

Participant ID	
Participant Name	
Test Center Name	
Test Date	11/11/2018
Test Time	4:30 PM - 6:30 PM
Subject	EXECUTIVE SIGNAL & TELECOMMUNICATION

Section : General Aptitude Knowledge

Q.1 With the army of which country has Indian army conducted a two-week joint military exercise "Vidh Abhyas 2018" in Uttarakhand in September 2018?

- Ans** ☒ 1. USA
☒ 2. France
☒ 3. Germany
☒ 4. UK

Question ID : 1860452231

Status : Answered

Chosen Option : 1

Q.2 The Indian Air Force has successfully carried out the first ever mid-air refuelling of which of the following combat aircrafts?

- Ans** ☒ 1. Tejas
☒ 2. Cheetah
☒ 3. Dhruv
☒ 4. Rudra

Question ID : 1860452233

Status : Answered

Chosen Option : 1

Q.3 Which one of the following is hailed as the finest specimen of Indo-British architecture in India, and called the 'Taj of the Raj'?

- Ans** ☒ 1. The Victoria Memorial Hall, Kolkata
☒ 2. Victoria Terminus, Bombay
☒ 3. Rashtrapati Bhavan, New Delhi
☒ 4. Cellular Jail, Andaman and Nicobar Islands

Question ID : 1860452228

Status : Answered

Chosen Option : 1

Q.4 A device used to test whether any object is carrying a charge or not is known as _____.

- Ans** ☒ 1. Stethoscope
☒ 2. Coulomb device
☒ 3. Electrostatic device
☒ 4. Electroscope

Question ID : 1860452237

Status : Answered

Chosen Option : 3

Q.5 Which airport will become the first airport of India to provide paperless air travel to the domestic passengers through biometric technology?

- Ans** ☒ 1. Chhatrapati Shivaji International Airport, Mumbai
☒ 2. Kempegowda International Airport, Bengaluru
☒ 3. Sardar Vallabhbhai Patel International Airport, Ahmedabad

Question ID : 1860452234

Status : Answered

Chosen Option : 1

☒ 4.

Indira Gandhi International Airport, New Delhi

Q.6 Government of which Union Territory has launched 'Home Delivery of Public Services' scheme as an attempt to eliminate corruption in various public dealing offices?

Ans

- ☒ 1. Chandigarh
- ☒ 2. Puducherry
- ☒ 3. Lakshadweep
- ☒ 4. Delhi

Question ID : 1860452232

Status : Answered

Chosen Option : 4

Q.7 Where is the famous and India's largest Buddhist monastery, Tawang Monastery, located?

Ans

- ☒ 1. Arunachal Pradesh
- ☒ 2. Assam
- ☒ 3. Nagaland
- ☒ 4. Manipur

Question ID : 1860452229

Status : Answered

Chosen Option : 4

Q.8 Which among the following States has the largest number of Lok Sabha seats?

Ans

- ☒ 1. West Bengal
- ☒ 2. Gujarat
- ☒ 3. Assam
- ☒ 4. Rajasthan

Question ID : 1860452230

Status : Answered

Chosen Option : 4

Q.9 Which state is the largest producer of tomatoes in India?

Ans

- ☒ 1. Andhra Pradesh
- ☒ 2. Madhya Pradesh
- ☒ 3. West Bengal
- ☒ 4. Gujarat

Question ID : 1860452236

Status : Answered

Chosen Option : 2

Q.10 In which year was the Gandhi-Irwin Pact signed?

Ans

- ☒ 1. 1942
- ☒ 2. 1935
- ☒ 3. 1931
- ☒ 4. 1921

Question ID : 1860452227

Status : Answered

Chosen Option : 1

Q.11 Which of the following is NOT an instrument of the monetary policy of the Reserve Bank of India?

Ans

- ☒ 1. Goods and Services Tax (GST)
- ☒ 2. Bank Rate
- ☒ 3. Statutory Liquidity Ratio (SLR)
- ☒ 4. Cash Reserve Ratio (CRR)

Question ID : 1860452235

Status : Answered

Chosen Option : 1

Q.12 Which of the following pass (es) through the Indian mainland?

Ans

- 1. The Tropic of Capricorn
 - 2. The Tropic of Cancer
 - 3. The Equator
- ☒ 1. Both 2 and 3
 - ☒ 2. Only 1

Question ID : 1860452226

Status : Answered

Chosen Option : 3

☒ 3. Only 2

☐ 4. Both 1 and 2

Section : Logical Reasoning

Q.1 A, B, C, D, E and F are sitting in a theatre facing the stage. F is sitting second from the left end. D is on the immediate right of F. A is at an extreme end and has C as neighbour. E is between B and F. Who is sitting to the right of "C"?

Ans ☐ 1. D

☐ 2. E

☐ 3. B

☒ 4. A

Question ID : 1860452240

Status : Answered

Chosen Option : 4

Q.2 Abhijit leaves his house and moves 30 km in northwest direction and 30 km in southwest direction. Next, he moves 30 km in southeast direction. Then he moves 30 km in northeast direction. How far away is he from his house?

Ans ☐ 1. 10 km

☒ 2. 0 km

☐ 3. 30 km

☐ 4. 20 km

Question ID : 1860452244

Status : Answered

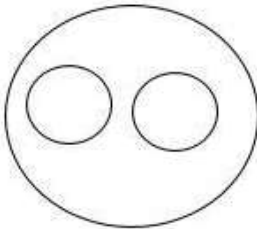
Chosen Option : 2

Q.3 Which of the Venn diagrams correctly represents the following classes as applicable in India?

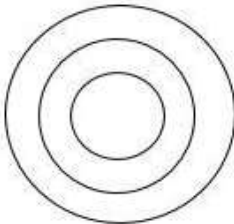
President, Cabinet, Home Minister

Ans

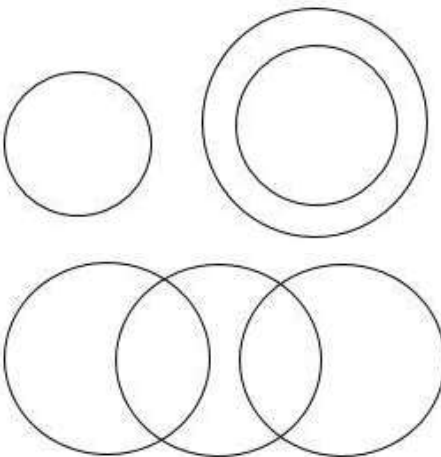
☐ 1.



