National Testing Agency

Question Paper Name :	Electronics Communication and Information Engineering 17th March 2026 Shift 3
Subject Name :	Electronics Communication and Information Engineering
Creation Date :	2026-03-17 19:15:56
Duration :	90
Total Marks :	300
Display Marks:	Yes

Electronics Communication and Information Engineering

Group Number :	1
Group Id :	432449159
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300

Electronics Communication and Information Engineering

Section Id :	432449253
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	432449625
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 43244919148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following is a sequential logic circuit?

(1) Full adder

(2) Multiplexer

(3) Flip-flop

(4) Decoder

Options :

43244975101. 1

43244975102. 2

43244975103. 3

43244975104. 4

Question Number : 2 Question Id : 43244919149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which layer in IOT architecture is responsible for data acquisition using sensors?

(1) Application layer

(2) Processing layer

(3) Perception layer

(4) Transport layer

Options :

43244975105. 1

43244975106. 2

43244975107. 3

43244975108. 4

Question Number : 3 Question Id : 43244919150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the inverse of the given matrix:

$$A=\begin{bmatrix}1 & 0 & 1\\ -1 & 1 & 1\\ 0 & 1 & 0\end{bmatrix}$$

(1) $\frac{1}{2}\begin{bmatrix}0 & 1 & 0\\ -1 & 1 & 1\\ 1 & 0 & 1\end{bmatrix}$

(2) $\frac{1}{-2}\begin{bmatrix}1 & 0 & 2\\ 1 & -1 & 0\\ 1 & 1 & -1\end{bmatrix}$

(3) $\frac{1}{2}\begin{bmatrix}1 & -1 & 1\\ 0 & 0 & 2\\ 1 & 1 & -1\end{bmatrix}$

(4) $\frac{1}{-2}\begin{bmatrix}0 & 1 & 0\\ -1 & 1 & 1\\ 0 & 0 & 1\end{bmatrix}$

Options :

43244975109. 1

43244975110. 2

43244975111. 3

43244975112. 4

Question Number : 4 Question Id : 43244919151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The differential equation $\frac{dy^2}{dx^2}+\frac{dy}{dx}+\sin y=0$ is:

(1) Homogenous

(2) Non-linear

(3) Linear

(4) of degree two

Options :

43244975113. 1

43244975114. 2

43244975115. 3

43244975116. 4

Question Number : 5 Question Id : 43244919152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

For IPv6 addressing:

A. It has 128-bit address space

B. It supports multicasting

C. It provides built-in IPsec support

D. It has a 32-bit address structure

Choose the **correct** answer from the options given below:

(1) A, B and C only

(2) B, C and D only

(3) A and D only

(4) B and C only

Options :

43244975117. 1

43244975118. 2

43244975119. 3

43244975120. 4

Question Number : 6 Question Id : 43244919153 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Laws)		**List - II (Applications)**
A.	Ampere's law	I.	Force on a charge
B.	Biot's law	II.	Force due to a current carrying conductor
C.	Coulomb's law	III.	Electric flux density at a point
D.	Gauss's law	IV.	Magnetic flux density at a point

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-IV, B-II, C-I, D-III

(3) A-III, B-II, C-I, D-IV

(4) A-III, B-I, C-II, D-IV

Options :

43244975121. 1

43244975122. 2

43244975123. 3

43244975124. 4

Question Number : 7 Question Id : 43244919154 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

DNS is primarily used for:

(1) Encryption data

(2) Mapping domain names to IP address

(3) Assigning MAC address

(4) Providing TCP acknowledgements

Options :

43244975125. 1

43244975126. 2

43244975127. 3

43244975128. 4

Question Number : 8 Question Id : 43244919155 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The pointing vector $P = E \times H$ represents:

(1) Stored energy density in the electric field

(2) Stored energy density in the magnetic field

(3) The directional power flux density (power per unit area) of an electromagnetic wave

(4) The curl of the electric field

Options :

43244975129. 1

43244975130. 2

43244975131. 3

43244975132. 4

Question Number : 9 Question Id : 43244919156 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange these digital logic building blocks in order of increasing complexity:

A. Multiplexers

B. Sequential logic circuits e.g.: counters

C. Combinational logic circuits e.g.: adder

D. ALU (Arithematic Logic Unit)

Choose the **correct** answer from the options given below:

