneous sampling

✗ 4. Flat top sampling

Question ID : **54062621881**
Status : **Answered**
Chosen Option : **2**

Q.61 Which of the following is NOT an advantage of pulse code modulation?

Ans ✓ 1.

No precise clock is necessary for precise reproduction as samples are not reliant on time.

✗ 2. It is immune to channel induced noise and distortion.

✗ 3. Repeaters can be employed along a transmission channel.

✗ 4. Encoders allow secured data transmission.

Question ID : **54062621942**
Status : **Answered**
Chosen Option : **3**

Q.62 Which of the following phase modulation applications is INCORRECT?

Ans ✗ 1.

It is an integral element of many digital transmission coding schemes that support an ample range of wireless technologies such as GSM and Wi-Fi.

✗ 2. This is very useful in radio waves transmission.

✓ 3. It is used in digital synthesizers for transferring signals.

✗ 4. It is also used in satellite television network.

Question ID : **54062621936**
Status : **Answered**
Chosen Option : **1**

Q.63 X/Y (where X represents the input code and Y represents the output code) as a qualifying symbol does NOT relate to:

Ans

✗ 1. code converters

✗ 2. encoders

✓ 3. comparators

✗ 4. decoders

Question ID : **54062621913**
Status : **Answered**
Chosen Option : **3**

Q.64 Complete the sentence correctly:

An even signal is _____ .

Ans
✔ 1. symmetrical about the vertical axis
✘ 2. antisymmetric about the vertical axis
✘ 3. antisymmetric about the horizontal axis
✘ 4. symmetrical about the horizontal axis

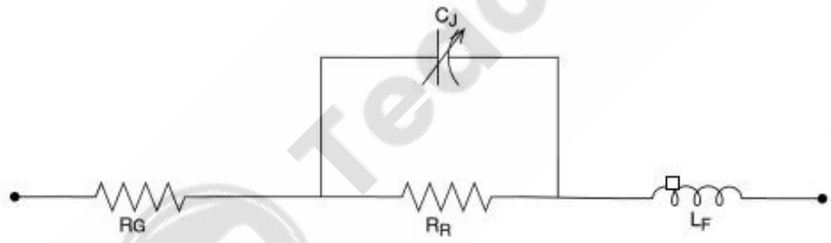
Question ID : **54062621877**
Status : **Answered**
Chosen Option : **1**

Q.65 In S-R latch, when the SET input is made high, output Q becomes:

Ans
✘ 1. 0
✔ 2. 1
✘ 3. no change
✘ 4. application not allowed

Question ID : **54062621917**
Status : **Answered**
Chosen Option : **2**

Q.66 The given equivalent circuit belongs to:



Ans
✘ 1. PIN diode
✘ 2. Tunnel diode
✘ 3. Zener diode
✔ 4. Varactor diode

Question ID : **54062621900**
Status : **Answered**
Chosen Option : **4**

Q.67 In which system, if an input consists of the weighted sum of several signals, then the output is the superposition?

Ans

✔ 1. Linearity

✘ 2. Invertibility

✘ 3. Stability

✘ 4. Casualty

Question ID : **54062621875**
Status : **Answered**
Chosen Option : **1**

Q.68 Which of the following statements about the MOS transistor is INCORRECT?

Ans

✘ 1. The heart of a MOS transistor is the MOS capacitor.

✔ 2. In modern MOS transistors, the metal layer is often replaced by highly doped Si_3N_4.

✘ 3. The oxide thickness, which is typically of the order of 0.01 μm is crucial in determining the behaviour of the MOS capacitor.

✘ 4. It derives its name from materials involved in the early transistor of metal, oxide, and semiconductor.

Question ID : **54062621889**
Status : **Answered**
Chosen Option : **3**

Q.69 In which type of active filter, its implementation gives a lot steeper roll-off, but has ripple in the pass band, so it is not used in audio systems, as well as it is far better in applications where there is only one frequency available in the pass band?

Ans

✔ 1. Chebyshev filter

✘ 2. Elliptical filter

✘ 3. Butterworth filter

✘ 4. Bessel filter

Question ID : **54062621904**
Status : **Answered**
Chosen Option : **3**

Q.70 In the _____, the emitter junction is reverse biased and collector junction is forward biased.

Ans

✘ 1. saturation region of transistor operation

✘ 2. active region of transistor operation

✘ 3. cut-off region of transistor operation

✔ 4. inverse region of transistor operation

Question ID : **54062621885**
Status : **Answered**
Chosen Option : **4**

Q.71 Evaluate $\int (x^2 - 5)^4 \, x \, dx$:

Ans

✔ 1. $\frac{1}{10}(x^2 - 5)^5 + c$

✘ 2. $\frac{1}{2}(x^2 - 5)^4 + c$

✘ 3. $\frac{1}{2}(x^2 - 5)^5 + c$

✘ 4. $\frac{1}{5}(x^2 - 5)^4 + c$

Question ID : **54062621869**
Status : **Not Answered**
Chosen Option : **--**

Q.72 _____ a sinusoidal transfer function of a system can be represented by two separate plots, where one plot corresponds to the magnitude vs frequency while the other corresponds to the phase angle vs frequency response of the system.

