UPPCL AE EC

Previous Year Paper

30 March 2022

UTTAR PRADESH POWER CORPORATION LTD.

Participant ID	
Participant Name	
Test Center Name	
Test Date	30/03/2022
Test Time	9:00 AM - 12:00 PM
Subject	AE Electronics and Telecommunication

Section : **Domain Knowledge**

Q.1 The ideal transformer CANNOT be described by:

Ans

✔ A. Z-parameters

✘ B. g-parameters

✘ C. ABCD parameters

✘ D. h-parameters

Question ID : **63068063732**
Status : **Answered**
Chosen Option : **A**

Q.2 The value of a_n for $f(x) = x^2$ in (0, 2) of half range Fourier series is:

Ans

✗ A. $\frac{8}{n^2\pi^2}\cos n\pi$

✗ B. $\frac{16}{n^2\pi^2}$

✗ C. $\frac{8}{n^2\pi^2}$

✓ D. $\frac{16}{n^2\pi^2}\cos n\pi$

Question ID : **63068064921**
Status : **Not Answered**
Chosen Option : **--**

Q.3 If the probability density function of a random variable x is $f(x)=\begin{cases}\frac{1}{2}\sin x; 0 \le x \le \pi \\ 0: otherwise\end{cases}$ then mode of the distribution is:

Ans

✗ A. $\frac{\pi}{4}$

✓ B. $\frac{\pi}{2}$

✗ C. 0

✗ D. $\frac{\pi}{6}$

Question ID : **63068065287**
Status : **Answered**
Chosen Option : **C**

Q.4 The solution of the differential equation

$$[\log(x^2+y^2)+\frac{2x^2}{x^2+y^2}]dx+\frac{2xy}{x^2+y^2}dy=0 \text{ is:}$$

Ans

✗ A. $x\log(x+y)=c$

✗ B. $\log(x^2+y^2)=c$

✓ C. $x\log(x^2+y^2)=c$

✗ D. $x\log(x^2-y^2)=c$

Question ID : **63068064188**
Status : **Answered**
Chosen Option : **C**

Q.5 **A transmission line has the characteristics impedance and the load impedance of 100 Ohm. The line is excited by a source of sinusoidal voltage of 5 GHz. The phase difference between two points spaced 1-mm long is equal to π/4 radians. The phase velocity of the wave along the line is equal to:**

Ans

✓ A. 40×10^6 m/sec

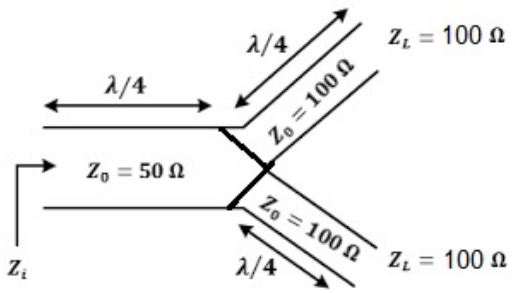
✗ B. 40×10^9 m/sec

✗ C. 3×10^8 m/sec

✗ D. 4×10^6 m/sec

Question ID : **63068063883**
Status : **Answered**
Chosen Option : **B**

Q.6 What is the input impedance (in Ω) for the following transmission line with parallel load?



Ans

✔ A. 50

✘ B. 200

✘ C. 25

✘ D. 100

Question ID : **63068063922**
Status : **Answered**
Chosen Option : **A**

Q.7 Consider the characteristic equation of a control system given by $s^3 + (K + 0.5)s^2 + 4Ks + 50 = 0$. Find the value of the frequency if the system has sustained oscillations for a given K.

Ans

✘ A. $\omega = 50\ rad/sec$

✘ B. $\omega = 25\ rad/sec$

✔ C. $\omega = 3.63\ rad/sec$

✘ D. $\omega = 4.63\ rad/sec$

Question ID : **63068065436**
Status : **Answered**
Chosen Option : **C**

Q.8 **Consider a discrete time system whose impulse response is given as h[n]={1,1,1}. If the sampling frequency of the system is Fs = 40 kHz, then the first positive frequency (in kHz) where the null occurs in the spectrum is:**

Ans

✗ A. 20

✗ B. 8

✗ C. 10

✓ D. 13.33

Question ID : **63068063120**
Status : **Answered**
Chosen Option : **D**

Q.9 Consider a Signal $x(t) = e^{-2t}\,u(t)$, where u(t) is unit step function.
The bandwidth of the signal x(t) (in rad/s) is:

Ans

✗ A. 1 rad/s

✗ B. 0.5 rad/s

✗ C. 2 rad/s

✓ D. Infinite rad/s

Question ID : **63068063760**
Status : **Answered**
Chosen Option : **B**

Q.10 Consider a binary transmission of bits 0 and 1 with equal probability. Bits are transmitted in a noisy channel and channel noise is additive in nature. The received signal is random in nature with conditional probability density function for each transmitted bit 0 and 1, respectively, as

$f_{r/_0}(x) = 1 - |x| |x| < 1$

$f_{r/_1}(x) = 1 - |x - 1|\ \ 0 < x < 2$

What is the average probability of error if threshold in the decision device at the receiving end is 1?

Ans

✗ A. $\frac{1}{3}$

✗ B. $\frac{1}{2}$

✗ C. $\frac{1}{8}$

✓ D. $\frac{1}{4}$

Question ID : **63068063915**
Status : **Not Answered**
Chosen Option : **--**

Q.11 The peak factor of a half wave rectifier is:

Ans

✗ A. 3

✗ B. 5

✓ C. 2

✗ D. 4

Question ID : **63068065475**
Status : **Answered**
Chosen Option : **C**

Q.12 The characteristics impedance of a two-wire lossless transmission line is equal to:

Ans

✗ A. $\sqrt{\frac{C}{L}}$

✗ B. $\sqrt{\frac{1}{LC}}$

✗ C. $\sqrt{LC}$

✓ D. $\sqrt{\frac{L}{C}}$

Question ID : **63068063858**
Status : **Answered**
Chosen Option : **D**

Q.13 **Consider a digital communication system that uses a repetition code for channel encoding. Each transmission bit is repeated 5 times. The decoder operates with majority rule,that is, if received bits are three or more '1', then receiver will decide in favour of 1. An error occurs when 3 or more received bits are incorrect. Assume a binary symmetric channel with crossover probability as 0.5. Assuming both bits are equi-probable,what is the average probability of error?**

Ans

✔ A. 0.5

✘ B. 0.125

✘ C. 0.875

✘ D. 0.625

Question ID : **63068063916**
Status : **Not Answered**
Chosen Option : **--**

Q.14 **If an electric field of 30 V/cm is applied across the specimen, then the drift velocity of free electron is _____. (Given $\mu = 34.8 \times 10^{-4}$ m^2/v-s)**

Ans

✘ A. 5.22 m/s

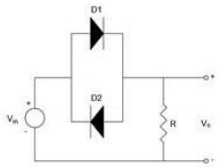
✘ B. 7.53 m/s

✔ C. 10.44 m/s

✘ D. 13.26 m/s

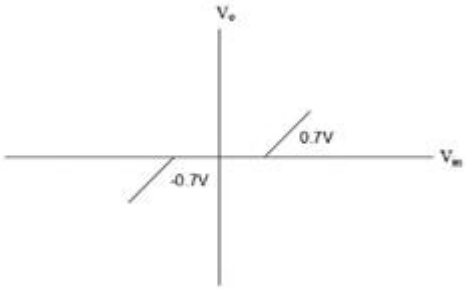
Question ID : **63068063826**
Status : **Answered**
Chosen Option : **C**

Q.15 In which of the following options are the transfer characteristics of the given circuit shown? (The diodes are non-ideal.)

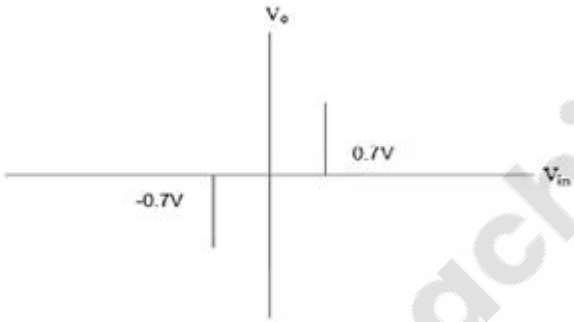


Ans

✔ A.

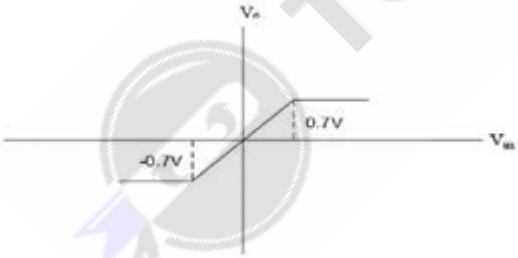


✘ B.



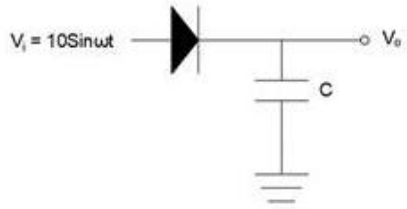
✘ C. none of the above

✘ D.



Question ID : **63068064008**
Status : **Answered**
Chosen Option : **A**

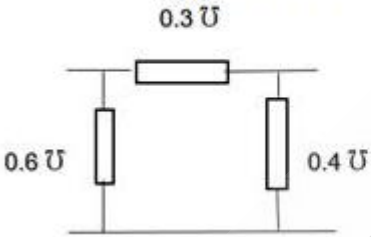
Q.16 Find the value of the voltage across the capacitor when the diode is ideal.



Ans
- ✔ A. 10V
- ✘ B. 5V
- ✘ C. 20V
- ✘ D. 15V

Question ID : **63068065491**
Status : **Answered**
Chosen Option : **A**

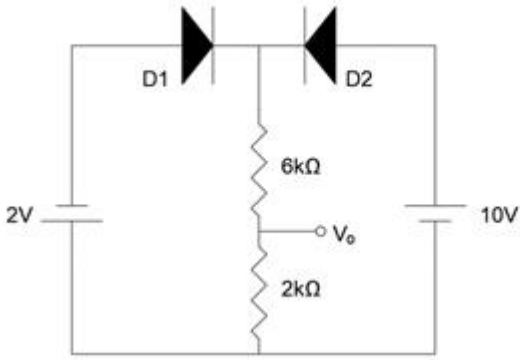
Q.17 Short circuit parameter for the network shown is:



Ans
- ✔ A. $Y_{11} = 0.9\ Ʊ, Y_{12} = -0.3\ Ʊ, Y_{21} = -0.3\ Ʊ, Y_{22} = 0.7\ Ʊ$
- ✘ B. $Y_{11} = 0.9\ Ʊ, Y_{12} = -0.3\ Ʊ, Y_{21} = 0.3\ Ʊ, Y_{22} = 0.7\ Ʊ$
- ✘ C. $Y_{11} = 0.9\ Ʊ, Y_{12} = 0.3\ Ʊ, Y_{21} = -0.3\ Ʊ, Y_{22} = 0.7\ Ʊ$
- ✘ D. $Y_{11} = 0.7\ Ʊ, Y_{12} = -0.3\ Ʊ, Y_{21} = -0.3\ Ʊ, Y_{22} = 0.9\ Ʊ$

Question ID : **63068064280**
Status : **Answered**
Chosen Option : **A**

Q.18 Find V_o for the given circuit. (The diodes are ideal).



Ans
- ✗ A. 6V
- ✗ B. 4.2V
- ✗ C. 5V
- ✓ D. 2.5V

Question ID : **63068063993**
Status : **Answered**
Chosen Option : **D**

Q.19 **For the input analog voltage range up to 12 V, the resolution for a 12-bit A/D converter is:**

Ans
- ✗ A. 29.3 mV
- ✗ B. 0.293 mV
- ✗ C. 293 mV
- ✓ D. 2.93 mV

Question ID : **63068063751**
Status : **Answered**
Chosen Option : **D**

Q.20 **A 1-km-long microwave link uses two antennas, each having 30 dB of gain. If the power transmitted by one antenna is 0.5 W at 3GHz, the power received by the other antenna is approximately equal to:**

Ans

✗ A. 15.85 μW

✗ B. 63.4 μW

✗ C. 0.5 μW

✓ D. 31.7 μW

Question ID : **63068063862**
Status : **Marked For Review**
Chosen Option : **D**

Q.21 **The attenuation constant and the phase shift constant for a lossless transmission line are equal to _____ and _____, respectively.**

Ans

✗ A. $\sqrt{RG}, w\sqrt{\frac{G}{R}}$

✗ B. $0, w\sqrt{\frac{G}{R}}$

✓ C. $0, w\sqrt{LC}$

✗ D. $w\sqrt{LC}, 0$

Question ID : **63068063879**
Status : **Answered**
Chosen Option : **C**

Q.22 An n–type silicon sample of 10^{-3}m length and 10^{-10} m^2 cross sectional area has an impurity concentration of 5×10^{20} atom/m^3. If mobility of majority carries is 0.125 m^2/v-sec, then the resistance of the sample will be ____.