(1) A, B, C, D

(2) A, B, D, A

(3) C, A, B, D

(4) C, A, D, B

Options :

43244975133. 1

43244975134. 2

43244975135. 3

43244975136. 4

Question Number : 10 Question Id : 43244919157 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Signal flow graph is used to find:

(1) Poles of the system

(2) Transfer function of the system

(3) Stability of the system

(4) Controllability of the system

Options :

43244975137. 1

43244975138. 2

43244975139. 3

43244975140. 4

Question Number : 11 Question Id : 43244919158 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following frequency domain specifications required to design a control system:

A. Bandwidth

B. Gain margin

C. Phase margin

D. Maximum overshoot

Choose the **correct** answer from the options given below:

(1) A, B and C only

(2) B and D only

(3) A and D only

(4) C and D only

Options :

43244975141. 1

43244975142. 2

43244975143. 3

43244975144. 4

Question Number : 12 Question Id : 43244919159 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A metal sphere with 1 m radius and a surface charge density of 10 coulombs/m^2 is enclosed in a cube of 10 m side. The total outward electric displacement flux normal to the surface of the cube is:

(1) 5π coulombs

(2) 10π coulombs

(3) 20π coulombs

(4) 40π coulombs

Options :

43244975145. 1

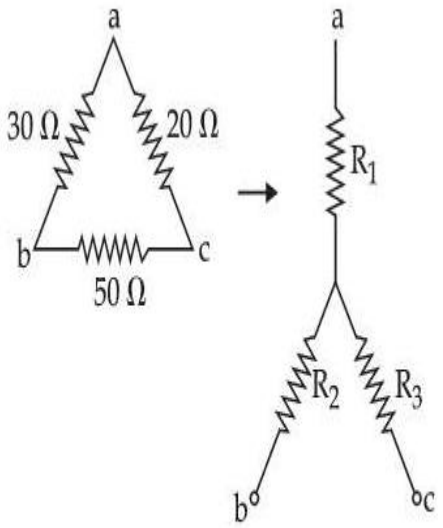
43244975146. 2

43244975147. 3

43244975148. 4

Question Number : 13 Question Id : 43244919160 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Δ-network connected with its Y-equivalent is shown in figure. Find the resistance R_1, R_2 and R_3 are respectively:



(1) 15 Ω, 9 Ω and 6 Ω

(2) 6 Ω, 15 Ω and 10 Ω

(3) 10 Ω, 6 Ω and 15 Ω

(4) 15 Ω, 10 Ω and 6 Ω

Options :

43244975149. 1

43244975150. 2

43244975151. 3

43244975152. 4

Question Number : 14 Question Id : 43244919161 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Compensation)		**List - II (Characteristics)**
A.	Lead	I.	Attenuation
B.	Lag	II.	Increases bandwidth
C.	Lag-lead	III.	Increases damping faster
D.	Rate	IV.	Second order

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-II, C-IV, D-III

(3) A-II, B-I, C-IV, D-III

(4) A-II, B-I, C-III, D-IV

Options :

43244975153. 1

43244975154. 2

43244975155. 3

43244975156. 4

Question Number : 15 Question Id : 43244919162 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which protocol in the TCP/IP suite is responsible for breaking data into packets and reassembling them at the destination providing reliable, connection-oriented delivery?

(1) IP (Internal Protocol)

(2) TCP (Transmission Control Protocol)

(3) UDP (User Datagram Protocol)

(4) HTTP (Hypertext Transfer Protocol)

Options :

43244975157. 1

43244975158. 2

43244975159. 3

43244975160. 4

Question Number : 16 Question Id : 43244919163 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II.**

	List - I (Communication System)		**List - II (Bandwidth)**
A.	AM broadcast	I.	7 MHz
B.	Telephone	II.	200 KHz
C.	Wideband FM	III.	4 KHz
D.	TV	IV.	10 KHz

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-II, C-IV, D-III

(3) A-IV, B-III, C-I, D-II

(4) A-IV, B-III, C-II, D-I

Options :

43244975161. 1

43244975162. 2

43244975163. 3

43244975164. 4

Question Number : 17 Question Id : 43244919164 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the steps of sampling and processing a continuous-time signal:

A. Apply the sampling theorem to acquire discrete samples

B. Perform discrete-time processing (e.g. filtering)

C. Start with a continuous-time signal

D. Reconstruct a continuous-time signal from the processed samples

Choose the **correct** answer from the options given below:

(1) C, A, D, B

(2) C, A, B, D

(3) A, C, B, D

(4) A, C, D, B

Options :

43244975165. 1

43244975166. 2

43244975167. 3

43244975168. 4

Question Number : 18 Question Id : 43244919165 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : With lag-lead compensation, the bandwidth of the system is not affected much.