Ans

✔ 1. By the use of a bode plot

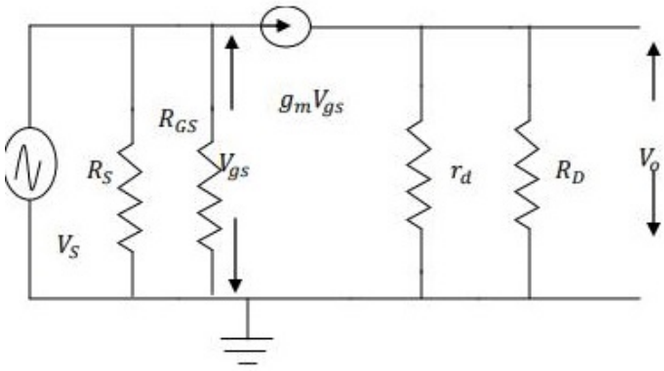
✘ 2. By the use of a root-locus plot

✘ 3. By the use of block-diagram representation

✘ 4. By the use of signal flow graph

Question ID : **54062621930**
Status : **Answered**
Chosen Option : **1**

Q.73 The given circuit represents small signal model of:



Ans
✗ 1. self-biased common gain amplifier
✗ 2. self-biased common drain amplifier
✓ 3. common gate amplifier
✗ 4. common drain amplifier

Question ID : **54062621903**
Status : **Answered**
Chosen Option : **1**

Q.74 The theorem to which the given two powerful laws in Boolean algebra belong to, is:

Law 1: $\overline{A+B} = \bar{A}\,\bar{B}$

Law 2: $\overline{AB} = \bar{A} + \bar{B}$

Ans
✗ 1. Included factor theorem
✗ 2. Transposition theorem
✓ 3. De Morgan's theorem
✗ 4. Consensus theorem

Question ID : **54062621912**
Status : **Answered**
Chosen Option : **3**

Q.75 All radios will need a sufficiently high level of image rejection, and this is provided by:

Ans
✗ 1. demodulator
✓ 2. RF tuning
✗ 3. filter and IF amplifier
✗ 4. local oscillator

Question ID : **54062621937**
Status : **Answered**
Chosen Option : **2**

Q.76 _____ is also called vertical redundancy check, one of the types of error detection in communications.

Ans
1. Longitudinal check
2. Sum technique
3. Parity checking
4. Cyclic check

Question ID : **54062621946**
Status : **Answered**
Chosen Option : **4**

Q.77 Which of the following is NOT a property of definite integral?

Ans
1. $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$
2. $\int_0^a f(x)\,dx = \int_0^a f(a-x)\,dx$
3. $\int_0^{2a} f(x)\,dx = \int_0^{2a} f(2a-x)\,dx$
4. $\int_a^b f(x)\,dx = -\int_a^b f(t)\,dt$

Question ID : **54062621865**
Status : **Answered**
Chosen Option : **4**

Q.78 What should be the bandwidth figure of signal to noise ratio for SSB?

Ans
1. 0.5 kHz
2. 9 kHz
3. 3 kHz
4. 6 kHz

Question ID : **54062621945**
Status : **Answered**
Chosen Option : **3**

Q.79 _____ are basically inverting amplifiers where we replace the feedback resistor with a capacitor of suitable value.

Ans

✗ 1. Differentiators

✗ 2. Active filters

✓ 3. Integrators

✗ 4. Summers

Question ID : **54062621895**
Status : **Answered**
Chosen Option : **3**

Q.80 Which of the following types of standard input signals has the Laplace transformation as $\frac{\omega}{(s^2+\omega^2)}$?

Ans

✓ 1. Cosine type of signal

✗ 2. Unit impulse signal

✗ 3. Sinusoidal type signal

✗ 4. Parabolic type signal

Question ID : **54062621928**
Status : **Answered**
Chosen Option : **3**

Q.81 If the open-loop gain decreases due to the frequency or the effects of the system ageing, providing that βG is still very large, then the overall system gain _____. (Where G is Open loop voltage gain and β is the feedback fraction)

Ans

✓ 1. does not change very much

✗ 2. increases very much

✗ 3. decreases very much

✗ 4. fluctuates accordingly inputs

Question ID : **54062621891**
Status : **Answered**
Chosen Option : **1**

Q.82 The z-transform of a causal periodic signal can be determined from the knowledge of the z-transform of its:

Ans

✓ 1. first cycle

✗ 2. similar cycle

✗ 3. final cycle

✗ 4. reverse cycle

Question ID : **54062621880**
Status : **Answered**
Chosen Option : **1**

Q.83 Maxwell's third equation is derived from _____.