Ans
✗ A. 4 MΩ

✓ B. 1 MΩ

✗ C. 25 kΩ

✗ D. 5 kΩ

Question ID : **63068063888**
Status : **Answered**
Chosen Option : **B**

Q.23 Which of the following statements with respect to the stability of a control system is true?
a. The roots of the characteristic equation are on the left half of the s-plane.
b. The system is bounded input bounded output (BIBO) stable.
c. Stability is independent of the input.
d. The roots of the characteristic equation are on the left half of the s-plane and on the imaginary axis.

Ans
✗ A. Only (a) and (c) are true

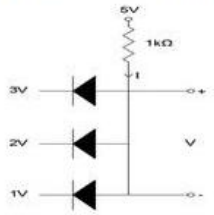
✗ B. Only (a), (b) are true

✓ C. Only (a), (b) and (c) are true

✗ D. Only (d) is true

Question ID : **63068065432**
Status : **Answered**
Chosen Option : **B**

Q.24 In the circuit shown below, find the values of I and V, respectively. (The diodes are ideal.)



Ans

✗ A. 2 mA, 0 V

✗ B. 3 mA, 2 V

✓ C. 4 mA, 1 V

✗ D. 0 mA, 1 V

Question ID : **63068063998**
Status : **Answered**
Chosen Option : **B**

Q.25 **For a twin-wire transmission line in air, the adjacent voltage maxima are at 12.5 cm and 25.0 cm. The line operates at a frequency of:**

Ans

✓ A. 1.2 GHz

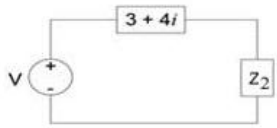
✗ B. 600MHz

✗ C. 2.5 GHz

✗ D. 2.1 GHz

Question ID : **63068063860**
Status : **Answered**
Chosen Option : **A**

Q.26 What should be impedance Z_2 for maximum power transfer, provided Z_2 has no real part?



Ans

✗ A. 5j

✓ B. −4j

✗ C. -5j

✗ D. 4j

Question ID : **63068063718**
Status : **Answered**
Chosen Option : **B**

Q.27 **The wavelength of the wave having propagation constant (0.314 + j 0.628) per metre is equal to:**

Ans

✗ A. 5 metres

✗ B. 20 metres

✗ C. 30 metres

✓ D. 10 metres

Question ID : **63068063876**
Status : **Answered**
Chosen Option : **D**

Q.28 If Lagrange's mean value theorem is applied to $f(x)= \log_e x$, $x \in [1,e]$, then $c \in (1,e)$ will be:

Ans

✔ A. e – 1

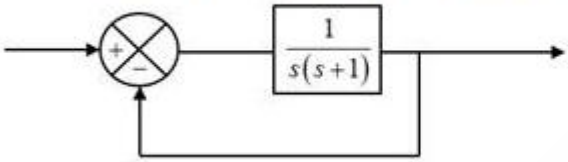
✘ B. 1.5

✘ C. 1.75

✘ D. 2

Question ID : **63068064895**
Status : **Not Answered**
Chosen Option : **--**

Q.29 Calculate the peak time of the given system for unit step i/p.



Ans

✔ A. $\frac{2\pi}{\sqrt{3}}$ sec

✘ B. $\sqrt{\frac{2\pi}{3}}$ sec

✘ C. $\frac{\sqrt{3}}{2\pi}$ sec

✘ D. $\sqrt{\frac{3}{2\pi}}$ sec

Question ID : **63068054502**
Status : **Answered**
Chosen Option : **A**

Q.30 If the distribution is mesokurtic and if $\mu_4 = 108$, then μ_2 is:

Ans
✗ A. 5
✓ B. 6
✗ C. −5
✗ D. −6

Question ID : **63068065264**
Status : **Not Answered**
Chosen Option : **--**

Q.31 **A bipolar junction transistor has α = 0.99, I_B = 25 μA and I_{CBO} = 200 nA. The DC collector current is:**

Ans
✗ A. 2.475 mA
✗ B. 2.485 mA
✗ C. 2.465 mA
✓ D. 2.495 mA

Question ID : **63068063841**
Status : **Answered**
Chosen Option : **D**

Q.32 **Which are the two basic operations performed in ADCs?**

Ans
✗ A. Counting and Approximation
✗ B. Addition and Comparison
✓ C. Quantization and Coding
✗ D. Counting and Addition

Question ID : **63068065057**
Status : **Answered**
Chosen Option : **B**

Q.33 **Which of the following statements concerning the Bode plot are correct?**
a. The relative stability can be obtained using Bode plots.
b. For a system with time delay, the phase plot does not reach a minimum value.
c. For a minimal system phase system, the phase plot reaches a minimum value.
d. Gain and phase margin can be used to ascertain the stability of a system using Bode plot.

Ans

✔ A. (a), (b), (c) and (d) are correct

✘ B. Only (c) and (d) are correct

✘ C. Only (a), (b) and (d) are correct

✘ D. Only (b), (c) and (d) are correct

Question ID : **63068065452**
Status : **Answered**
Chosen Option : **A**

Q.34 **The forward path and feedback transfer functions of a control system are given as G(s) and H(s) respectively. The polar plot of a system is the magnitude and phase plot in polar coordinates for:**

Ans

✔ A. $G(jw)H(jw)$

✘ B. $G(jw)/(1+G(jw)H(jw))$

✘ C. $(1+G(jw)H(jw))$

✘ D. $G(jw)/(1+G(jw))$

Question ID : **63068065463**
Status : **Answered**
Chosen Option : **A**

Q.35 The minimised expression for $(a + b)(a + \overline{b}) + \overline{(a\,\overline{b} + \overline{a})}$ is:

Ans
- ✗ A. a+b
- ✓ B. a
- ✗ C. b
- ✗ D. ab

Question ID : **63068063739**
Status : **Answered**
Chosen Option : **B**

Q.36 **The displacement current density is given by:**

Ans
- ✗ A. J
- ✗ B. D
- ✗ C. $\frac{\partial D}{\partial x}$
- ✓ D. $\frac{\partial D}{\partial t}$

Question ID : **63068063877**
Status : **Answered**
Chosen Option : **D**

Q.37 **Consider an analog signal sampled at a rate of 2 KHz and quantized into 128 levels. The time duration for each bit of the binary encoded signal is:**

Ans
- ✗ A. 0.01
- ✗ B. 0.035
- ✓ C. 0.0714
- ✗ D. 0.05

Question ID : **63068063917**
Status : **Answered**
Chosen Option : **C**

Q.38 The maximum area of the rectangle that can be inscribed in the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ is:

Ans

✔ A. $2ab$

✘ B. $2a^2b^2$

✘ C. 2

✘ D. 4

Question ID : **63068064909**
Status : **Answered**
Chosen Option : **A**

Q.39 The characteristic equation of a system is given by $s^3+5s^2+(6+K)s+20K=0$. Find the range of K for stability.

Ans

✔ A. 0<K<2

✘ B. K<2

✘ C. K<3

✘ D. 0<K<3

Question ID : **63068065433**
Status : **Answered**
Chosen Option : **A**

Q.40 **For the open loop transfer function G(s) H(S) = 1/S(S+2), the gain margin in dB is equal to:**

Ans

✔ A. ∞

✘ B. 2

✘ C. 1

✘ D. 0

Question ID : **63068063576**
Status : **Answered**
Chosen Option : **A**

Q.41 A semiconductor material is doped with donor type impurities with 10^{15} atoms/cm^3. If the intrinsic carrier concentration is 10^{10} cm^{-3}, then the concentration of holes in the doped semiconductors in equilibrium (in cm^{-3}) will be:

Ans
- ✗ A. 10^8
- ✓ B. 10^5
- ✗ C. 10^{10}
- ✗ D. 10^{12}

Question ID : **63068063821**
Status : **Answered**
Chosen Option : **B**

Q.42 For a two-wire transmission line, the load impedance is 100 Ohm and the characteristics impedance is 50 Ohm. The reflection coefficient at the load is equal to:

Ans
- ✗ A. 3
- ✗ B. $\frac{1}{2}$
- ✗ C. 2
- ✓ D. $\frac{1}{3}$

Question ID : **63068063881**
Status : **Answered**
Chosen Option : **D**

Q.43 Calculate the recombination rate if the excess carrier's concentration is $10^{14}cm^{-3}$ and carrier life time is 1μ sec.

Ans

✗ A. 10^{14}

✗ B. 10^{6}

✓ C. 10^{20}

✗ D. 10^{9}

Question ID : **63068063889**
Status : **Answered**
Chosen Option : **C**

Q.44 In a forward-biased p-n diode with $N_A >> N_D$, the product of dynamic diode resistance and diffusion capacitance C_D equals:

Ans

✗ A. τ_P^2

✗ B. $-\tau_p$

✗ C. τ_P^{-1}

✓ D. τ_p

Question ID : **63068063836**
Status : **Answered**
Chosen Option : **D**

Q.45 S parameters of a transmission line are S_{11}, S_{12}, S_{21} and S_{22}. If the transmission line is symmetrical, what is the condition?

Ans

✗ A. $S_{21} = -S_{12}$

✗ B. $S_{21} = S_{12}$

✗ C. $S_{11} = S_{12}$

✓ D. $S_{11} = S_{22}$

Question ID : **63068063885**
Status : **Answered**
Chosen Option : **D**

Q.46 The transformer utilization factor TUF of a bridge rectifier is:

Ans

✗ A. 86.5%

✗ B. 69.2%

✓ C. 81.2%

✗ D. 28.6%

Question ID : **63068064010**
Status : **Answered**
Chosen Option : **A**

Q.47 For static electric and magnetic fields in an inhomogeneous source-free medium, which of the following represents the correct form of two of Maxwell's equations?

Ans

✗ A. $\nabla.\vec{E} = 0 \quad \nabla.\vec{B} = 0$

✗ B. $\nabla.\vec{E} = 0 \quad \nabla X\vec{B} = 0$

✓ C. $\nabla X\vec{E} = 0 \quad \nabla.\vec{B} = 0$

✗ D. $\nabla X\vec{E} = 0 \quad \nabla X\vec{B} = 0$

Question ID : **63068063850**
Status : **Answered**
Chosen Option : **C**

Q.48 दो व्यक्ति A और B, एकांतर रूप से ताश की एक गड्डी से एक-एक ताश निकालते हैं और प्रत्येक ड्रॉ के बाद पैक को शफल किया जाता है। यदि A खेल शुरू करता है और खेल तब तक जारी रहता है जब तक कि उनमें से किसी एक को हुकुम का ताश न मिल जाए, तो B के जीतने की प्रायिकता क्या है?

Ans

✗ A. $\frac{5}{9}$

✗ B. $\frac{1}{7}$

✗ C. $\frac{2}{9}$

✓ D. $\frac{3}{7}$

Question ID : **63068065294**
Status : **Not Answered**
Chosen Option : **--**

Q.49 The only curve in which the subnormal is constant is:

Ans

✗ A. a hyperbola

✗ B. a straight line

✓ C. a parabola

✗ D. an ellipse

Question ID : **63068064965**
Status : **Answered**
Chosen Option : **B**

Q.50 **Which of the following statements is correct?**
S1: Channel capacity is the same for two binary symmetric channels with transition probabilities as 0.1 and 0.9.
S2: For a binary symmetric channel with transition probability 0.5, the channel capacity is 1.
S3: For AWGN channel with infinite bandwidth, channel capacity is also infinite.
S4: If Y = g(X), then H(Y) > H(X).

Ans

✗ A. S1, S2, S3 and S4

✓ B. Only S1

✗ C. Only S2 and S3

✗ D. S1, S2 and S3

Question ID : **63068063911**
Status : **Answered**
Chosen Option : **B**

Q.51 **The intrinsic impedance of a lossless dielectric medium is given by:**

Ans

✗ A. $\frac{j\omega\epsilon}{\mu}$

✓ B. $\sqrt{\frac{\mu}{\epsilon}}$

✗ C. $\frac{j\omega\mu}{\sigma}$

✗ D. $\sqrt{\frac{j\omega\mu}{(\sigma+j\omega\epsilon)}}$

Question ID : **63068063852**
Status : **Answered**
Chosen Option : **B**

Q.52 If the determinant of the matrix A= $\begin{pmatrix} 4 & 2 & 6 \\ 5 & 15 & 5 \\ 3 & x & 9 \end{pmatrix}$ and the determinant of matrix $B = \begin{pmatrix} 1 & 3 & 1 \\ 1 & y & 3 \\ 2 & 1 & 3 \end{pmatrix}$ are related as A=30B, then x and y are related as:

Ans

✗ A. x = −y

✗ B. x = y

✗ C. y = 3x

✓ D. x = 3y

Question ID : **63068065504**
Status : **Answered**
Chosen Option : **D**

Q.53 Consider a source with four symbols. The entropy of the source will be maximum when probabilities of occurrence of symbols are:

Ans

✗ A. $\{1,0,0,0\}$

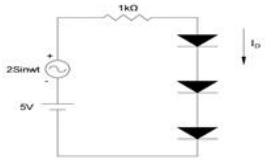
✓ B. $\left\{\frac{1}{4},\frac{1}{4},\frac{1}{4},\frac{1}{4}\right\}$

✗ C. $\left\{\frac{1}{2},\frac{1}{4},\frac{1}{8},\frac{1}{8}\right\}$

✗ D. $\left\{\frac{1}{3},\frac{1}{3},\frac{1}{3},0\right\}$

Question ID : **63068064067**
Status : **Answered**
Chosen Option : **B**

Q.54 For the circuit shown below, find the values of I_D and r_d, respectively, if V_d= 0.7V and V_T = 25mV.