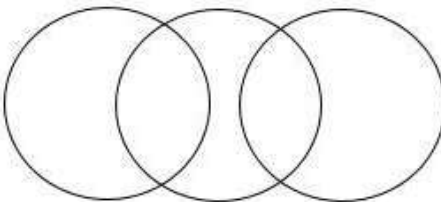
☐ 2.



☒ 3.



☐ 4.



Question ID : 1860452249

Status : Answered

Chosen Option : 3

Q.4 From the given alternatives, select the word which CANNOT be formed using the letters of the given word: RESOLUTELY

Ans ☐ 1. LUSTRE

☐ 2. SELLOUT

☐ 3. TROLLEYS

☒ 4. RESULTS

Question ID : 1860452242

Status : Answered

Chosen Option : 4

Q.5 Find a number, which when added to itself 14 times, gives 120.

Question ID : 1860452247

- Ans ☒ 1. 9
☒ 2. 6
☒ 3. 7
☒ 4. 8

Status : **Answered**
Chosen Option : 4

Q.6 Select the option which is different from the other three responses:

- Ans ☒ 1. OQTX
☒ 2. CEHL
☒ 3. KMPT
☒ 4. NPSV

Question ID : 1860452238
Status : **Answered**
Chosen Option : 3

Q.7 Choose the correct alternative from the given ones that will complete the given number series:

62, 73, 95, 128, 172, _____?

- Ans ☒ 1. 204
☒ 2. 248
☒ 3. 258
☒ 4. 227

Question ID : 1860452239
Status : **Answered**
Chosen Option : 4

Q.8 In the following equation, two numbers need to be interchanged to make it correct. Choose the numbers from the given alternatives:

$$6 \times 3 + 8 + 2 - 1 = 9 - 8 + 1 - 5 \times 2$$

- Ans ☒ 1. 2, 8
☒ 2. 5, 9
☒ 3. 3, 6
☒ 4. 1, 9

Question ID : 1860452245
Status : **Answered**
Chosen Option : 2

Q.9 An argument always has:

- Ans ☒ 1. Noise
☒ 2. Difficulty
☒ 3. Disagreement
☒ 4. Mediator

Question ID : 1860452246
Status : **Answered**
Chosen Option : 3

Q.10 J, K, L, M and N are five cousins. M is half the age of K; N is twice the age of J. K is half the age of L. M is half the age of L. Who is the youngest of all?

- Ans ☒ 1. L
☒ 2. M
☒ 3. K
☒ 4. J

Question ID : 1860452248
Status : **Answered**
Chosen Option : 2

Q.11 Given below are two statements. Consider these statements to be true even if they seem factually absurd. Read the conclusions and then decide which of the given conclusions logically follow(s) from the given statements?

Statements:

1. All noodles are forks.
2. No fork is a spoon.

Conclusions:

- I. No noodle is a spoon.
- II. Some forks are noodles.

- Ans ☒ 1. Neither conclusion follows.
☒ 2. Only conclusion I follows.
☒ 3. Only conclusion II follows.
☒ 4. Both the conclusions follow.

Question ID : 1860452241
Status : **Answered**
Chosen Option : 4

Q.12 If the twelfth day of a month is 4 days after Friday, what day will it be on the first day of the month?

- Ans ☒ 1. Friday
☒ 2. Monday
☒ 3. Tuesday
☒ 4. Wednesday

Question ID : 1860452243

Status : Answered

Chosen Option : 1

Section : Engineering Mathematics

Q.1 The expression for the truth table given below in POS form is given by:

A	B	C	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

- Ans ☒ 1. $AB'C+ABC'$
☒ 2. $(A+B+C')(A'+B'+C')$
☒ 3. $A'B'C+ABC$
☒ 4. $(A+B'+C')(A'+B'+C')$

Question ID : 1860452254

Status : Answered

Chosen Option : 4

Q.2 Two voltages given as -2 V and -1V in positive logic convention represent:

- Ans ☒ 1. -2 V is logic 1 and -1 V is logic 0
☒ 2. -5 V is logic 0 in some circuits and 1 in the other
☒ 3. -2 V is logic 0 and -1 V is logic 1
☒ 4. -5 V is logic 1 in some circuits and 0 in the other

Question ID : 1860452253

Status : Answered

Chosen Option : 1

Q.3 The number of essential prime implicants for the Function $Y = A'B'C'D + A'BCD + AB'C'D + ABCD$ is given by _____.

- Ans ☒ 1. 1
☒ 2. 2
☒ 3. 3
☒ 4. 4

Question ID : 1860452252

Status : Answered

Chosen Option : 4

Q.4 A buffer is:

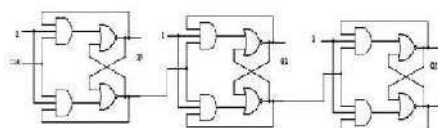
- Ans ☒ 1. Neither inverting nor non-inverting
☒ 2. Inverting or non-inverting
☒ 3. Always non-inverting
☒ 4. Always inverting

Question ID : 1860452255

Status : Answered

Chosen Option : 4

Q.5 The current state of Q2Q1Q0 – 100 for the circuit below. The next state will be _____.



- Ans ☒ 1. 101
☒ 2. 111

Question ID : 1860452251

Status : Not Answered

Chosen Option : --

☒ 3. 001

☒ 4. 110

Q.6 The Boolean function $AB+AC$ is equivalent to _____.

Ans ☒ 1. $AB+AC+BC$

☒ 2. $A'B'C'+ABC'+A'BC$

☒ 3. $ABC+A'BC+B'C'$

☒ 4. $ABC+ABC'+AB'C$

Question ID : 1860452250

Status : Not Answered

Chosen Option : --

Section : Networks Signals & systems

Q.1 PLA consists of _____.

Ans ☒ 1. Programmable AND and fixed OR arrays

☒ 2.

Programmable AND and Programmable OR arrays

☒ 3. Fixed AND and Programmable OR arrays

☒ 4. Fixed AND and Fixed OR arrays

Question ID : 1860452259

Status : Not Answered

Chosen Option : --

Q.2 When two asynchronous active low inputs PRESET and CLEAR are applied to a J-K flip flop, the output will be _____.

Ans ☒ 1. 0

☒ 2. Undefined

☒ 3. Previous State

☒ 4. 1

Question ID : 1860452257

Status : Answered

Chosen Option : 3

Q.3 5:32 decoder circuit can be implemented with _____.