Reason (R) : The effect of lag and lead compensation at high frequencies cancel one another.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975169. 1

43244975170. 2

43244975171. 3

43244975172. 4

Question Number : 19 Question Id : 43244919166 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Port 80 is used for:

(1) HTTPS

(2) FTP

(3) HTTP

(4) DNS

Options :

43244975173. 1

43244975174. 2

43244975175. 3

43244975176. 4

Question Number : 20 Question Id : 43244919167 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A Zener diode is primary used for:

(1) Rectification

(2) Amplification

(3) Voltage regulation

(4) Oscillation

Options :

43244975177. 1

43244975178. 2

43244975179. 3

43244975180. 4

Question Number : 21 Question Id : 43244919168 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following rectifier circuits, decreasing order of their ripple factor:

A. Half-wave rectifier without filter

B. Full-wave rectifier without filter

C. Full-wave rectifier with series inductance filter

D. Full-wave rectifier with capacitance filter

Choose the **correct** answer from the options given below:

(1) A, B, C, D

(2) A, B, D, C

(3) D, C, A, B

(4) D, C, B, A

Options :

43244975181. 1

43244975182. 2

43244975183. 3

43244975184. 4

Question Number : 22 Question Id : 43244919169 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following are fundamental concepts from Shannon's information theory?

A. Entropy

B. Matched filter receiver

C. Auto correlation

D. Channel capacity theorem

Choose the **correct** answer from the options given below:

(1) A and D only

(2) A, B and C only

(3) A, B and D only

(4) B, C and D only

Options :

43244975185. 1

43244975186. 2

43244975187. 3

43244975188. 4

Question Number : 23 Question Id : 43244919170 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange these concepts in the logical flow from fundamental laws to wave propagation:

A. Wave equation (derived from the laws)

B. Maxwell's equations (differential and integral forms)

C. Boundary conditions (derived from the laws)

D. Poynting vector (define power flow of the wave)

Choose the **correct** answer from the options given below:

(1) C, B, D, A

(2) C, B, A, D

(3) B, C, D, A

(4) B, C, A, D

Options :

43244975189. 1

43244975190. 2

43244975191. 3

43244975192. 4

Question Number : 24 Question Id : 43244919171 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

A source generates three symbols with probabilities 0.25, 0.25, 0.50 at a rate of 3000 symbols per second. Assuming independent generation of symbols, the most efficient source encoder would have average bit rate is:

(1) 1500 bits/sec

(2) 3000 bits/sec

(3) 4500 bits/sec

(4) 6000 bits/sec

Options :

43244975193. 1

43244975194. 2

43244975195. 3

43244975196. 4

Question Number : 25 Question Id : 43244919172 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Nyquist sampling theorem states that for a signal with maximum frequency f_m, the sampling frequency f_s must be:

(1) $f_s = f_m$

(2) $f_s > f_m$

(3) $f_s \leq 2f_m$

(4) $f_s \geq 2f_m$

Options :

43244975197. 1

43244975198. 2

43244975199. 3

43244975200. 4

Question Number : 26 Question Id : 43244919173 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following theorems from calculas relate an integral over a region to an integral over its boundary?

A. Stoke's theorem

B. Gauss's divergence theorem

C. Mean value theorem

D. Taylor series

Choose the **correct** answer from the options given below:

(1) A, C and D only

(2) A, B and C only

(3) A and B only

(4) A and D only

Options :

43244975201. 1

43244975202. 2

43244975203. 3

43244975204. 4

Question Number : 27 Question Id : 43244919174 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange these protocols in the order of the TCP/IP stack, from the lowest to highest layers.