Ans

✗ A. 0.5mA, 3Ω

✗ B. 1mA, 5Ω

✓ C. 2.9mA, 8.6Ω

✗ D. 0.8mA, 4Ω

Question ID : **63068063999**
Status : **Answered**
Chosen Option : **C**

Q.55 **A semiconductor wafer is 0.5 mm thick. A potential of 100 mV is applied across its thickness. How much time is required for an electron to move across the thickness if the mobility is 0.2 m^2/V-s?**

Ans

✓ A. 12.5 μs

✗ B. 19.2 μs

✗ C. 15.3 μs

✗ D. 17 μs

Question ID : **63068063828**
Status : **Answered**
Chosen Option : **A**

Q.56 If $A=\begin{pmatrix} 3 & 2 & 2 \\ 1 & 2 & 2 \\ -1 & -1 & 0 \end{pmatrix}$ and if $A^2+8I-4A^{-1}=kA$ then $k=?$

Ans
- ✗ A. −5
- ✓ B. 5
- ✗ C. 2
- ✗ D. 1

Question ID : **63068065518**
Status : **Not Attempted and Marked For Review**
Chosen Option : **--**

Q.57 **If an AM broadcast radio transmitter radiates 10 KW when the modulation percentage is 100%, then what is the power efficiency of the AM? (Assume single tone message signal is used.)**

Ans
- ✓ A. 33%
- ✗ B. 50%
- ✗ C. 67%
- ✗ D. 25%

Question ID : **63068064040**
Status : **Answered**
Chosen Option : **A**

Q.58 An n–channel JFET has I_{DSS}= 1 mA; V_p = – 5 V. The maximum value of transconductance is:

Ans

✗ A. 0.6×10^{-3} A/V

✗ B. 0.65 A/V

✗ C. 0.56×10^{-3} A/V

✓ D. 0.4×10^{-3} A/V

Question ID : **63068063849**
Status : **Answered**
Chosen Option : **D**

Q.59 The range of β in BJT is _____.

Ans

✓ A. 20 to 500

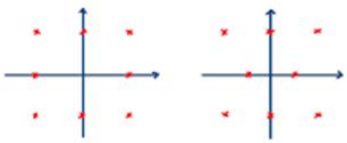
✗ B. 2 to 50

✗ C. 100 to 400

✗ D. 5 to 100

Question ID : **63068063845**
Status : **Answered**
Chosen Option : **A**

Q.60 Consider the two 8-point QAM signal constellations shown in the given figures. The minimum distance between adjacent points is 2A. Assuming that all signal points are equally probable, the ratio of average transmitted power in Constellation I to Constellation II is:



Ans

✔ A. 4:3

✘ B. 2:1

✘ C. 3:2

✘ D. 3:4

Question ID : **63068064076**
Status : **Marked For Review**
Chosen Option : **A**

Q.61 Consider a message signal as $m(t) = 3\,cos(100\pi t) + 2cos(200\pi t)$. If this signal undergoes frequency modulation with frequency sensitivity constant 20 Hz/Volts, then the bandwidth of the modulated signal is:

Ans

✘ A. 300 Hz

✘ B. 100 Hz

✔ C. 400 Hz

✘ D. 200 Hz

Question ID : **63068064049**
Status : **Answered**
Chosen Option : **C**

Q.62 The maximum value of the function

$$f(x) = x^3 - 3x^2 + 2x \text{ in } [1,2] \text{ is:}$$

Ans

✗ A. 1

✗ B. 2

✗ C. 4

✓ D. 0

Question ID : **63068064906**
Status : **Answered**
Chosen Option : **D**

Q.63 Consider a WSS random process X(t), whose amplitudes are normally distributed with E(x(t)) = 0 and $R_X(\tau) = e^{-2|\tau|}$.

Then $P(X(t)) \leq 2)$ =?

$(Q(\alpha) = \frac{1}{\sqrt{2\pi}} \int_{\alpha}^{\infty} e^{-x^2/2}\, dx)$

Ans

✗ A. Q (1)

✓ B. 1 – Q (2)

✗ C. 1 – Q (1)

✗ D. Q (2)

Question ID : **63068064061**
Status : **Answered**
Chosen Option : **B**

Q.64 Two coaxial cables 1 and 2 are filled with different dielectric constants ϵ_{r1} and ϵ_{r2}, respectively. The ratio of the wavelengths in the two cables, $(\frac{\lambda_1}{\lambda_2})$, is equal to:

Ans

✗ A. $\frac{\epsilon_{r1}}{\epsilon_{r2}}$

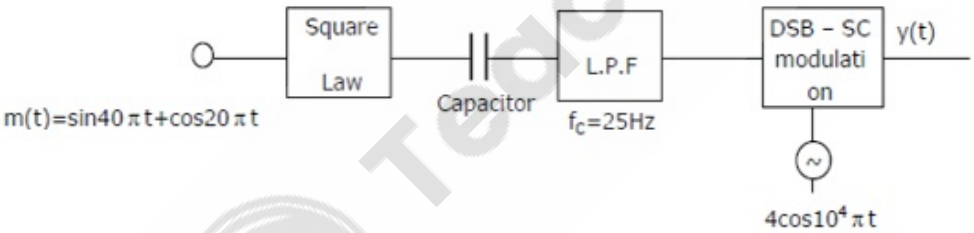
✗ B. $\frac{\epsilon_{r2}}{\epsilon_{r1}}$

✓ C. $\sqrt{\frac{\epsilon_{r2}}{\epsilon_{r1}}}$

✗ D. $\sqrt{\frac{\epsilon_{r1}}{\epsilon_{r2}}}$

Question ID : **63068063855**
Status : **Answered**
Chosen Option : **C**

Q.65 Determine Bandwidth (in Hz) of signal y(t) in the figure shown below.



Ans

✗ A. 80

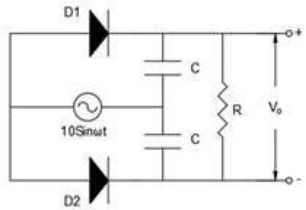
✓ B. 40

✗ C. 20

✗ D. 60

Question ID : **63068063899**
Status : **Answered**
Chosen Option : **B**

Q.66 In the circuit shown, the Diodes D1 and D2 are ideal and RC>> T. Find V_o at steady state.



Ans

✔ A. 0V

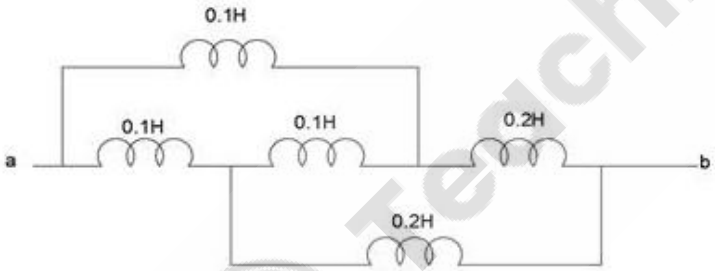
✗ B. 10V

✗ C. 5V

✗ D. –20V

Question ID : **63068064019**
Status : **Answered**
Chosen Option : **D**

Q.67 The equivalent inductance across 'ab' for the diagram shown below is:



Ans

✗ A. 0.5 H

✔ B. 0.15 H

✗ C. 0.3 H

✗ D. 1 H

Question ID : **63068063736**
Status : **Answered**
Chosen Option : **B**

Q.68 For a Poisson variate X, P(X = 1) = P(X=2).The variance of X is:

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

Question ID : **63068065283**
Status : **Answered**
Chosen Option : **A**

Q.69 A memoryless source has symbols S = {-3, -1, 0, 1, 3} with corresponding probabilities {0.3, 0.2, 0.1, 0.2, 0.2}. The entropy of the source is:

Ans
- ✔ A. 2.254 bits
- ✘ B. 1.356 bits
- ✘ C. 0.678 bits
- ✘ D. 1 bit

Question ID : **63068064069**
Status : **Answered**
Chosen Option : **C**

Q.70 Consider a binary transmission of bits 0 and 1 using Binary FSK. Two sine waves of frequency 10 KHz and 20 KHz are used to transmit bits 0 and 1, respectively. What is the bit interval for which the two signals of FSK are orthogonal to each other?

Ans
- ✘ A. 75 µsec
- ✘ B. 150 µsec
- ✔ C. 100 µsec
- ✘ D. 25 µsec

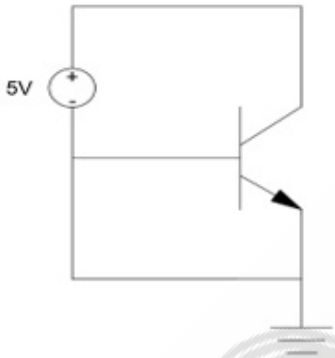
Question ID : **63068064078**
Status : **Answered**
Chosen Option : **C**

Q.71 The value of the integral $\int_0^{\pi} \frac{1}{3+2\cos\theta} d\theta$ is:

Ans
- ✗ A. $\frac{-\pi}{\sqrt{5}}$
- ✗ B. 0
- ✗ C. $\frac{2\pi}{\sqrt{5}}$
- ✓ D. $\frac{\pi}{\sqrt{5}}$

Question ID : **63068064950**
Status : **Answered**
Chosen Option : **B**

Q.72 The region of operation for the transistor shown in the given figure is:



Ans
- ✓ A. cut off
- ✗ B. active
- ✗ C. inverse active
- ✗ D. saturation

Question ID : **63068063896**
Status : **Answered**
Chosen Option : **A**

Q.73 If Z_1, Z_2 be the Z-parameter matrix of two networks connected in series, then the Z-parameter matrix of the resultant matrix will be:

Ans

✔ A. $Z_1 + Z_2$

✘ B. $Z_1 Z_2$

✘ C. $Z_1 - Z_2$

✘ D. $\frac{Z_1}{Z_2}$

Question ID : **63068063733**
Status : **Answered**
Chosen Option : **A**

Q.74 In the complex form of Fourier series of a periodic function f(x) with period 2π, the Fourier constant c_n = ?

Ans

✔ A. $\frac{1}{2\pi}\int_{-\pi}^{\pi} f(x)e^{-inx}dx$

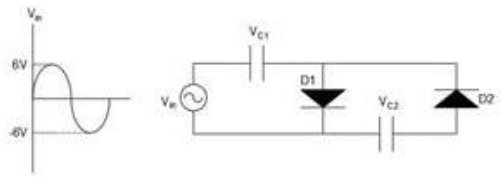
✘ B. $\frac{2}{\pi}\int_{0}^{\pi} f(x)e^{-inx}dx$

✘ C. $\frac{1}{\pi}\int_{-\pi}^{\pi} f(x)e^{-inx}dx$

✘ D. $\frac{1}{\pi}\int_{0}^{2\pi} f(x)e^{-inx}dx$

Question ID : **63068064919**
Status : **Answered**
Chosen Option : **A**

Q.75 Find V_{C2} at steady state for the circuit shown below. (The diodes are ideal.)



Ans

✗ A. 6V

✓ B. 12V

✗ C. 0V

✗ D. 18V

Question ID : **63068064004**
Status : **Answered**
Chosen Option : **B**

Q.76 What is the modulation index of AM wave which is given by
$x_{AM}(t) = [2 + cos\omega_m t]cos\omega_c t$? ($\omega_m$is message signal frequency and $\omega_c$is carrier signal frequency.)

Ans

✗ A. 0.33

✗ B. 1

✓ C. 0.5

✗ D. 2

Question ID : **63068064042**
Status : **Answered**
Chosen Option : **C**

Q.77 What is resolution in DAC?

Ans

✗ A. Resolution is range of analog values DAC can produce.