Ans ☒ 1. One 2:4 decoder and 43:8 decoders

☒ 2. Four 3:8 decoders

☒ 3. Two 3:8 decoders

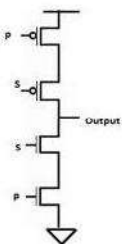
☒ 4. Eight 2:4 decoders

Question ID : 1860452264

Status : Answered

Chosen Option : 3

Q.4 Output of the circuit shown below when $S = 1$ and $S = 0$ will be _____.



Ans ☒ 1. P and High Impedance state respectively

☒ 2. High Impedance state and P' respectively

☒ 3. 0 and 1 respectively

☒ 4. X and P respectively

Question ID : 1860452258

Status : Not Answered

Chosen Option : --

Q.5 A particular logic family has $V_{OH} = 5V$, $V_{OL} = 1V$, $V_{IH} = 3.5$ and $V_{IL} = 2V$. The Noise margins values NM_H and NM_L will be:

Ans ☒ 1. 1.5V, 1V

☒ 2. 5V, 1V

Question ID : 1860452260

Status : Not Answered

Chosen Option : --

☒ 3. 1V, 1.5V

☒ 4. 4.1V, 5V

Q.6 The resolution of 4 Bit counting ADC is 0.5 V. For an analog input 5.8 volt, the output of ADC will be _____.

Ans ☒ 1. 1100

☒ 2. 1111

☒ 3. 1010

☒ 4. 1011

Question ID : 1860452266

Status : Not Answered

Chosen Option : --

Q.7 A problem detector system produces an alarm in the factory when one of the three conditions occurs. The system is designed as such only one condition can occur at a time. If the three conditions are defined as q, r and s respectively, the output logic for the system can be given as _____.

Ans ☒ 1. $q'rs+r's'$

☒ 2. $qr's'+qs$

☒ 3. $qrs'+r'$

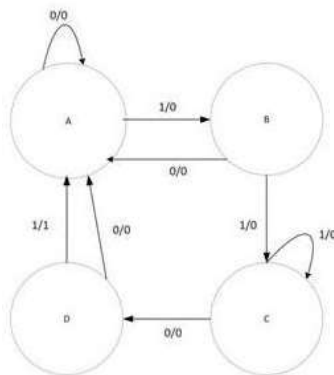
☒ 4. $q+r+s$

Question ID : 1860452261

Status : Not Answered

Chosen Option : --

Q.8 The sequence detected by the state diagram shown below is _____.



Ans ☒ 1. 1110 sequence detector without overlap

☒ 2. 1110 sequence detector with overlap

☒ 3. 1101 sequence detector without overlap

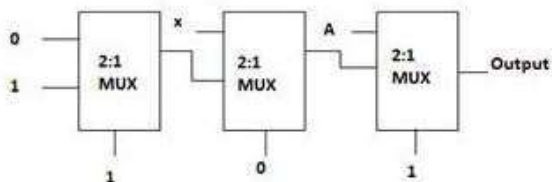
☒ 4. 1101 sequence detector with overlap

Question ID : 1860452267

Status : Marked For Review

Chosen Option : 4

Q.9 The output of the circuit shown in Fig. is _____.



Ans ☒ 1. 0

☒ 2. X

☒ 3. A

☒ 4. 1

Question ID : 1860452256

Status : Answered

Chosen Option : 4

Q.10 For a Typical CMOS process, the minimum feature size is set to be $\lambda = 25 \mu\text{m}$. The minimum line width of process is set to be _____.

Ans ☒ 1. $100 \mu\text{m}$

☒ 2. $12.5 \mu\text{m}$

☒ 3. $50 \mu\text{m}$

Question ID : 1860452265

Status : Not Answered

Chosen Option : --

☒ 4. 25 μm

Q.11 Race around condition is associated with _____.

- Ans ☒ 1. Combinational circuits
☒ 2.

Sequential circuits with level triggered clock

- ☒ 3. Sequential circuits
☒ 4. Both Sequential and Combinational circuits

Question ID : 1860452263

Status : Answered

Chosen Option : 1

Q.12 Minimum number of half adders, full adders and AND gates required to implement 2×3 Multiplier is given as _____.

- Ans ☒ 1. 1, 2, 6
☒ 2. 1, 1, 6
☒ 3. 2, 2, 6
☒ 4. 2, 1, 6

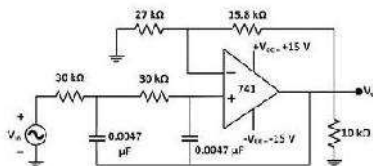
Question ID : 1860452262

Status : Answered

Chosen Option : 4

Section : Electronic devices

Q.1 Find the high cut-off frequency of second order filter as shown in the figure below:



- Ans ☒ 1. 1128 Hz
☒ 2. 1028 Hz
☒ 3. 1228 Hz
☒ 4. 1528 Hz

Question ID : 1860452273

Status : Not Answered

Chosen Option : --

Q.2 The transistor in the circuit of below Fig. has $\beta = 100$ and exhibits a v_{BE} of 0.7 V at $I_C = 2$ mA. Find the values of R_C and R_E respectively, so that a current of 3 mA flows through the collector and a voltage of 15 V appears at the collector.



- Ans ☒ 1. 4.59 k and 3.33 k
☒ 2. 3.33 k and 2 k
☒ 3. 4.59 k and 2 k
☒ 4. 3.33 k and 4.59 k

Question ID : 1860452270

Status : Not Answered

Chosen Option : --

Q.3 The CMOS inverter can be used as an amplifier when:

- Ans ☒ 1. PMOS is in linear, NMOS is in cut-off.
☒ 2. Both are in linear region.
☒ 3. both PMOS and NMOS are in saturation.
☒ 4. NMOS is in linear, PMOS is in cut-off.

Question ID : 1860452279

Status : Answered

Chosen Option : 3

Q.4 For given op-amp circuit, consider infinite input resistance and zero output resistance. If $A = 100$ (open loop gain) then what will be the closed loop gain?

- Ans ☒ 1. 0.99
☒ 2. 0.25
☒ 3. 0.7

Question ID : 1860452275

Status : Not Answered

Chosen Option : --

☒ 4. 0.11

Q.5 Diffusion capacitance of PN Junction Diode _____.

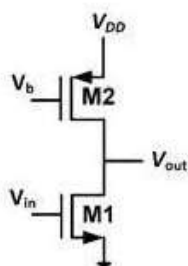
- Ans ☒ 1. increases with increasing current and increasing temperature
- ☒ 2. increases with increasing current and decreasing temperature
- ☒ 3. decreases with decreasing current and decreasing temperature
- ☒ 4. decreases with increasing current and increasing temperature

Question ID : 1860452278

Status : Answered

Chosen Option : 2

Q.6 What is the voltage gain for the circuit given below?