Ans
✗ 1. Ampere's circuital law
✗ 2. Gauss's law of electrostatic
✓ 3. Faraday's law of electromagnetic induction
✗ 4. Gauss's law of magnetostatics

Question ID : **54062621954**
Status : **Answered**
Chosen Option : **1**

Q.84 Which of the following parameters is used in RF design?

Ans
✗ 1. H-parameters
✗ 2. Z-parameters
✗ 3. Y-parameters
✓ 4. S-parameters

Question ID : **54062621948**
Status : **Answered**
Chosen Option : **4**

Q.85 In which process is the flat-top pulse amplitude modulated signal generated?

Ans
✓ 1. Sampling
✗ 2. Encoding
✗ 3. Reconstruction filter
✗ 4. Quantisation

Question ID : **54062621944**
Status : **Answered**
Chosen Option : **1**

Q.86 Which of the following is NOT the advantage of amplitude modulation?

Ans
✗ 1.
It can be demodulated using a circuit consisting of very few components.
✗ 2. It is simple to implement.
✗ 3.
AM receivers are very cheap as no specialised components are needed.
✓ 4. It is efficient in terms of its power usage.

Question ID : **54062621938**
Status : **Answered**
Chosen Option : **4**

Q.87 Which type of Boolean algebra law do the following laws belong to?

Law 1: $A + A \,.\, B = A$

Law 2: $A(A + B) = A$

Ans

✗ 1. Double negation laws

✗ 2. Distributive laws

✓ 3. Absorption laws

✗ 4. Associate laws

Question ID : **54062621907**
Status : **Answered**
Chosen Option : **2**

Q.88 Which of the following terms related to the Root Loci technique originates from the centre of gravity of the centroid and goes to infinity at some definite angle?

Ans

✗ 1. Angle of arrival or departure

✓ 2 Asymptotes of Root Loci

✗ 3. Symmetry of root

✗ 4. Symmetry of Root Locus

Question ID : **54062621925**
Status : **Answered**
Chosen Option : **2**

Q.89 High frequency transistors are designed especially for:

Ans

✗ 1. LF applications (100 kHz and above)

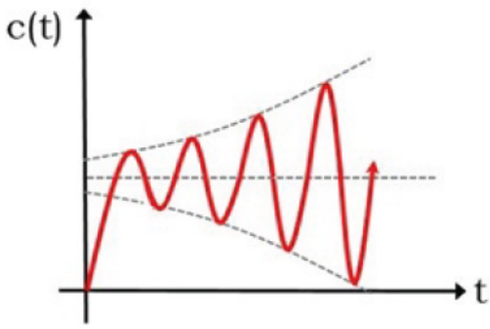
✓ 2. RF applications (100 kHz and above)

✗ 3. DF applications (below 100 kHz)

✗ 4. AF applications (below 100 kHz)

Question ID : **54062621884**
Status : **Answered**
Chosen Option : **2**

Q.90 The given figure represents:



Ans
1. absolutely stable system
2. unstable system
3. marginally stable system
4. critically stable system

Question ID : **54062621924**
Status : **Answered**
Chosen Option : **2**

Q.91 The amplifier in which each input will be multiplied by a different factor and then summed together is called as:

Ans
1. non-weighted amplifier
2. scaling amplifier
3. averaging amplifier
4. multiple-way amplifier

Question ID : **54062621902**
Status : **Answered**
Chosen Option : **1**

Q.92 Find the slope of normal to the curve $y = x^2 + 7x$ at $(1, 8)$.

Ans
1. 9
2. $\frac{-1}{11}$
3. $\frac{-1}{9}$
4. 11

Question ID : **54062621867**
Status : **Answered**
Chosen Option : **1**

Q.93 Which of the following is NOT the advantage of frequency modulation?

Ans
✗ 1. Less interference and noise
✗ 2. Adjacent FM channels are separated by guard bands
✓ 3. More convenient receiver and transmitter
✗ 4. Power consumption is less as compared to AM

Question ID : **54062621941**
Status : **Answered**
Chosen Option : **4**

Q.94 The transfer function does NOT contain which of the following types of terms?

Ans
✓ 1. Simple conjugate poles
✗ 2. Real poles
✗ 3. Complex conjugate zeros
✗ 4. Poles or zeros at origin

Question ID : **54062621926**
Status : **Answered**
Chosen Option : **1**

Q.95 Find the equation of normal to the curve $y = 4x - 3x^2$ at $(2, -4)$.

Ans
✗ 1. $x - 2y - 34 = 0$
✓ 2. $x - 8y - 34 = 0$
✗ 3. $4x - 2y - 32 = 0$
✗ 4. $x - 4y - 32 = 0$

Question ID : **54062621868**
Status : **Answered**
Chosen Option : **2**

Q.96 _____ of a wave is the velocity with which variations in the shape of modulation or envelope of the wave propagate through space.

Ans
✗ 1. The elliptical velocity
✗ 2. The phase velocity
✓ 3. The group velocity
✗ 4. The circular velocity

Question ID : **54062621955**
Status : **Answered**
Chosen Option : **2**