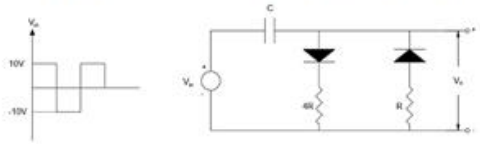
✓ B. Resolution is amount of change in output voltage for 1 bit change in LSB of input

✗ C. Resolution is number of input bits in Digital input of DAC

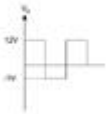
✗ D. Resolution is value of reference Voltage

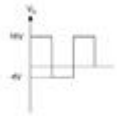
Question ID : **63068065061**
Status : **Answered**
Chosen Option : **B**

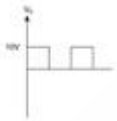
Q.78 The output waveform from the given circuit is _____ (The diodes are ideal).



Ans

✗ A. 

✓ B. 

✗ C. 

✗ D. 

Question ID : **63068064003**
Status : **Answered**
Chosen Option : **A**

Q.79 **In the steady state of a two-dimensional heat flow, if u is independent of t, then the equation reduces to:**

Ans

✗ A. heat flow in three dimensions

✗ B. Laplace's equation in three dimensions

✓ C. Laplace's equation in two dimensions

✗ D. heat flow in two dimensions

Question ID : **63068064973**
Status : **Answered**
Chosen Option : **C**

Q.80 **The leakage currents of a transistor are I_{CBO} = 5μA and I_{CEO} = 0.4mA. Find β.**

Ans

✗ A. 100

✓ B. 79

✗ C. 85

✗ D. 60

Question ID : **63068063895**
Status : **Answered**
Chosen Option : **B**

Q.81 **Consider an 8-point QAM signal scheme. What is the symbol rate if the desired bit rate is 90 Mbit/s?**

Ans

✗ A. 45×10^6 *Symbols per second*

✓ B. 30×10^6 *Symbols per second*

✗ C. 11.25×10^6 *Symbols per second*

✗ D. 60×10^6 *Symbols per second*

Question ID : **63068064075**
Status : **Answered**
Chosen Option : **B**

Q.82 The polar plot of the transfer function $G(s) = \frac{1}{(1+sT_1)(1+sT_2)(1+sT_3)}$ intersects which of the following phase quadrants?

Ans

✗ A. 0° and −180°

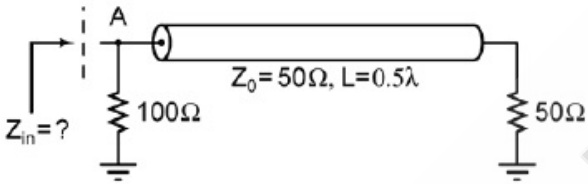
✗ B. 90° and −270°

✓ C. 180° and 270°

✗ D. −90° and −270°

Question ID : **63068065464**
Status : **Answered**
Chosen Option : **B**

Q.83 The input impedance (in Ω) for the transmission line cable shown in the given circuit is equal to:



Ans

✗ A. 66.66

✓ B. 33.33

✗ C. 100

✗ D. 50

Question ID : **63068063923**
Status : **Answered**
Chosen Option : **B**

Q.84 The condition for reciprocity for a two-port network is:

Ans

✗ A. $Z_{11} = Z_{22}$

✗ B. $Y_{11} = Y_{22}$

✓ C. $Y_{12} = Y_{21}$

✗ D. $A = D$

Question ID : **63068064281**
Status : **Answered**
Chosen Option : **C**

Q.85 If $A = \begin{pmatrix} -3 & 2 \\ -1 & 0 \end{pmatrix}$ then which of the following represents A^{-1} ?

Ans

✓ A. $\frac{(-A - 3I)}{2}$

✗ B. $A + 3I$

✗ C. $-A - 3I$

✗ D. $\frac{(A + 3I)}{2}$

Question ID : **63068065517**
Status : **Answered**
Chosen Option : **A**

Q.86 The bandwidth of a control system can be increased by using:

Ans

✗ A. lag and/or PI compensator

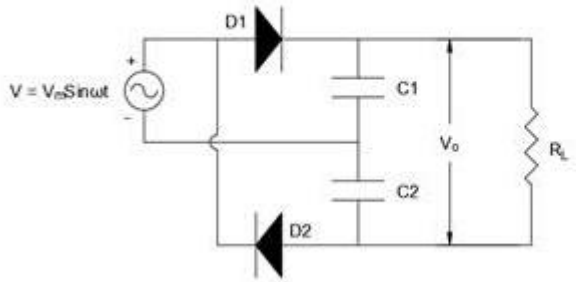
✓ B. lead and/or PD compensator

✗ C. only lead compensator

✗ D. only lad compensator

Question ID : **63068065461**
Status : **Answered**
Chosen Option : **B**

Q.87 In the given circuit, the diodes are ideal. Find V_o at steady state.



Ans
- ✗ A. V_m
- ✗ B. $3V_m$
- ✓ C. $2V_m$
- ✗ D. 0

Question ID : **63068065487**
Status : **Answered**
Chosen Option : **D**

Q.88 **The attenuation constant and the phase shift constant for a distortion-less transmission line are equal to _____ and _____, respectively.**

Ans
- ✗ A. $wL\sqrt{\frac{G}{R}}, \sqrt{RG}$
- ✓ B. $\sqrt{RG}, wL\sqrt{\frac{G}{R}}$
- ✗ C. $wL\sqrt{\frac{G}{R}}, 0$
- ✗ D. $0, wL\sqrt{\frac{G}{R}}$

Question ID : **63068063880**
Status : **Answered**
Chosen Option : **B**

Q.89 The content of 'A' after executing the following program is:

2020: MVI A, 12H

2012: MVI B, F1H

2014: LXI H, 2013

2017: MOV A, M

2018: MOV A, L

Ans
- ✗ A. 0
- ✗ B. F1H
- ✗ C. 12H
- ✓ D. 13H

Question ID : **63068063448**
Status : **Answered**
Chosen Option : **D**

Q.90 The Fourier cosine coefficient a_n for the function $f(x) = \begin{cases} c - x; 0 < x \leq c \\ x; c \leq x \leq 2c \end{cases}$ is:

Ans

✗ A. $\frac{c}{n^2\pi^2}[1 - \cos n\pi]$

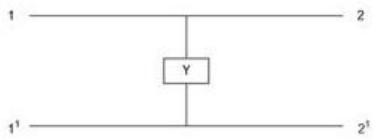
✓ B. $\frac{2c}{n^2\pi^2}[1 - \cos n\pi]$

✗ C. $\frac{2c^2}{n^2\pi^2}[1 - \cos n\pi]$

✗ D. $\frac{4c}{n^2\pi^2}[1 - \cos n\pi]$

Question ID : **63068064920**
Status : **Not Answered**
Chosen Option : **--**

Q.91 For the given linear time-invariant two-part network, the admittance matrix [Y] will be:



Ans

✗ A. $\begin{bmatrix} Y & 0 \\ 0 & Y \end{bmatrix}$

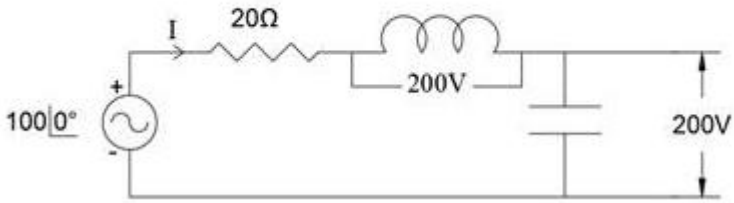
✓ B. indeterminate

✗ C. $\begin{bmatrix} Y & -Y \\ -Y & Y \end{bmatrix}$

✗ D. a null matrix

Question ID : **63068063730**
Status : **Answered**
Chosen Option : **B**

Q.92 What is the value of I in the given network?



Ans
✗ A. 2A
✗ B. 8A
✓ C. 5A
✗ D. 7A

Question ID : **63068063715**
Status : **Answered**
Chosen Option : **C**

Q.93 **The components of the vector v= 4i+5j relative to B= {i − j, 2i+j} of R^2 is:**

Ans
✗ A. (2, 3)
✗ B. 1(3, 0)
✗ C. (4, −5)
✓ D. (−2, 3)

Question ID : **63068065511**
Status : **Not Answered**
Chosen Option : **--**

Q.94

Consider a standard second order system given by $\frac{w_n^2}{s^2+2\zeta w_n s+w_n^2}$.

The speed of response is measured in time and frequency domain by:

Ans

✗ A. steady-state error, rise time in the time domain and resonant peak in the frequency domain

✓ B. settling-time, rise-time in the time domain and bandwidth in the frequency domain

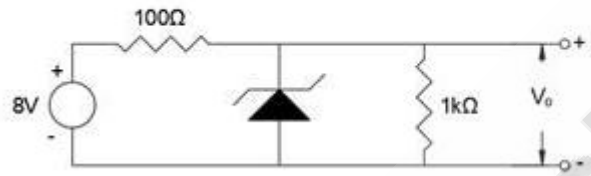
✗ C. rise-time in the time domain and bandwidth in the frequency domain

✗ D. settling-time, steady state in the time domain and bandwidth in the frequency domain

Question ID : **63068065459**
Status : **Answered**
Chosen Option : **B**

Q.95

Find V_o for the below shown circuit, when $V_z = 5V$.



Ans

✗ A. 4V

✗ B. 2V

✗ C. 6V

✓ D. 5V

Question ID : **63068064022**
Status : **Answered**
Chosen Option : **D**

Q.96 **An ideal crystal diode is one which behaves as a perfect _____ when forward biased.**

Ans

✔ A. conductor

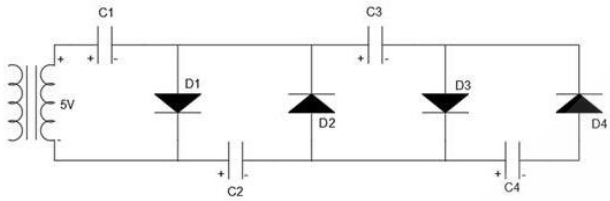
✘ B. Switch

✘ C. resistor

✘ D. insulator

Question ID : **63068064028**
Status : **Answered**
Chosen Option : **B**

Q.97 What is the value of the voltage measured from C_4 to the negative terminal of the transformer in the given circuit?



Ans

✘ A. 10V

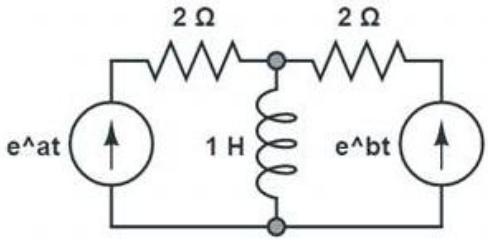
✘ B. –10V

✘ C. 5V

✔ D. –20V

Question ID : **63068064015**
Status : **Answered**
Chosen Option : **B**

Q.98 In the circuit shown in the given figure, the voltage drop across inductor v(t) is:



Ans

✗ A. $e^{at} - e^{bt}$

✗ B. $a\,e^{at} - b\,e^{bt}$

✓ C. $a\,e^{at} + b\,e^{bt}$

✗ D. $e^{at} + e^{bt}$

Question ID : **63068064279**
Status : **Answered**
Chosen Option : **C**

Q.99 What is the conversion time in Successive approximation type ADC?

Ans

✓ A. Conversion time of SAR ADC is lower than counter type ADC

✗ B. Conversion time of SAR ADC is larger than counter type ADC

✗ C. Conversion time of SAR ADC is same as counter type ADC

✗ D. Conversion time of SAR ADC does not depend on numberof bits in ADC

Question ID : **63068065085**
Status : **Answered**
Chosen Option : **A**

Q.100 Consider a signal given by $x(t) = \cos(2\pi 100t) + \sqrt{3}\sin(2\pi 100t)$, where carrier frequency is 100 Hz. The pre-envelope of the signal is:

Ans

✗ A. $x_{pe}(t) = 2e^{-j\frac{\pi}{3}}$

✗ B. $x_{pe}(t) = 2e^{j(\frac{\pi}{3})}$

✓ C. $x_{pe}(t) = 2e^{j(2\pi 100t - \frac{\pi}{3})}$

✗ D. $x_{pe}(t) = 2e^{j(2\pi 100t + \frac{\pi}{3})}$

Question ID : **63068064037**
Status : **Answered**
Chosen Option : **C**

Q.101 Consider a WSS random process X(t) passing through an LTI system with impulse response $h(t) = \delta(t+a) - \delta(t-a)$. Let the output random process be Y(t). Then, autocorrelation function $R_{yy}(\tau)$ of random process Y(t) in terms of autocorrelation function $R_{xx}(\tau)$ of random process X(t) is:

Ans

✓ A. $R_{yy}(\tau) = 2R_{xx}(\tau) - R_{xx}(\tau+2a) - R_{xx}(\tau-2a)$

✗ B. $R_{yy}(\tau) = 2R_{xx}(\tau) + R_{xx}(\tau+a) + R_{xx}(\tau+a)$

✗ C. $R_{yy}(\tau) = 2R_{xx}(\tau) + R_{xx}(\tau+2a) + R_{xx}(\tau-2a)$

✗ D. $R_{yy}(\tau) = 2R_{xx}(\tau) - R_{xx}(\tau+a) - R_{xx}(\tau-a)$

Question ID : **63068063907**
Status : **Answered**
Chosen Option : **A**

Q.102 The Maxwell's equation $\nabla X H = J + \frac{\partial D}{\partial t}$ is also called _____.