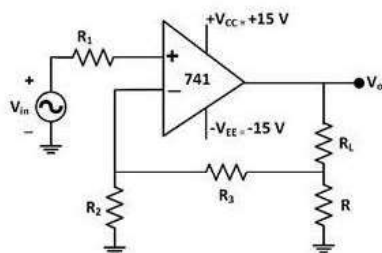
- Ans ☒ 1. $-gm_1 (r_{o1} \times r_{o2})$
- ☒ 2. $-gm_1 (r_{o1} || r_{o2})$
- ☒ 3. $gm_1 (r_{o1} \times r_{o2})$
- ☒ 4. $gm_1 (r_{o1} || r_{o2})$

Question ID : 1860452272

Status : Not Answered

Chosen Option : --

Q.7 In the given circuit, which type of feedback configuration is used?



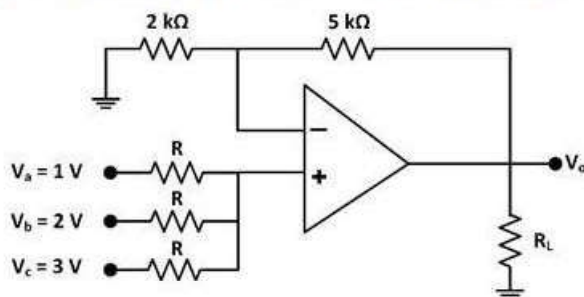
- Ans ☒ 1. Series – Shunt feedback
- ☒ 2. Shunt – Shunt feedback
- ☒ 3. Series – Series feedback
- ☒ 4. Shunt – Series feedback

Question ID : 1860452274

Status : Answered

Chosen Option : 2

Q.8 In the given circuit below, what will be the value of V_o ?



- Ans ☒ 1. 8 V

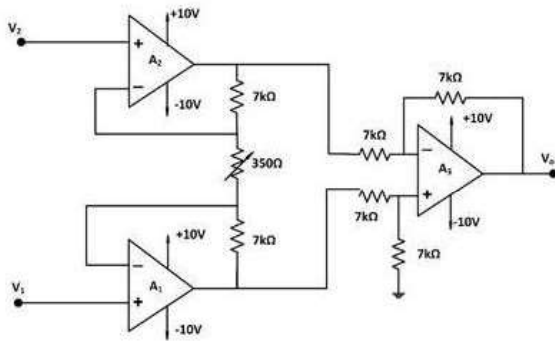
Question ID : 1860452271

Status : Not Answered

Chosen Option : --

- ☒ 2. 7 V
- ☒ 3. -5 V
- ☒ 4. -4 V

Q.9 Calculate the expression of output voltage for the given circuit:



Question ID : 1860452276

Status : Not Answered

Chosen Option : --

- Ans
- ☒ 1. $41(V_1 - V_2)$
 - ☒ 2. $11(V_2 - V_1)$
 - ☒ 3. $11(V_1 - V_2)$
 - ☒ 4. $41(V_2 - V_1)$

Q.10 A Darlington emitter follower circuit is sometimes used in the output stage of TTL gate to _____.

- Ans
- ☒ 1. To decrease power consumption
 - ☒ 2. Decrease its I_{OH}
 - ☒ 3. Increase its I_{OL}
 - ☒ 4. To increase speed

Question ID : 1860452268

Status : Answered

Chosen Option : 1

Q.11 What is the peak output voltage of a class B amplifier for a supply voltage of $V_{CC} = 15$ V with an efficiency of 69 %?

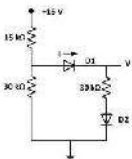
- Ans
- ☒ 1. 17.31 V
 - ☒ 2. 21.74 V
 - ☒ 3. 13.17 V
 - ☒ 4. 10.35 V

Question ID : 1860452277

Status : Answered

Chosen Option : 2

Q.12 Assume that the diode D1 is ideal and D2 has cut in voltage of 0.3 as given in the circuit below. Find out the values of labeled voltage and current:



- Ans
- ☒ 1. 8 V and 0.5 mA
 - ☒ 2. 7.57 V and 0.5 mA
 - ☒ 3. 8 V and 0.24 mA
 - ☒ 4. 7.57 V and 0.24 mA

Question ID : 1860452269

Status : Not Answered

Chosen Option : --

Section : Analog Circuits

Q.1 The output resistance of JFET when operating in pinch off at a current 10 mA and $V_{GS} = 0.05$ V is given by:

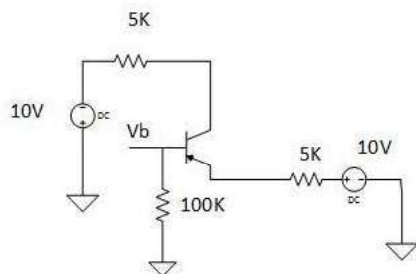
- Ans
- ☒ 1. 450Ω
 - ☒ 2. $2k\Omega$
 - ☒ 3. 200Ω
 - ☒ 4. 2Ω

Question ID : 1860452280

Status : Not Answered

Chosen Option : --

Q.2 If $V_B = 1V$ and $V_E = 1.7V$, β and V_C of the circuit will be _____.



- Ans
- ✓ 1. 165 and $-1.75V$
 - ✗ 2. 150 and $-2.75V$
 - ✗ 3. 0.994 and $-1.75V$
 - ✗ 4. 180 and $2.75V$

Question ID : 1860452288

Status : Not Answered

Chosen Option : --

Q.3 An NMOS has $I_d = 5mA$, $V_{gs} = 2V$, $V_{ds} = 4V$ and $V_t = 0.8V$. If the thickness of oxide is $500\text{\AA}$, the aspect ratio of device at room temperature will be _____.

- Ans
- ✗ 1. 1.5
 - ✗ 2. 14
 - ✗ 3. 25
 - ✓ 4. 35

Question ID : 1860452287

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.4 Fourier Transform of $\text{sgn}(t)$ is _____, where sgn represents signum function.

- Ans
- ✗ 1. $j\omega$
 - ✗ 2. $2j\omega$
 - ✗ 3. $j\omega/2$
 - ✓ 4. $2/j\omega$

Question ID : 1860452291

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.5 An MOS Capacitor with P Substrate is in accumulation mode. The dominant charge in the channel is due to the presence of _____.

- Ans
- ✗ 1. electrons
 - ✗ 2. negatively charged ions
 - ✓ 3. holes
 - ✗ 4. positively charged ions

Question ID : 1860452286

Status : Answered

Chosen Option : 2

Q.6 Trans conductance of MOSFET in linear region can be approximated by _____.

- Ans
- ✗ 1. $2K(V_{GS}-V_T)$
 - ✓ 2. KV_{DS}
 - ✗ 3. $ID/(V_{GS}-V_{DS})$
 - ✗ 4. $K(V_{GS}-V_T)^2/ID$

Question ID : 1860452282

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.7 A Si sample is doped with 10^{17} Arsenic atoms/ cm^3 . Displacement of E_F relative to E_i is _____.

- Ans
- ✗ 1. Positive, 0.589 eV
 - ✗ 2. Negative, 0.589 eV
 - ✓ 3. Positive, 0.407 eV
 - ✗ 4. Negative, 0.407 eV

Question ID : 1860452284

Status : Not Answered

Chosen Option : --

Q.8 An N-Channel JFET has $I_{DSS} = 4\text{ mA}$ and $V_p = -8V$. Its maximum transconductance is _____.

- Ans
- ✗ 1. 4 S

Question ID : 1860452290

Status : Not Answered

- ☒ 2. 0.002 S
- ☒ 3. 0.2 S
- ☒ 4. 0.001 S

Chosen Option : --

Q.9 For a BJT, $\alpha = 0.97$ and collector base junction reverse saturation is given by $0.4 \mu\text{A}$. This BJT is connected in common emitter configuration and operating in active region. If $I_B = 15 \mu\text{A}$, the collector current for the device will be _____.

- Ans**
- ☒ 1. 506 μA
 - ☒ 2. 498.34 μA
 - ☒ 3. 1.01 mA
 - ☒ 4. 1 mA

Question ID : 1860452281

Status : Not Answered

Chosen Option : --

Q.10 Probability of energy state E_f (Fermi Level) occupied by an electron at absolute temperature can be approximated as _____.

- Ans**
- ☒ 1. 0.5
 - ☒ 2. 0
 - ☒ 3. 0.25
 - ☒ 4. 1

Question ID : 1860452283

Status : Not Answered

Chosen Option : --

Q.11 At a constant collector current, the magnitude of base emitter voltage decreases by 2 mV for every XX rise in temperature. Here XX is _____.

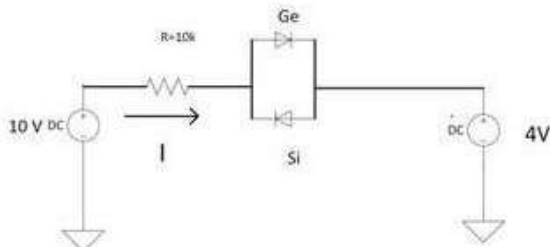
- Ans**
- ☒ 1. 3 $^{\circ}\text{C}$
 - ☒ 2. 9 $^{\circ}\text{C}$
 - ☒ 3. 4 $^{\circ}\text{C}$
 - ☒ 4. 1 $^{\circ}\text{C}$

Question ID : 1860452289

Status : Not Answered

Chosen Option : --

Q.12 Value of current in this circuit is _____.



- Ans**
- ☒ 1. 1 mA
 - ☒ 2. 1.7 mA
 - ☒ 3. 0.57 mA
 - ☒ 4. 0.53 mA

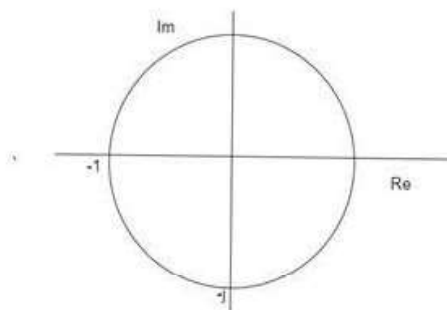
Question ID : 1860452285

Status : Not Answered

Chosen Option : --

Section : Digital circuits

Q.1 The Nyquist plot given below represents which circuit?



- Ans**
- ☒ 1. High Pass Filter
 - ☒ 2. Low Pass Filter

Question ID : 1860452309

Status : Answered

Chosen Option : 2

☒ 3. All Pass Filter

☐ 4. Notch Filter

Q.2 What is the total power carried by sidebands of the AM wave (DSB) for tone modulation for $\mu = 0.4$?

Ans ☒ 1. 7.4%

☐ 2. 11.11%

☐ 3. 4.3%

☐ 4. 8.3%

Question ID : 1860452293

Status : Answered

Chosen Option : 2

Q.3 Which of the following requires least bandwidth?

Ans ☐ 1. DSB-SC

☐ 2. DSB

☐ 3. VSB

☒ 4. SSB

Question ID : 1860452297

Status : Answered

Chosen Option : 4

Q.4 To increase the rate of communication by $\log_2 M$ in M-ary communication, the power requirement increases by _____.

Ans ☐ 1. 2^M

☒ 2. M^2

☐ 3. M^M

☐ 4. $2M$

Question ID : 1860452296

Status : Answered

Chosen Option : 1

Q.5 An Amplitude modulated signal has a carrier frequency of 10 kHz. The upper sideband is transmitted at 11 kHz. The bandwidth required for the AM signal to transmit is _____.

Ans ☐ 1. 10 kHz

☒ 2. 2 kHz

☐ 3. 11 kHz

☐ 4. 1 kHz

Question ID : 1860452304

Status : Not Answered

Chosen Option : --

Q.6 Which modulation technique does NOT use past information for modulation?

Ans ☐ 1. Delta Modulation

☒ 2. Pulse Code Modulation

☐ 3.

Adaptive Differential Pulse Code Modulation

☐ 4. Adaptive Delta Modulation

Question ID : 1860452295

Status : Answered

Chosen Option : 4

Q.7 Number of bits per symbol in a 16 QAM is _____.

Ans ☒ 1. 4

☐ 2. 16

☐ 3. 8

☐ 4. 32

Question ID : 1860452301

Status : Answered

Chosen Option : 1

Q.8 If the constant 'k' is negative, then what would be its contribution to the phase plot?

Ans ☐ 1. 90 degrees

☐ 2. 45 degrees

☐ 3. 180 degrees

☒ 4. 0 degree

Question ID : 1860452307

Status : Answered

Chosen Option : 3

Q.9

Inverse Fourier Transform of $\delta(\omega - \omega_0)$ is _____.

Question ID : 1860452292

Status : Not Answered

Chosen Option : --

- Ans
- ☒ 1. $2\pi / e^{j\omega_0 t}$
 - ☒ 2. $e^{j\omega_0 t}$
 - ☒ 3. $e^{j\omega_0 t} / 2\pi$
 - ☒ 4. $2\pi e^{j\omega_0 t}$

Q.10 An op-amp based programmable gain amplifier with a negative feedback is designed. Which method will be the best suitable for its stability analysis?