Ans
- ✗ A. modified Gauss's law
- ✗ B. Faraday's law
- ✗ C. Coulomb's law
- ✓ D. modified Ampere's law

Question ID : **63068063867**
Status : **Answered**
Chosen Option : **D**

Q.103 **The reverse saturation current on an NPN transistor is common base circuit is 12.5μA. For an emitter current of 2mA, the collector current is 1.97mA. The current gain α is ____.**

Ans
- ✗ A. 0.72
- ✗ B. 0.821
- ✓ C. 0.979
- ✗ D. 0.99

Question ID : **63068063897**
Status : **Answered**
Chosen Option : **C**

Q.104 **The value of $(2+2i)^{24}$ = ?**

Ans
- ✗ A. 2^{72}
- ✗ B. 2^{24}
- ✓ C. 2^{36}
- ✗ D. 2^{48}

Question ID : **63068064946**
Status : **Answered**
Chosen Option : **C**

Q.105 The characteristics impedance of a two-wire lossy transmission line is equal to:

Ans

✗ A. $\sqrt{\frac{L}{C}}$

✗ B. $\sqrt{\frac{R+jwC}{L}}$

✓ C. $\sqrt{\frac{R+jwL}{G+jwC}}$

✗ D. $\sqrt{\frac{R+jwL}{G}}$

Question ID : **63068063859**
Status : **Answered**
Chosen Option : **C**

Q.106 The internal resistance of both diode of centre tap fullwave rectifier is 20Ω. The RMS secondary voltage at each end on the secondary side of transformer is 50V and Load resistance R_L is 980Ω. Determine I_{dc}

Ans

✓ A. 45mA

✗ B. 50mA

✗ C. 55mA

✗ D. 60mA

Question ID : **63068064017**
Status : **Answered**
Chosen Option : **A**

Q.107

The Maxwell's equation $\nabla \times E = -\frac{\partial B}{\partial t}$ is based on:

Ans

✗ A. Coulomb's law

✗ B. Ampere's law

✓ C. Faraday's law

✗ D. Gauss's law

Question ID : **63068063868**
Status : **Answered**
Chosen Option : **C**

Q.108 **Consider an RLC series circuit with circuit components R, L and C with the output across the resistor. The half power occurs for frequencies, which can be found by equating the magnitude of the transfer function to:**

Ans

✓ A. $1/\sqrt{2}$

✗ B. $2\sqrt{2}$

✗ C. $\sqrt{2}$

✗ D. 0.5

Question ID : **63068065456**
Status : **Answered**
Chosen Option : **A**

Q.109 A half wave rectifier uses a diode with internal resistance (R_f) of 100Ω and R_L = 1kΩ.Find percentage regulation

Ans

✗ A. 5%

✓ B. 10%

✗ C. 20%

✗ D. 30%

Question ID : **63068064012**
Status : **Answered**
Chosen Option : **B**

Q.110 In a certain transistor, the emitter current is 1.02 times as large as that of the collector current. If the emitter current is 12 mA, find the base current.

Ans

✗ A. 0.35 mA

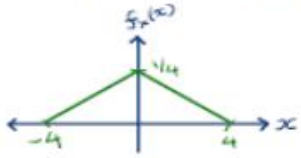
✗ B. 0.42 mA

✗ C. 0.5 mA

✓ D. 0.24 mA

Question ID : **63068063846**
Status : **Answered**
Chosen Option : **D**

Q.111 Consider a random variable X having probability density function as shown:



$P(|X| < 2) = ?$

Ans

✔ A. 0.75

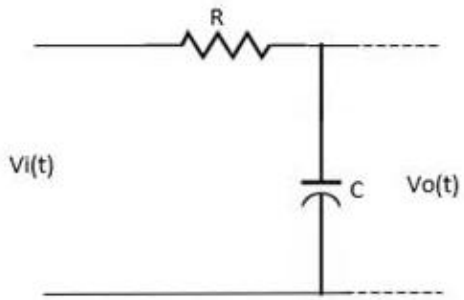
✗ B. 0.25

✗ C. 0.2

✗ D. 0.5

Question ID : **63068064056**
Status : **Answered**
Chosen Option : **A**

Q.112



Consider an LTI system made using resistor and capacitor as shown.

The impulse response of this system is:

Ans

✗ A. $e^{\frac{-t}{RC}}\,u(t)$

✗ B. $\frac{1}{RC}e^{-RCt}\,u(t)$

✓ C. $\frac{1}{RC}e^{\frac{-t}{RC}}\,u(t)$

✗ D. $e^{-tRC}\,u(t)$

Question ID : **63068063111**
Status : **Answered**
Chosen Option : **C**

Q.113 **The leakage current in a crystal diode is due to:**

Ans

✓ A. minority carriers

✗ B. Both minority and majority carriers

✗ C. majority carriers

✗ D. junction capacitance

Question ID : **63068064029**
Status : **Answered**
Chosen Option : **A**

Q.114 The width of depletion layer in an open-circuited diode is directly proportional to _____ (if NA = ND).

Ans

✗ A. doping

✗ B. $\frac{1}{\text{doping}}$

✗ C. $\sqrt{\text{doping}}$

✓ D. $\frac{1}{\sqrt{\text{doping}}}$

Question ID : **63068063829**
Status : **Answered**
Chosen Option : **D**

Q.115 For an abrupt Pn junction, the doping on P side and n side are $N_A^- = 9 \times 10^{16}\ cm^{-3}; N_D^+ = 10^{16} cm^{-3}$. If the total width is 3 μm, what is the depletion layer width on p side?

Ans

✗ A. 1.7 μm

✓ B. 0.3 μm

✗ C. 2.25 μm

✗ D. 2.7 μm

Question ID : **63068063839**
Status : **Answered**
Chosen Option : **B**

Q.116 The drift current is 200 mA and the diffusion current is 2 A. What is the total current in the semiconductor diode?

Ans

✗ A. 3 A

✗ B. 2.8 A

✓ C. 2.2 A

✗ D. 2.02 A

Question ID : **63068063840**
Status : **Answered**
Chosen Option : **C**

Q.117 Consider the characteristic equation of a control system given by $s^3 + (K + 0.5)s^2 + 4Ks + 50 = 0$. Find the value of K for the system to have sustained oscillations.

Ans

✗ A. 3.1

✗ B. 3.8

✓ C. 3.3

✗ D. 4.3

Question ID : **63068065435**
Status : **Answered**
Chosen Option : **C**

Q.118 With respect to inverse transmission parameter, which of the following options is correct?

Ans

✗ A. (V1,V2) = f (I1,I2)

✗ B. (V1,I1) = f (V2,I2)

✗ C. (I1,I2) = f (V1,V2)

✓ D. (V2,I2) = f (V1,I1)

Question ID : **63068064283**
Status : **Answered**
Chosen Option : **D**

Q.119 Which of the following is true in case of Sampling frequency in ADC?

Ans

✗ A. Sampling frequency should be less than highest frequency in signal

✗ B. Sampling frequency should be equal to highest frequency in signal

✗ C. Sampling frequency should be as low as possible

✓ D. Sampling frequency should be at least twice that of highest frequency in signal

Question ID : **63068065083**
Status : **Answered**
Chosen Option : **D**

Q.120 If the coefficient of variation of two distributions are 30% and 40%, and their arithmetic means are 70 and 60,respectively, then the difference between their standard deviations is:

Ans

✗ A. 1

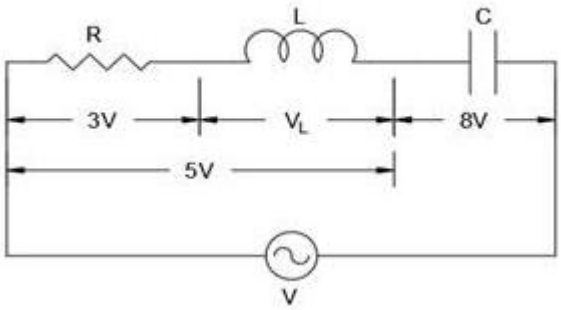
✗ B. 2

✓ C. 3

✗ D. 0

Question ID : **63068065262**
Status : **Not Answered**
Chosen Option : **--**

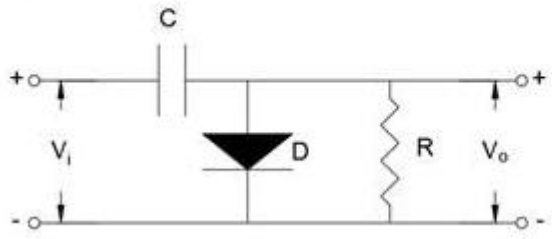
Q.121 Find voltage V in the given circuit.



Ans
- ✗ A. 3V
- ✗ B. 9V
- ✓ C. 5V
- ✗ D. 7V

Question ID : **63068063720**
Status : **Answered**
Chosen Option : **C**

Q.122 The given circuit is called _____. (The diode is ideal.)



Ans
- ✔ A. clamper
- ✘ B. clipper
- ✘ C. peak detector
- ✘ D. half wave rectifier

Question ID : **63068065481**
Status : **Answered**
Chosen Option : **A**

Q.123 Match the following:

1) MOV A,B	a) 4 Machine cycles
2) MOV A,M	b) 3 Machine cycles
3) LDA 3000H	c) 1 Machine cycles
4) LXI F0F1H	d) 2 Machine cycles

Ans
- ✘ A. 1 – d, 2 – c, 3 – b, 4 – a
- ✔ B. 1 – c, 2 – d, 3 – a, 4 – b
- ✘ C. 1 – d, 2 – c, 3 – a, 4 – b
- ✘ D. 1 – a, 2 – b, 3 – c, 4 – d

Question ID : **63068063449**
Status : **Answered**
Chosen Option : **B**

Q.124 Which of the following is the transfer function for the all-pass filter?

Ans

✗ A. $\frac{1}{(jw+1)}$

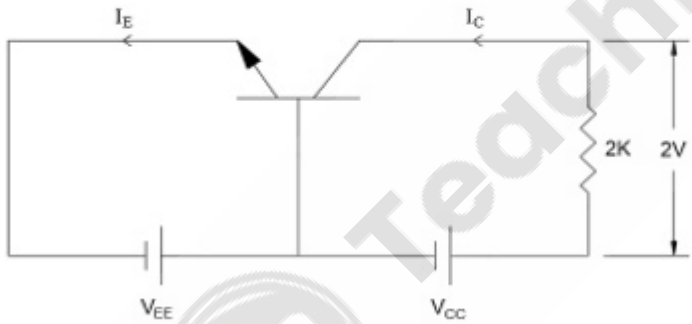
✗ B. $\frac{1}{(jw-1)}$

✓ C. $\frac{jw-1}{(jw+1)}$

✗ D. $jw + 1$

Question ID : **63068063575**
Status : **Answered**
Chosen Option : **C**

Q.125 In a common base connection, $\alpha = 0.95$. The voltage drop across 2 K resistance that is connected in the collector is 2 V. Find I_E.



Ans

✓ A. 1.05 mA

✗ B. 2 mA

✗ C. 2.6 mA

✗ D. 0.8 mA

Question ID : **63068063843**
Status : **Answered**
Chosen Option : **A**

Q.126 The slope in Bode plots is generally expressed as:

a. $\pm 10 dB/dec$

b. $\pm 5 dB/\text{octave}$

c. $\pm 8 dB/dec$

d. $\pm 6 dB/\text{octave}$

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

Question ID : **63068065453**
Status : **Answered**
Chosen Option : **B**

Q.127 How is the output voltage of Weighted Resistor DAC calculated?

Ans
✗ A. Vo = Decimal value of Digital Input / (gain X resolution)
✓ B. Vo = gain X resolution X Decimal value of Digital Input
✗ C. Vo = (gain + resolution) / Decimal value of Digital Input
✗ D. Vo = (gain + resolution) X Decimal value of Digital Input

Question ID : **63068065062**
Status : **Answered**
Chosen Option : **B**

Q.128 For a second order underdamped control system, the settling time for the 5% band is given by the equation:

Ans

✗ A. $\frac{4}{\zeta w_n}$

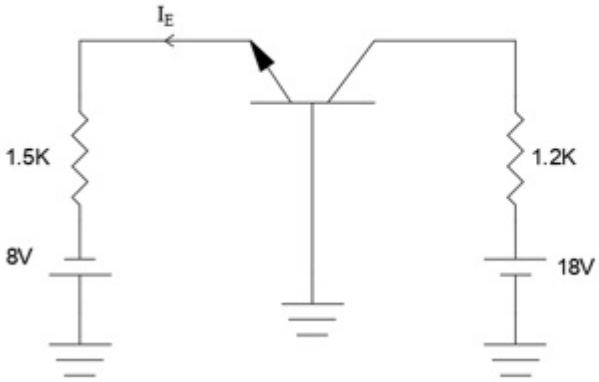
✗ B. $\frac{1}{\zeta w_n}$

✓ C. $\frac{3}{\zeta w_n}$

✗ D. $\frac{2}{\zeta w_n}$

Question ID : **63068063562**
Status : **Answered**
Chosen Option : **C**

Q.129 For the common base circuit shown in the given figure, determine I_E.