Question ID : 1860452306

Status : Answered

Chosen Option : 4

- Ans
- ☒ 1. Bode Plot
 - ☒ 2. Nyquist Plot
 - ☒ 3. Root Locus
 - ☒ 4. R-H Stability Criteria

Q.11 A system with a unity gain margin and zero phase margin is _____.

Question ID : 1860452305

Status : Answered

Chosen Option : 3

- Ans
- ☒ 1. sluggish
 - ☒ 2. highly stable
 - ☒ 3. oscillatory
 - ☒ 4. relatively stable

Q.12 The signal power and noise power are denoted by S and N respectively. If the signal power increases to 3S and the noise power reduces by half, the ratio of old SNR to the new SNR is given by _____.

Question ID : 1860452300

Status : Answered

Chosen Option : 4

- Ans
- ☒ 1. 6
 - ☒ 2. $2/3$
 - ☒ 3. 1.5
 - ☒ 4. $1/6$

Q.13 The maximum efficiency of AM modulation (tone modulation) is _____.

Question ID : 1860452298

Status : Answered

Chosen Option : 1

- Ans
- ☒ 1. 67%
 - ☒ 2. 30%
 - ☒ 3. 70%
 - ☒ 4. 33%

Q.14 The modulation index of an AM modulated signal is 0.7 and the carrier power is 14 W. Calculate total sideband power.

Question ID : 1860452299

Status : Answered

Chosen Option : 1

- Ans
- ☒ 1. 18.47 W
 - ☒ 2. 23.14 W
 - ☒ 3. 12.39 W
 - ☒ 4. 17.43 W

Q.15 Identify the correct definition for Phase Margin and Gain Margin:

Question ID : 1860452308

Status : Answered

Chosen Option : 1

- Ans
- ☒ 1.
I. Gain margin is a factor by which the system gain can be increased to drive the system to the verge of instability.
II. Phase margin is the additional phase lead at gain cross over frequency to bring the system to verge of instability.
 - ☒ 2.
I. Gain margin is a factor by which the system gain can be increased to drive the system to the verge of instability.
II. Phase margin is the additional phase lag at gain cross over frequency to bring the system to verge of instability.
 - ☒ 3.
I. Gain margin is a factor by which the system gain can be decreased to drive the system to the verge of instability.
II. Phase margin is the additional phase lead at gain cross over frequency to bring the system to verge of instability.
 - ☒ 4.
I. Gain margin is a factor by which the system gain can be decreased to drive the system to the verge of instability.
II. Phase margin is the additional phase lag at gain cross over frequency to bring the system to verge of instability.

Q.16

The bit rate of digital communication system is M kbps. The modulation used is 16-QAM. The minimum bandwidth required for ideal transmission is _____.

Question ID : 1860452303

Status : Answered

Chosen Option : 4

- Ans
- ☒ 1. M/2 kHz
 - ☒ 2. M/16 kHz
 - ☒ 3. M kHz
 - ☒ 4. M/8 kHz

Q.17 A practical signal could be _____.

Question ID : 1860452294

Status : Answered

Chosen Option : 4

- Ans
- ☒ 1. both, time limited and band limited, simultaneously
 - ☒ 2. both, time limited and band limited, but not at the same time
 - ☒ 3. band limited
 - ☒ 4. time limited

Q.18 Which of the following has the least noise immunity?

Question ID : 1860452302

Status : Answered

Chosen Option : 2

- Ans
- ☒ 1. QAM
 - ☒ 2. ASK
 - ☒ 3. FSK
 - ☒ 4. PSK

Section : Control System

Q.1 A discrete time system $y(n)$ is the resultant convolution of $f(n)$ and $h(n)$ having length 3 and 5 respectively. The maximum possible sample value of $f(n)$ and $h(n)$ are 10 and 20 respectively. Find the maximum possible value for sum of all sample value of $y(n)$.

Question ID : 1860452327

Status : Not Answered

Chosen Option : --

- Ans
- ☒ 1. 3000
 - ☒ 2. 15
 - ☒ 3. 130
 - ☒ 4. 200

Q.2 Slow response of an over-damped system can be made faster with the help of _____ controller.

Question ID : 1860452314

Status : Answered

Chosen Option : 1

- Ans
- ☒ 1. PD
 - ☒ 2. P
 - ☒ 3. PI
 - ☒ 4. Remote

Q.3 A system is given by $x(t) = e^{at} u(t)$. The system is _____.

Question ID : 1860452326

Status : Not Attempted and Marked For Review

Chosen Option : --

- Ans
- ☒ 1. Causal and Stable
 - ☒ 2. Non-Causal and Stable
 - ☒ 3. Causal and Unstable
 - ☒ 4. Non-Causal and Unstable

Q.4 A condition where integral control action drives the output of a controller into saturation is called _____.

Question ID : 1860452315

Status : Answered

Chosen Option : 4

- Ans
- ☒ 1. Wind-Up
 - ☒ 2. Noise
 - ☒ 3. Repeat
 - ☒ 4. Offset

Q.5

Question ID : 1860452310

There are 2 systems:

- a. An automatic washing machine
- b. An automatic intensity adjustable light bulb

Which of these systems will be more sensitive to the variation in system's gain?

- Ans
- ☒ 1. Data is insufficient
 - ☒ 2. Automatic intensity adjustable light bulb
 - ☒ 3. Both will be equally sensitive
 - ☒ 4. Automatic washing machine

Status : **Answered**
Chosen Option : 4

Q.6 The fourier series expansion of $\text{sgn}(\cos(t))$ has _____. Where sgn represents the signum function..

- Ans
- ☒ 1. Only sine terms with even harmonics.
 - ☒ 2. Only sine terms with odd harmonics.
 - ☒ 3. Only cosine terms with odd harmonics.
 - ☒ 4. Only cosine terms with even harmonics.

Question ID : 1860452325
Status : **Not Attempted and Marked For Review**
Chosen Option : --

Q.7 What will be the Gain Margin (GM) and the Phase Margin (PM) of a closed loop T.F $T(s) = 500000/(s^2 + 700s + 250000)$?