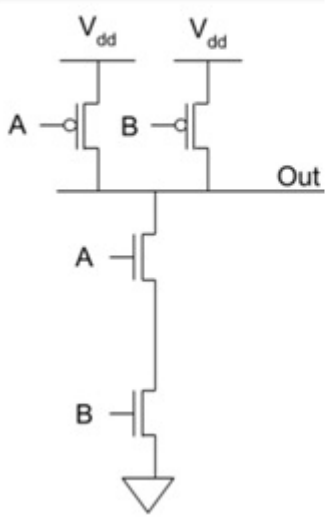


Ans
- ✗ A. 2.42 mA
- ✓ B. 4.87 mA
- ✗ C. 5.2 mA
- ✗ D. 1.37 mA

Question ID : **63068063844**
Status : **Answered**
Chosen Option : **B**

Q.130

The circuit shown in the following figure is a _____ gate.



Ans

✗ A. AND

✗ B. OR

✓ C. NAND

✗ D. NOR

Question ID : **63068063443**
Status : **Answered**
Chosen Option : **C**

Q.131 In a full wave rectifier, if the input frequency is 60Hz, the output frequency will be:

Ans

✗ A. 100Hz

✓ B. 120Hz

✗ C. 60Hz

✗ D. 75Hz

Question ID : **63068065478**
Status : **Answered**
Chosen Option : **B**

Q.132 Consider the root locus of a unity feedback system which has open loop poles at s = −4, −6, −8 and open loop zeros at s = −5,−7 The angle contribution at point s = −7.5 is:

Ans

✗ A. −90

✓ B. 0

✗ C. 90

✗ D. −180

Question ID : **63068065439**
Status : **Answered**
Chosen Option : **B**

Q.133 The depth of penetration of electromagnetic waves in a medium having conductivity σ at a frequency of 2MHz is 12.5 cm. The depth of penetration at a frequency of 8MHz is equal to:

Ans

✗ A. 50.00 cm

✗ B. 100.00 cm

✓ C. 6.25 cm

✗ D. 12.50 cm

Question ID : **63068063856**
Status : **Answered**
Chosen Option : **C**

Q.134 If the polar plot of a control system passes through (−1, j0) point, then this implies that:

Ans

✗ A. the magnitude is 1 dB and phase is 180°

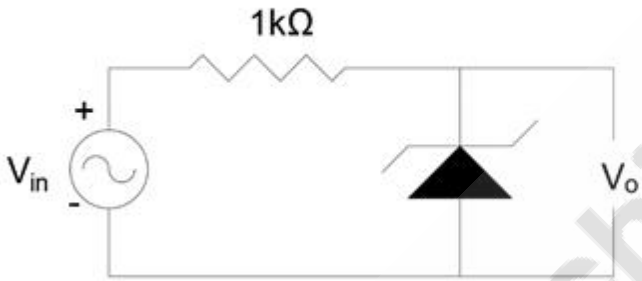
✗ B. the magnitude is −20 dB and phase is −180°

✗ C. the magnitude is 20 dB and phase is −180°

✓ D. the magnitude is 0 dB and phase is 180°

Question ID : **63068065465**
Status : **Answered**
Chosen Option : **D**

Q.135 Find $V_{in(min)}$ in the given circuit, if $I_{Z(Knee)} = 1mA$ and $V_Z = 5V$.



Ans

✗ A. 5V

✓ B. 6V

✗ C. 7V

✗ D. 8V

Question ID : **63068064001**
Status : **Answered**
Chosen Option : **B**

Q.136 **Consider the following statements related to decimation in time and decimation in frequency algorithm of FFT.**
S1: Input is in bit reversed order and output is in normal order in decimation in time.
S2: Number of complex addition and multiplications are the same in both algorithms.
S3: Input is in bit reversed order and output is also in bit reversed order in decimation in frequency.

The correct statement(s) is/are:

Ans

✗ A. Only S1 and S3

✓ B. Only S1 and S2

✗ C. S1, S2 and S3

✗ D. Only S2 and S3

Question ID : **63068063117**
Status : **Answered**
Chosen Option : **A**

Q.137 Which of the following is the property of mutual information?

S1: Mutual information of the channel is symmetric; that is, $I(X; Y) = I(Y; X)$

S2: Mutual information of the channel is always non-negative; that is, $I(X; Y) \geq 0$

S3: Mutual information of a channel is related to the joint entropy of the channel input and channel output by

$I(X;Y) = H(X) + H(Y) - H(X,Y)$

S4: $H(X, Y) = H(X) + H(Y/X)$

Ans

✗ A. Only S1 and S2

✓ B. S1, S2, S3 and S4

✗ C. Only S2 and S3

✗ D. S1, S2 and S3

Question ID : **63068064068**
Status : **Answered**
Chosen Option : **D**

Q.138 Consider a WSS random process X(t) passing through an LTI system with impulse response $h(t) = \delta(t+a) - \delta(t-a)$. Let the output random process be Y(t). Then, power spectral density $S_y(\omega)$ of random process Y(t) in terms of power spectral density $S_x(\omega)$ of random process X(t) is:

Ans

✔ A. $S_y(\omega) = 4S_x(\omega)\sin^2(a\omega)$

✘ B. $S_y(\omega) = 4S_x(\omega)\cos^2(a\omega)$

✘ C. $S_y(\omega) = 4S_x(\omega)\cos^2(a\omega/2)$

✘ D. $S_y(\omega) = 4S_x(\omega)\sin^2(a\omega/2)$

Question ID : **63068063908**
Status : **Answered**
Chosen Option : **A**

Q.139 Consider two events A and B. *If* $A \subset B, P(A) = \frac{1}{4}$ *and* $P(B) = \frac{1}{3}$, *then* $P\left(\frac{A}{B}\right)$ *is*:

Ans

✔ A. 0.75

✘ B. 0.33

✘ C. 0.25

✘ D. 1

Question ID : **63068064053**
Status : **Answered**
Chosen Option : **C**

Q.140 Consider the following non-homogenous system of linear equations:

$x - 8y + z = 2$

$3x - 4y + 3z = 0$

$1.2x + 2y - z = 1$

Find the value of z.

Ans

✗ A. $\frac{-3}{10}$

✗ B. System has no solutions.

✗ C. $\frac{6}{11}$

✓ D. $\frac{-52}{55}$

Question ID : **63068065573**
Status : **Answered**
Chosen Option : **B**

Q.141 What is the capacity of an additive white Gaussian noise channel with bandwidth of 1 MHz, power of 10W and noise power spectral density of No/2 = $10^{(-9)}$ W/Hz?

Ans

✗ A. 17.4 Mbit/s

✓ B. 13.28 Mbit/s

✗ C. 26.56 Mbit/s

✗ D. 6.64 Mbit/s

Question ID : **63068063913**
Status : **Answered**
Chosen Option : **C**

Q.142 Let x[n] be a discrete time sequence given by x[n] = { 1,2,3,0,-3,-2,-1}, where x[0] is 1. The value of $X(e^{j\pi})$ is:

Ans

✗ A. 1

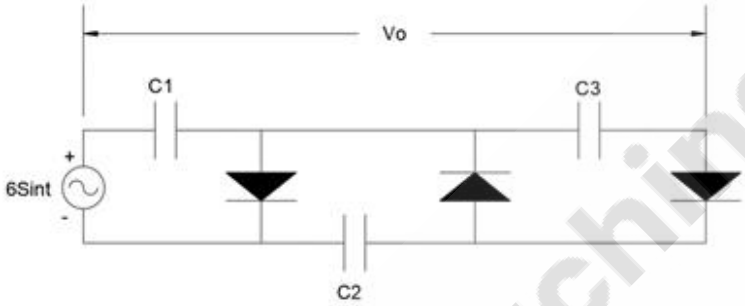
✓ B. 0

✗ C. 6

✗ D. 1/7

Question ID : **63068063118**
Status : **Answered**
Chosen Option : **B**

Q.143 For the given circuit, Find V_o at steady state (The diodes are ideal).



Ans

✓ A. 18V

✗ B. 12V

✗ C. 16V

✗ D. 6V

Question ID : **63068063995**
Status : **Answered**
Chosen Option : **A**

Q.144 A continuous signal has voltage range of−4V to +2V. If this is quantized to 8 bits, then the step size of the quantizer will be:

Ans

✔ A. $\frac{3}{128}$

✘ B. $\frac{1}{256}$

✘ C. $\frac{1}{64}$

✘ D. $\frac{1}{128}$

Question ID : **63068063914**
Status : **Answered**
Chosen Option : **A**

Q.145 Consider a message signal whose spectrum is given by

$M(f) = 1 - \frac{|f|}{10^4}$, for $|f| \leq 10^4$ and zero elsewhere.

The message signal amplitude modulates a carrier $f_c = 1$ MHz. The bandwidth of the modulated signal is:

Ans

✔ A. 20 KHz

✘ B. 1.01 MHz

✘ C. 1.02 MHz

✘ D. 10 KHz

Question ID : **63068063902**
Status : **Answered**
Chosen Option : **A**

Q.146 The phase shift constant for a distortion-less transmission line is equal to:

Ans

✗ A. $w\sqrt{\frac{G}{R}}$

✓ B. $w\sqrt{LC}$

✗ C. $w\sqrt{\frac{C}{L}}$

✗ D. $w\sqrt{\frac{R}{G}}$

Question ID : **63068063869**
Status : **Answered**
Chosen Option : **B**

Q.147 Consider a 51 taplinear phase FIR filter operating at a sampling frequency of 10 kHz.
The delay of this linear phase FIR is:

Ans

✗ A. 2.55 milliseconds

✗ B. 5 milliseconds

✗ C. 5.1 milliseconds

✓ D. 2.5 milliseconds

Question ID : **63068063112**
Status : **Answered**
Chosen Option : **C**

Q.148 Match the following for the TTL logic family:

1) Fan Out	a) 10 n
2) Output Current with HIGH O/P	b) 0.4
3) Noise Margin	c) 10
4) Time Delay	d) I_{OH}

Ans

✗ A. 1 – d, 2 – c, 3 – a, 4 – b

✓ B. 1 – c, 2 – d, 3 – b, 4 – a

✗ C. 1 – b, 2 – a, 3 – c, 4 – d

✗ D. 1 – a, 2 – b, 3 – d, 4 – c

Question ID : **63068063747**
Status : **Answered**
Chosen Option : **B**

Q.149 If a transmission line is distortion-less, then what is the condition?

Ans

✗ A. $RL = \frac{1}{GC}$

✗ B. $RL = GC$

✓ C. $LG = RC$

✗ D. $RG = LC$

Question ID : **63068063861**
Status : **Answered**
Chosen Option : **D**

Q.150 If a plane wave travelling in free space is incident normally on a medium having $\in_r$=4.0, then the fraction of power transmitted into the medium is equal to:

Ans

✗ A. $\frac{1}{2}$

✗ B. $\frac{5}{6}$

✗ C. $\frac{1}{3}$

✓ D. $\frac{8}{9}$

Question ID : **63068063857**
Status : **Answered**
Chosen Option : **D**

Section : **General Knowledge and Awareness**

Q.1 Which of the following is a broad money concept?

Ans

✗ A. M1 and M3

✗ B. M2 and M4

✓ C. M3 and M4

✗ D. M1 and M2

Question ID : **63068053627**
Status : **Not Answered**
Chosen Option : **--**

Q.2 **Which of the following schemes is also known as 'Ajeevika'?**

Ans
- ✗ A. Sampooran Gramin Rojgar mission
- ✗ B. Minimum needs programme
- ✗ C. Prime minister Rojgar Yojana
- ✓ D. National rural livelihood mission

Question ID : **63068059748**
Status : **Answered**
Chosen Option : **A**

Q.3 **Originally, the Indian Constitution had _____ Articles and _____ Schedules.**

Ans
- ✗ A. 395, 9
- ✗ B. 395, 12
- ✓ C. 395, 8
- ✗ D. 395, 6

Question ID : **63068051501**
Status : **Answered**
Chosen Option : **C**

Q.4 **Which of the following institutions have recently signed an MoU with North Eastern Space Application Centre (NESAC) to study ways to tackle disasters, by developing professionals in this field?**

Ans
- ✗ A. NATMO, Kolkata
- ✗ B. IIM Shillong
- ✓ C. IIT Guwahati
- ✗ D. NIDM

Question ID : **63068062011**
Status : **Not Answered**
Chosen Option : **--**

Q.5 **Which state of India has launched 'Generic Medical Store scheme' to provide medicine at affordable rate on October 2021?**

Ans
- ✗ A. Madhya Pradesh
- ✗ B. Jharkhand
- ✗ C. Bihar
- ✓ D. Chhattisgarh

Question ID : **63068073296**
Status : **Answered**
Chosen Option : **D**

Q.6 **Mahatma Gandhi National Rural Employment Guarantee Scheme guarantees _____ days employment to an unemployed person in a year.**

Ans
- ✗ A. 250
- ✗ B. 200
- ✗ C. 150
- ✓ D. 100

Question ID : **63068053197**
Status : **Answered**
Chosen Option : **D**

Q.7 **Which force plays a key role in the large-scale phenomena of the universe, such as formation and evolution of stars, galaxies and galactic clusters?**

Ans
- ✗ A. Weak nuclear force
- ✗ B. Strong nuclear force
- ✓ C. Gravitational force
- ✗ D. Electromagnetic force

Question ID : **63068051544**
Status : **Answered**
Chosen Option : **C**

Q.8 Tata Steel Limited uses high grade haematite iron ore from which of the following mines?

Ans
✗ A. Dalli-Rajhara mines
✓ B. Noamundi mines
✗ C. Kemmangundi mines
✗ D. Guna mines

Question ID : **63068059330**
Status : **Not Answered**
Chosen Option : **--**

Q.9 The Supreme Court can issue _____ types of writs.

Ans
✗ A. three
✓ B. five
✗ C. four
✗ D. six

Question ID : **63068051516**
Status : **Answered**
Chosen Option : **B**

Q.10 In which year did Erich Huckel recognise that an aromatic compound must have an odd number of pairs of electrons, which can mathematically be written as 4n+2 (n = 0,1,2,3 etc.)?

Ans
✗ A. 1937
✗ B. 1939
✓ C. 1931
✗ D. 1935

Question ID : **63068051556**
Status : **Not Answered**
Chosen Option : **--**

Q.11 What do you mean by gross primary productivity?

Ans

✔ A. Rate of production of organic matter during photosynthesis.

✘ B. The available biomass for the consumption to heterotrophs.

✘ C. Bacterial and fungal enzymes degrade detritus into simpler inorganic substances.

✘ D. Breakdown of complex organic matter.

Question ID : **63068049645**
Status : **Not Answered**
Chosen Option : **--**

Q.12 How many chapters are there in Panini's 'Ashtadhyayi'?

Ans

✘ A. 6

✘ B. 11

✔ C. 8

✘ D. 5

Question ID : **63068048212**
Status : **Answered**
Chosen Option : **C**

Q.13 Which of the following is the correct definition of 'unicorn' which is commonly used these days?

Ans

✘ A. Any start-up which invests in technology.

✘ B. Any business which stands out amongst others because of its popularity.

✘ C. Start-ups in the field of rare technologies.

✔ D. A start-up with billion dollar-plus valuations.

Question ID : **63068062010**
Status : **Answered**
Chosen Option : **D**

Q.14 **"The Indian Constitution provides a unitary state with subsidiary federal features rather than federal state with subsidiary unitary features". Who among the following gave this statement?**

Ans

✔ A. KC Wheare

✘ B. Sir Ivor Jennings

✘ C. MN Roy

✘ D. BN Rau

Question ID : **63068054219**
Status : **Answered**
Chosen Option : **A**

Q.15 **Which of the following was the last campaign of Shershah Suri?**

Ans

✘ A. Miwar Campaign

✘ B. Battle of Semal

✔ C. Kalinjar Fort campaign

✘ D. Battle of Kannauj

Question ID : **63068061995**
Status : **Answered**
Chosen Option : **C**

Q.16 **Who among the following Vijayanagar kings was designated with the title of 'Gajbetakara'?**

Ans

✘ A. Deva Raya I

✔ B. Deva Raya II

✘ C. Harihara II

✘ D. BukkaRaya II

Question ID : **63068061992**
Status : **Not Answered**
Chosen Option : **--**

Q.17 Who was the first cricketer to receive the Rajiv Gandhi Khel Ratna award?

Ans
✗ A. Sunil Gavaskar
✓ B. Sachin Tendulkar
✗ C. Kapil Dev
✗ D. Virat Kohli

Question ID : **63068051055**
Status : **Answered**
Chosen Option : **B**

Q.18 Which of the following classical dance forms originated from the temple dancers of Tamil Nadu?

Ans
✗ A. Kathakali
✗ B. Kuchipudi
✗ C. Kathak
✓ D. Bharatanatyam

Question ID : **63068057536**
Status : **Answered**
Chosen Option : **D**

Q.19 _____ enacted by the British Parliament is considered to be a landmark in the development of legal institutions in India

Ans
✓ A. Regulating Act of 1773
✗ B. Pitt's India Act of 1784
✗ C. Charter Act of 1793
✗ D. Charter Act of 1813

Question ID : **63068051518**
Status : **Answered**
Chosen Option : **A**

Q.20 निम्नलिखित में से किसने 17वीं शताब्दी में शास्त्रीय कर्नाटक संगीत में 72 मेलाकार्टो की शुरुआत की थी?

Ans
- ✔ A. वेंकटमखी
- ✘ B. सुब्बाराम दीक्षितार
- ✘ C. त्यागराजा
- ✘ D. पुरंदर दास

Question ID : **63068050056**
Status : **Marked For Review**
Chosen Option : **B**

Section : **Reasoning and Aptitude**

Q.1 Three of the following number triads are alike in a certain manner and one is different. Select the number triad that is different from the rest.

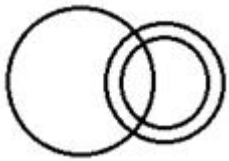
Ans
- ✘ A. (4, 35, 67)
- ✘ B. (5, 43, 83)
- ✔ C. (10, 77, 151)
- ✘ D. (8, 67, 131)

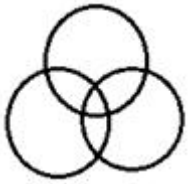
Question ID : **63068073382**
Status : **Answered**
Chosen Option : **C**

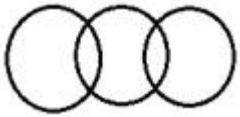
Q.2 Select the Venn diagram that best represents the relationship between the following classes.

Women, Players, Hockey players

Ans

✔ A. 

✘ B. 

✘ C. 

✘ D. 

Question ID : **63068073435**
Status : **Answered**
Chosen Option : **B**

Q.3 From the given alternatives, choose an approximate value which would replace x in the given expression.

5.98 of 2 + 1.96 of 6 – 8 ÷ 2 + 1 = X

Ans

✗ A. 25

✓ B. 21

✗ C. 22

✗ D. 24

Question ID : **63068073370**
Status : **Answered**
Chosen Option : **B**

Q.4 Himanshi is 10th ranks ahead of Advit in a class of 48. If Advit's rank is 20th from the last, what is Himanshi's rank from the start?

Ans

✓ A. 19

✗ B. 20

✗ C. 18

✗ D. 17

Question ID : **63068073408**
Status : **Answered**
Chosen Option : **A**

Q.5 दी गई स्थिति के बाद उसके दो संभावित कारण दिए गए हैं। सभी सूचनाओं को ध्यान से पढ़िए और तय कीजिए कि दिए गए कारणों में से कौन-सा कारण अनुसरण करता है।
नोट: आपको यह मानना है कि दी गई हर स्थिति/संभावित कारण सत्य है।
स्थिति:
इन्फोमर्स नामक IT कंपनी के विभिन्न विभागों के 30% कर्मचारियों ने वित्तीय वर्ष 2019-2020 की पहली तिमाही में इस्तीफा दे दिया।

संभावित कारण:
(I): इन्फोमर्स के सबसे बड़े विभाग (संख्या के अनुसार) को अप्रत्याशित परियोजनाओं के कारण ओवरटाइम काम करना पड़ा। हालांकि, इन ओवरटाइम घंटों का उचित मुआवजा नहीं दिया गया था।
(II): इन्फोमर्स के वर्तमान सीईओ ने नियमों में बहुत सारे संशोधन किए थे और 2018 में शामिल होने के बाद से कई कर्मचारियों को अनिर्दिष्ट कारणों से रोककर कर रखा था।

Ans
✗ A. केवल (I) एक संभावित कारण हो सकता है।
✓ B. केवल (II) एक संभावित कारण हो सकता है।
✗ C. न तो (I) और न ही (II) एक संभावित कारण हो सकता है।
✗ D. (I) और (II) दोनों संभावित कारण हो सकते हैं।

Question ID : **63068048478**
Status : **Answered**
Chosen Option : **C**

Q.6 **The given situation is followed by two conclusions. Read all the information carefully and decide which of the given conclusions follow(s).**
Situation:
A blogger has recently become very popular and all her blogs in the past year have received lakhs of views and likes which, until last year, would hardly cross a few hundreds. However, a leading content analyst said that 80% of her posts this year are not new, rather they are just her old blogs that have been worded and presented differently.

Conclusions:
(I): The choice of words and presentations in an article/blog plays an important role in the impact that the article/blog has on its readers.
(II): Just 20% of her blogs this year received great response from her readers.

Ans

✗ A. Only conclusion (II) follows.

✓ B. Only conclusion (I) follows.

✗ C. Neither conclusion (I) nor (II) follows.

✗ D. Both conclusions (I) and (II) follow.

Question ID : **63068048468**
Status : **Answered**
Chosen Option : **B**

Q.7 एक निश्चित संख्या में महिलाएं क्रिकेट मैच में जाती हैं और वे एक पंक्ति में बैठी हैं तथा वे उत्तर दिशा की ओर अभिमुख हैं। तरुनी पंक्ति के किसी एक अंतिम छोर से दूसरे स्थान पर बैठी है। तरुनी और पावनी के बीच तीन व्यक्ति बैठे हैं। पावनी और रोहिणी के बीच एक व्यक्ति बैठा है। जितने व्यक्ति तरुनी के दाईं ओर बैठे हैं उतने ही विश्नवी के बाईं ओर बैठे हैं। कोमली, विश्नवी के दायें चौथे स्थान पर बैठी है। पावनी और विश्नवी के बीच दो व्यक्ति बैठे हैं। विश्नवी, तरुनी के ठीक पड़ोस में नहीं बैठी है। कोमली और उर्मिला के मध्य तीन व्यक्ति बैठे हैं। विश्नवी, रोहिणी के पड़ोस में नहीं बैठी है। पंक्ति में बैठे व्यक्तियों की कुल संख्या कितनी है?

Ans

✗ A. सात

✓ B. दस

✗ C. छह

✗ D. पांच

Question ID : **63068073416**
Status : **Not Answered**
Chosen Option : **--**

Q.8 A certain number of teachers are seated in a row, facing North. Exactly three people are seated between E and Q. F is at the immediate left of Y. U occupies a corner position. W is second to the left of Q as well as third to the right of Y. Only R and T are sitting between U and Q. No person is sitting at the left of F. If no other person is sitting in the row, what is the total number of people seated?

Ans

✔ A. 10

✘ B. 11

✘ C. 8

✘ D. 9

Question ID : **63068073418**
Status : **Not Answered**
Chosen Option : **--**

Q.9 Three of the following numbers are alike in a certain manner and one is different. Select the number that is different from the rest.
(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /deleting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed)

Ans

✘ A. 504

✔ B. 954

✘ C. 728

✘ D. 616

Question ID : **63068073380**
Status : **Not Answered**
Chosen Option : **--**

Q.10 In this question, the statement is followed by two conclusions. Which of the two conclusion(s) is/are true?

Statement:

$A < B = C \geq D \leq E > F < G$

Conclusions:

I. $C > G$

II. $D < B$

Ans

✔ A. Only conclusion II is true

✘ B. Both I and II are true

✘ C. Only conclusion I is true

✘ D. Neither I nor II is true

Question ID : **63068073404**
Status : **Answered**
Chosen Option : **D**

Q.11 **Four boys Anand, Barun, Charan and Divedi and four girls, Pallavi, Archana, Richa and Soni are sitting around a circular table, but not necessarily in the same order. Two boys and two girls are not facing the centre. Charan is second to the left of Archana, who is not an immediate neighbour of Barun. Pallavi sits third to the left of Soni and one of them is not facing the centre. Anand is third to the right of Barun, who is facing the centre. Richa and Divedi are facing each other, but both are not immediate neighbours of Barun or Soni. No three girls can sit together. Divedi sits second to the right of Soni. Who among the following is third to the left of Anand?**

Ans

✘ A. Soni

✔ B. Divedi

✘ C. Barun

✘ D. Richa

Question ID : **63068058750**
Status : **Not Answered**
Chosen Option : **--**

Q.12 **Eight friends Arohi, Bidan, Chaya, Dilip, Esha, Farhan, Garima and Hayati are sitting around a circular table facing the centre but not necessarily in the same order. Each one of into different professions. Musician, Advocate, Doctor, Politician, Vice-Chancellor, Engineer, Pharmacist and Lecturer. Arohi sits third to the right of the Lecturer. Only two people sit between the Lecturer and Hayati. Vice-Chancellor and the Advocate are immediate neighbours of each other. Neither Arohi nor Hayati is a Vice-Chancellor or an Advocate. The Vice-Chancellor is not an immediate neighbour of the Lecturer. The musician sits second to the left of Esha. Esha is not an immediate neighbour of Hayati. The Musician is an immediate neighbour of both Engineer and Pharmacist. The pharmacist sits third to the right of Bidan. Bidan is not the Vice-Chancellor. Chaya sits to the immediate right of the Doctor. Arohi is not the Doctor. Farhan is not an immediate neighbour of Arohi. Garima is not an immediate neighbour of the Musician. Who among the following sits third to the left of Esha?**

Ans

✗ A. Garima

✓ B. The Pharmacist

✗ C. The Musician

✗ D. Arohi

Question ID : **63068058751**
Status : **Not Answered**
Chosen Option : **--**

Q.13 Select the answer option which holds true regarding the following two statements.