- Ans
- ☒ 1. $\infty, 35$
 - ☒ 2. $\infty, 70$
 - ☒ 3. 60, 70
 - ☒ 4. 60, 35

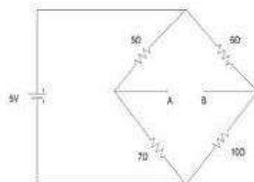
Question ID : 1860452312
Status : **Not Attempted and Marked For Review**
Chosen Option : --

Q.8 Steady state error for an open loop system is 0.1. Steady state error for the previously mentioned system being closed loop with a unity negative feedback and a pulse input for 1s having magnitude of 10 is?

- Ans
- ☒ 1. 0.1
 - ☒ 2. 0
 - ☒ 3. 0.2
 - ☒ 4. 0.02

Question ID : 1860452311
Status : **Not Attempted and Marked For Review**
Chosen Option : --

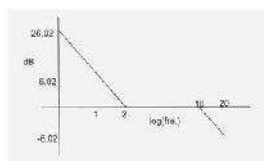
Q.9 Find Thevenin's equivalent resistance for the following circuit:



- Ans
- ☒ 1. 5.67 Ω
 - ☒ 2. 6.66 Ω
 - ☒ 3. 6 Ω
 - ☒ 4. 6.33 Ω

Question ID : 1860452320
Status : **Not Attempted and Marked For Review**
Chosen Option : --

Q.10 If the given system is connected to a unity negative feedback system, the steady state error of closed loop system to a ramp input is:



- Ans
- ☒ 1. 0.01
 - ☒ 2. 1
 - ☒ 3. 0.5

Question ID : 1860452313
Status : **Not Answered**
Chosen Option : --

☒ 4. 0.2

Q.11 _____ indicates not only whether a system is stable, but also its degree of stability and how stability may be improved, if necessary.

- Ans ☒ 1. Bode Plot
☒ 2. Polar Plot
☒ 3. Nyquist Plot
☒ 4. Nichols Plot

Question ID : 1860452316

Status : Answered

Chosen Option : 1

Q.12 If the output of the system at steady state doesn't agree with the input, then the system is said to have _____, which determines the _____ of the system.

- Ans ☒ 1. Steady state error, accuracy
☒ 2. Residual error, overshoot
☒ 3. Steady state error, tolerance
☒ 4. Residual error, tolerance

Question ID : 1860452318

Status : Answered

Chosen Option : 3

Q.13 The Transfer Function of lead and lag compensators have _____ and _____ phase angles respectively which makes the system _____ and _____ respectively.

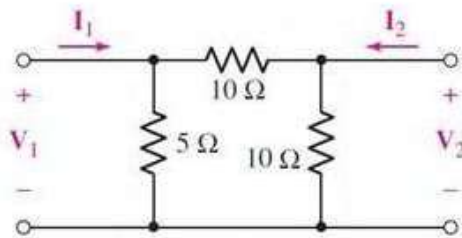
- Ans ☒ 1. -ve, -ve, slower, faster
☒ 2. +ve, +ve, slower, faster
☒ 3. +ve, -ve, faster, slower
☒ 4. -ve, +ve, faster, slower

Question ID : 1860452319

Status : Answered

Chosen Option : 3

Q.14 Find I_1 in the following circuit. $V_1 = V_2 = 1V$:



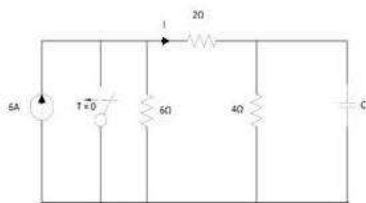
- Ans ☒ 1. 0.1A
☒ 2. 0.4A
☒ 3. 0.3A
☒ 4. 0.2A

Question ID : 1860452322

Status : Answered

Chosen Option : 2

Q.15 In the given Circuit, the switch is closed at $t = 0$. Find the value of I .



- Ans ☒ 1. 6A
☒ 2. -3A
☒ 3. 3A
☒ 4. -6A

Question ID : 1860452323

Status : Marked For Review

Chosen Option : 1

Q.16 $\int_{-7}^2 (t^2 + t^3 + 1) \delta(t - 3) dt = \underline{\hspace{2cm}}$.

Ans

Question ID : 1860452324

Status : Not Attempted and

- ☒ 1. 3
- ☒ 2. 37
- ☒ 3. 13
- ☒ 4. 0

Marked For Review

Chosen Option : --

- Q.17** A. If the inputs to a control system are gradually changing functions of time, then a/an _____ function will be a good test signal.
 B. If a system is subjected to sudden disturbances, a/an _____ function will be a good test signal.
 C. For a system subjected to shock inputs, a/an _____ function will be a good test signal.

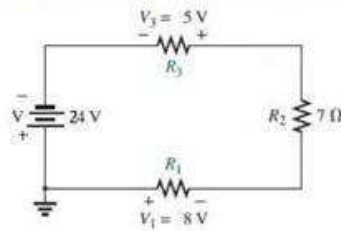
Question ID : 1860452317

Status : Answered

Chosen Option : 3

- Ans** ☒ 1. impulse, ramp, step
☒ 2. ramp, step, impulse
☒ 3. impulse, step, ramp
☒ 4. ramp, impulse, step

- Q.18** Find the resistance R_1 and R_3 in the following circuit:



Question ID : 1860452321

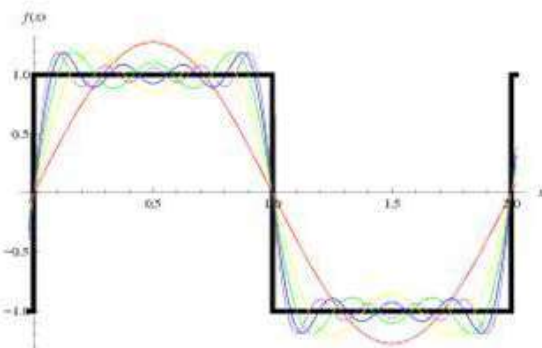
Status : Not Attempted and Marked For Review

Chosen Option : --

- Ans** ☒ 1. 4.11, 6.78
☒ 2. 4.11, 5.78
☒ 3. 7.23, 3.19
☒ 4. 5.09, 3.18

Section : Communication

- Q.1** The following image represents:



Question ID : 1860452331

Status : Answered

Chosen Option : 2

- Ans** ☒ 1. Wave Shaping
☒ 2. Shannon-Hartley Effect
☒ 3. Gibb's Phenomena
☒ 4. Aliasing

- Q.2** Consider the 2 statements:
 1) An odd and imaginary signal always has an odd and imaginary Fourier transform.
 2) The convolution of an odd Fourier transform with an even Fourier transform is always even.