Statement I.

X has joined IAS coaching institute as a student.

Statement II.

The parents of X gifted him a play-station.

Ans

✔ A.

Both the statements are effects of some independent causes.

✘ B.

Statement I is the effect and Statement II is its immediate and principal cause.

✘ C. Both the statements are effects of some common cause.

✘ D.

Statement II is the effect and Statement I is its immediate and principal cause.

Question ID : **63068073440**
Status : **Answered**
Chosen Option : **A**

Q.14 F, D की इकलौती बहन है जबकि G, C का भाई है। A, C की पुत्री है और उसका एक भाई B है। D, E की मौसी/मामी है। G, F से विवाहित है। B का G से क्या संबंध है?

Ans

✘ A. भाई

✘ B. पुत्र

✔ C. भांजा

✘ D. मामा

Question ID : **63068073391**
Status : **Answered**
Chosen Option : **C**

Q.15 **A situation is given followed by two possible reasons for the same. Read all the information carefully and decide which of the given reasons follow(s).**
Note: You have to assume every given situation / possible reason to be true.
Situation:
The HR department of Company TDL conducts an 'employee proximity survey' within the organisation once every two months. The rate of proximity between employees of the organisation has seen a constant fall over the past three surveys.

Possible reasons:
(I): In the last quarter, almost 40% of the employees across all departments had to work overtime for 1-2 hours at least twice every week, leading to increased stress.
(II): In the beginning of this year, the company rolled out a minor change, where instead of all employees having their lunch between 1:30 and 2 p.m., they can now choose any half an hour long slot between 1 and 3 p.m.

Ans

✗ A. Neither (I) nor (II) can be a possible reason.

✓ B. Only (II) can be a possible reason.

✗ C. Both (I) and (II) can be possible reasons.

✗ D. Only (I) can be a possible reason.

Question ID : **63068048479**
Status : **Answered**
Chosen Option : **D**

Q.16 Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.
ONG, RMJ, ULM, XKP, AJS, ?

Ans

✗ A. XKV

✗ B. XKU

✓ C. DIV

✗ D. DIP

Question ID : **63068073430**
Status : **Answered**
Chosen Option : **D**

Q.17 If in a certain coding language 'BUSINESS' is coded as 'UBISENSS' and 'CAMPAIGN' is coded as 'ACPMIANG' then how will 'ATTITUDE' be coded in that coding language?

Ans

✗ A. TAITTUED

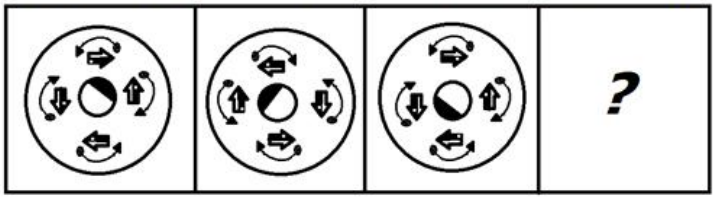
✗ B. ATTIUTED

✗ C. EDUTITTA

✓ D. TAITUTED

Question ID : **63068073395**
Status : **Answered**
Chosen Option : **D**

Q.18 Select a suitable figure from the answer figures which would replace the question mark (?)



Ans

✗ A.

✓ B.

✗ C.

✗ D.

Question ID : **63068073443**
Status : **Answered**
Chosen Option : **B**

Q.19 Select the number which will complete the given number series.

18, 19, 40, 123, ?

Ans
✗ A. 494
✗ B. 498
✗ C. 500
✓ D. 496

Question ID : **63068073376**
Status : **Not Answered**
Chosen Option : **--**

Q.20 Which of the following explanation is false, if the given expression is true?

$P = Z > L \leq S = K$

1) $P > L$
2) $S \geq L$
3) $S \geq Z$
4) $K \geq L$

Ans
✗ A. Only 3 and 4
✗ B. Only 2
✓ C. Only 3
✗ D. Only 1

Question ID : **63068073401**
Status : **Answered**
Chosen Option : **C**

Section : **General Hindi**

Q.1 "चिकना घड़ा होना" का तात्पर्य क्या है?

Ans
✗ A. समृद्ध होना
✓ B. निर्लज्ज होना
✗ C. चिकना होना
✗ D. निडर होना

Question ID : **63068073462**
Status : **Answered**
Chosen Option : **B**

Q.2 "वृष्टि" शब्द का पर्यायवाची है:

Ans
✗ A. वसंत
✗ B. शीत
✓ C. वर्षा
✗ D. गर्मी

Question ID : **63068073455**
Status : **Answered**
Chosen Option : **C**

Q.3 "विनायक" शब्द का पर्यायवाची है:

Ans
✗ A. इन्द्र
✗ B. शंकर
✓ C. गणेश
✗ D. कामदेव

Question ID : **63068073457**
Status : **Answered**
Chosen Option : **C**

Q.4 "श्रीगणेश करना" का क्या अर्थ है?

Ans
✗ A. समापन करना
✗ B. विघ्न डालना
✗ C. पूजा करना
✓ D. प्रारंभ करना

Question ID : **63068073465**
Status : **Answered**
Chosen Option : **D**

Q.5 "वह कमरे से बाहर गया है।" इस वाक्य में कौन सा कारक है?

Ans
✗ A. करण कारक
✗ B. कर्म कारक
✗ C. कर्ता कारक
✓ D. अपादान कारक

Question ID : **63068073491**
Status : **Answered**
Chosen Option : **D**

Q.6 "यह घर श्याम का है।" वाक्य में कौन-सा विशेषण है?

Ans
✓ A. सार्वनामिक विशेषण
✗ B. परिमाणवाचक विशेषण
✗ C. संख्यावाचक विशेषण
✗ D. गुणवाचक विशेषण

Question ID : **63068073452**
Status : **Answered**
Chosen Option : **A**

Comprehension:

भारत की एकता और भारत की स्वतन्त्रता एक ही तस्वीर के दो पहलू हैं। अगर एकता खिड़की खोलकर चली गयी, तो स्वतन्त्रता सदर दरवाजा खोल कर भाग जायेगी। इसलिए, सभी भारतवासियों का पहला कर्त्तव्य यह है कि वे प्राणप्रण से अपनी राष्ट्रीय एकता की रक्षा करें। हिन्दुस्तान हिन्दी से कहीं महान् है। वह अपनी समस्त भाषाओं से भी बड़ा और विशाल है। एकता की रक्षा के लिए यदि हमें अपमान सहना पड़े, तो उसे सह लेना चाहिए। एकता की रक्षा के लिए यदि हमें अन्याय सहना पड़े, तो हम अन्याय को भी सहेंगे। यह सब इसलिए सहना है कि भारत की एकता जब पुष्ट और बलवती हो जायेगी, तब हमारा अपमान कोई नहीं करेगा, तब देश का एक भाग किसी दूसरे भाग के साथ अन्याय करना भी भूल जायेगा।

SubQuestion No : 7

Q.7 हमारा अपमान कोई नहीं कर सकेगा यदि-

Ans

✗ A. देश की एकता और स्वतंत्रता बनी रहेगी।

✗ B. देश के सभी भागों में समानता का भाव रहेगा।

✗ C. हम देश की एकता और स्वतंत्रता की रक्षा के लिए प्राणप्रण से तत्पर रहेंगे।

✓ D. हमारा देश एकता के बल पर पुष्ट और मजबूत रहेगा।

Question ID : **63068073487**
Status : **Answered**
Chosen Option : **D**

Comprehension:

भारत की एकता और भारत की स्वतन्त्रता एक ही तस्वीर के दो पहलू हैं। अगर एकता खिड़की खोलकर चली गयी, तो स्वतन्त्रता सदर दरवाजा खोल कर भाग जायेगी। इसलिए, सभी भारतवासियों का पहला कर्त्तव्य यह है कि वे प्राणप्रण से अपनी राष्ट्रीय एकता की रक्षा करें। हिन्दुस्तान हिन्दी से कहीं महान् है। वह अपनी समस्त भाषाओं से भी बड़ा और विशाल है। एकता की रक्षा के लिए यदि हमें अपमान सहना पड़े, तो उसे सह लेना चाहिए। एकता की रक्षा के लिए यदि हमें अन्याय सहना पड़े, तो हम अन्याय को भी सहेंगे। यह सब इसलिए सहना है कि भारत की एकता जब पुष्ट और बलवती हो जायेगी, तब हमारा अपमान कोई नहीं करेगा, तब देश का एक भाग किसी दूसरे भाग के साथ अन्याय करना भी भूल जायेगा।

SubQuestion No : 8

Q.8 पूरे अवतरण का सारांश है कि?

Ans

✔ A. भारत की एकता और स्वतंत्रता एक ही तस्वीर के दो पहलू हैं।

✘ B. हिन्दुस्तान के सभी भाग आपस में समान हैं ।

✘ C. हिन्दुस्तान हिन्दी से बड़ा है।

✘ D. हम प्राणप्रण से देश की राष्ट्रीय एकता की रक्षा करें।

Question ID : **63068073489**
Status : **Answered**
Chosen Option : **B**

Comprehension:

भारत की एकता और भारत की स्वतन्त्रता एक ही तस्वीर के दो पहलू हैं। अगर एकता खिड़की खोलकर चली गयी, तो स्वतन्त्रता सदर दरवाजा खोल कर भाग जायेगी। इसलिए, सभी भारतवासियों का पहला कर्त्तव्य यह है कि वे प्राणप्रण से अपनी राष्ट्रीय एकता की रक्षा करें। हिन्दुस्तान हिन्दी से कहीं महान् है। वह अपनी समस्त भाषाओं से भी बड़ा और विशाल है। एकता की रक्षा के लिए यदि हमें अपमान सहना पड़े, तो उसे सह लेना चाहिए। एकता की रक्षा के लिए यदि हमें अन्याय सहना पड़े, तो हम अन्याय को भी सहेंगे। यह सब इसलिए सहना है कि भारत की एकता जब पुष्ट और बलवती हो जायेगी, तब हमारा अपमान कोई नहीं करेगा, तब देश का एक भाग किसी दूसरे भाग के साथ अन्याय करना भी भूल जायेगा।

SubQuestion No : 9

Q.9 एकता का विलोम होगा?

Ans

✗ A. समरसता

✗ B. स्वतंत्रता

✗ C. विविधता

✓ D. अनेकता

Question ID : **63068073488**
Status : **Answered**
Chosen Option : **D**

Comprehension:

भारत की एकता और भारत की स्वतन्त्रता एक ही तस्वीर के दो पहलू हैं। अगर एकता खिड़की खोलकर चली गयी, तो स्वतन्त्रता सदर दरवाजा खोल कर भाग जायेगी। इसलिए, सभी भारतवासियों का पहला कर्त्तव्य यह है कि वे प्राणप्रण से अपनी राष्ट्रीय एकता की रक्षा करें। हिन्दुस्तान हिन्दी से कहीं महान् है। वह अपनी समस्त भाषाओं से भी बड़ा और विशाल है। एकता की रक्षा के लिए यदि हमें अपमान सहना पड़े, तो उसे सह लेना चाहिए। एकता की रक्षा के लिए यदि हमें अन्याय सहना पड़े, तो हम अन्याय को भी सहेंगे। यह सब इसलिए सहना है कि भारत की एकता जब पुष्ट और बलवती हो जायेगी, तब हमारा अपमान कोई नहीं करेगा, तब देश का एक भाग किसी दूसरे भाग के साथ अन्याय करना भी भूल जायेगा।

SubQuestion No : 10

Q.10 उपर्युक्त अवतरण का उपयुक्त शीर्षक होगा?

Ans

✔ A. भारत की भाषा समस्या

✘ B. मन की एकता और स्वतंत्रता

✘ C. देश के प्रति हमारा कर्त्तव्य

✘ D. भारतवासियों के मान अपमान का प्रश्न।

Question ID : **63068073486**
Status : **Answered**
Chosen Option : **C**