Which of the above statements is / are true:

Question ID : 1860452334

Status : Not Attempted and Marked For Review

Chosen Option : --

- Ans** ☒ 1. None
☒ 2. 1 and 2
☒ 3. 1

☒ 4. 2

Q.3 Should the real time instruments like CRO and DSO be time invariant?

- Ans ☒ 1. Yes
☒ 2. Never
☒ 3. Sometimes
☒ 4. No relation with the time invariance

Question ID : 1860452329

Status : Answered

Chosen Option : 1

Q.4 By the decomposition property of a linear system, we can separate out 2 components of the linear system namely:

- Ans ☒ 1. Zero input component, zero state component
☒ 2. Steady state component, transient component
☒ 3. Linear component, non-linear component
☒ 4. Line and a Circle

Question ID : 1860452330

Status : Answered

Chosen Option : 2

Q.5 Wattmeter deflection in AC circuits is proportional to the _____.

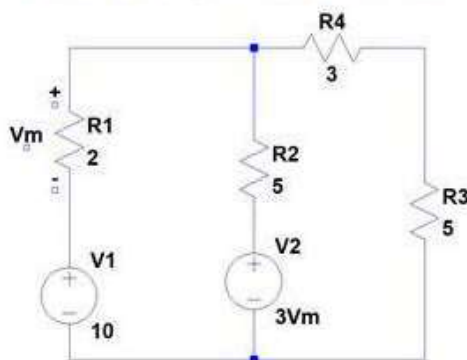
- Ans ☒ 1. Voltage in the circuit
☒ 2. Average Power in the circuit
☒ 3. Instantaneous Power in the circuit
☒ 4. Maximum power in the circuit

Question ID : 1860452337

Status : Answered

Chosen Option : 4

Q.6 Find the current flowing through the resistor R3?



- Ans ☒ 1. 0.48A
☒ 2. 0.96A
☒ 3. 0.24A
☒ 4. 1.2A

Question ID : 1860452328

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.7 Consider $y_1(t) = x(3t)$ and $y_2(t) = x(t/3)$. Consider the following statements:

- 1) If $y_1(t)$ and $y_2(t)$ are periodic, then $x(t)$ is periodic.
2) If $x(t)$ is periodic, then $y_1(t)$ and $y_2(t)$ are periodic.

Which of the above statements is/are true:

- Ans ☒ 1. None
☒ 2. 1
☒ 3. 1 and 2
☒ 4. 2

Question ID : 1860452333

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.8 An absolutely integrable signal $x(t)$ is known to have a pole at $s = 5$. Which of the following statements are correct?

- Ans ☒ 1. $x(t)$ is of finite duration

Question ID : 1860452336

Status : Answered

- ☒ 2. None
- ☒ 3. $x(t)$ is right sided
- ☒ 4. $x(t)$ is not feasible

Chosen Option : 3

Q.9 Let $x(t)$ be a signal with Nyquist rate w_0 . Determine the Nyquist rate for $y(t) = x(t)\cos(w_0 t)$.

- Ans
- ☒ 1. w_0
 - ☒ 2. $2w_0$
 - ☒ 3. $3w_0$
 - ☒ 4. 2π

Question ID : 1860452335

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.10 Solve $15/t^2 = 2/3$:

- Ans
- ☒ 1. ± 2.122
 - ☒ 2. ± 2.568
 - ☒ 3. ± 2.372
 - ☒ 4. ± 2.188

Question ID : 1860452339

Status : Not Answered

Chosen Option : --

Q.11 The signal $y(t) = T\{x(t)\} = \sin(2\pi t)x(t) + u(t-2)$ is _____.

- Ans
- ☒ 1. Linear, time variant, non-causal
 - ☒ 2. Non-linear, time invariant, causal
 - ☒ 3. Linear, time invariant, causal
 - ☒ 4. Non-linear, time invariant, non-causal

Question ID : 1860452332

Status : Not Attempted and Marked For Review

Chosen Option : --

Q.12 A die is tossed three times. What is the probability of getting an odd number at least once?

- Ans
- ☒ 1. $7/16$
 - ☒ 2. $7/8$
 - ☒ 3. $3/16$
 - ☒ 4. $7/5$

Question ID : 1860452338

Status : Not Answered

Chosen Option : --

Section : Electromagnetic

Q.1 Light is good for telecommunications because it is:

- Ans
- ☒ 1. a high-frequency carrier
 - ☒ 2. not modulated
 - ☒ 3. a very low-frequency carrier
 - ☒ 4. a low-frequency carrier

Question ID : 1860452343

Status : Answered

Chosen Option : 1

Q.2 If σ is the conductivity, What is the relationship between the electric field E and the current density J in a conducting medium?

- Ans
- ☒ 1. $\sigma = J/E$
 - ☒ 2. $\sigma = 1/(EJ)$
 - ☒ 3. $\sigma = E/J$
 - ☒ 4. $\sigma = EJ$

Question ID : 1860452344

Status : Marked For Review

Chosen Option : 1

Q.3 What is meant by the polarisation of electromagnetic waves?

- Ans
- ☒ 1. The polarisation is the direction of the electric current in an electromagnetic wave.
 - ☒ 2.

Question ID : 1860452345

Status : Marked For Review

Chosen Option : 1

The polarisation is the direction of the electric field in an electromagnetic wave.

☒ 3.

The polarisation is the magnitude of the voltage in an electromagnetic wave.

☒ 4.

The polarisation is the inverse of the electric field in an electromagnetic wave.

Q.4 Find the gradient of the curve $y = 3x^2 - 7x + 2$ at the point $(1, -2)$:

Ans ☒ 1. 1

☒ 2. -2

☒ 3. 2

☒ 4. -1

Question ID : 1860452340

Status : Not Attempted and
Marked For Review

Chosen Option : --

Q.5 Consider an interface between two dielectric materials, one with $\epsilon_r = 2$ while the other has $\epsilon_r = 5$. If the tangential component of electric field on one side of the interface has a magnitude of 10V.m^{-1} what is the magnitude of the tangential component of electric field on the other side?

Ans ☒ 1. 10V.m^{-1}

☒ 2. 20V.m^{-1}

☒ 3. 2V.m^{-1}

☒ 4. 5V.m^{-1}

Question ID : 1860452342

Status : Not Answered

Chosen Option : --

Q.6 The wave impedance of a medium is equal to:

Ans ☒ 1. the refractive index of the medium

☒ 2.

the refractive index of the medium divided by the wave impedance of free-space

☒ 3.

the wave impedance of free-space divided by the refractive index of the medium

☒ 4. the wave impedance of free-space

Question ID : 1860452341

Status : Answered

Chosen Option : 3