A. HTTP (Application Layer Protocol)

B. TCP (Transport Layer Protocol)

C. IP (Internet Layer Protocol)

D. MAC Address (Link Layer)

Choose the **correct** answer from the options given below:

(1) D, C, A, B

(2) D, C, B, A

(3) C, D, A, B

(4) C, D, B, A

Options :

43244975205. 1

43244975206. 2

43244975207. 3

43244975208. 4

Question Number : 28 Question Id : 43244919175 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following, arrange **correct** sequence of time domain specifications of a second order system in the ascending order of the values:

A. Rise time

B. Settling time

C. Delay time

D. Peak time

Choose the **correct** answer from the options given below:

(1) B, D, A, C

(2) C, D, A, B

(3) B, A, D, C

(4) C, A, D, B

Options :

43244975209. 1

43244975210. 2

43244975211. 3

43244975212. 4

Question Number : 29 Question Id : 43244919176 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following phenomena in the order they occur to create drift current:

A. An electric field is applied

B. Free carriers (electrons/holes) exist in the semiconductor

C. Carriers accelerate and scatter, resulting in an average drift velocity

D. A net flow of charge, or drift current, is established

Choose the **correct** answer from the options given below:

(1) B, A, C, D

(2) B, A, D, C

(3) A, B, C, D

(4) A, B, D, C

Options :

43244975213. 1

43244975214. 2

43244975215. 3

43244975216. 4

Question Number : 30 Question Id : 43244919177 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

According to the Nyquist stability criterion, the number of unstable closed-loop poles (Z) is equal to:

(1) $N-P$

(2) $N+P$

(3) $P-N$

(4) $N \times P$

Options :

43244975217. 1

43244975218. 2

43244975219. 3

43244975220. 4

Question Number : 31 Question Id : 43244919178 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider Analog-to-Digital Converters given below : Arrange in ascending order in terms of conversion time of ADC's:

A. Successive approximate ADC

B. Dual ramp ADC

C. Counter method ADC

D. Simultaneous ADC

Choose the **correct** answer from the options given below:

(1) C, B, D, A

(2) B, C, D, A

(3) B, C, A, D

(4) C, B, A, D

Options :

43244975221. 1

43244975222. 2

43244975223. 3

43244975224. 4

Question Number : 32 Question Id : 43244919179 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No

Option Orientation : Vertical

In a Quadrature Amplitude Modulation (QAM) scheme, information is encoded in:

(1) Only phase of the carrier

(2) Only frequency of the carrier

(3) Both the amplitude and phase of the carrier

(4) Only amplitude of the carrier

Options :

43244975225. 1

43244975226. 2

43244975227. 3

43244975228. 4

Question Number : 33 Question Id : 43244919180 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Feedback control systems offer more accurate control over open loop systems.

Reason (R) : The feedback path establishes a link for input and output comparison and subsequent error correction.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975229. 1

43244975230. 2

43244975231. 3

43244975232. 4

Question Number : 34 Question Id : 43244919181 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If a fair coin is tossed 4 times, what is the probability that two heads and two tails will result:

(1) $\frac{1}{8}$

(2) $\frac{3}{8}$

(3) $\frac{5}{8}$

(4) $\frac{1}{2}$

Options :

43244975233. 1

43244975234. 2

43244975235. 3

43244975236. 4

Question Number : 35 Question Id : 43244919182 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Modulation)		**List - II (Disadvantages)**
A.	FM	I.	Image frequency references
B.	PCM	II.	Granular noise
C.	Delta modulation	III.	Quantization noise
D.	Superheterodyne receiver	IV.	Threshold effect

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-II, C-IV, D-III

(3) A-IV, B-III, C-I, D-II

(4) A-IV, B-III, C-II, D-I

Options :

43244975237. 1

43244975238. 2

43244975239. 3

43244975240. 4

Question Number : 36 Question Id : 43244919183 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The noise at the input to an ideal frequency detector is white, the power spectral density of the noise at the output is:

(1) Gaussian

(2) Flat

(3) Raised-cosine

(4) Parabolic

Options :

43244975241. 1

43244975242. 2

43244975243. 3

43244975244. 4

Question Number : 37 Question Id : 43244919184 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : FET is a majority carrier device whereas BJT works based on the movement of both the majority and the minority carriers.

Reason (R) : Thermal runaway occurs in FET circuits but it does not occur in BJT circuit.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975245. 1

43244975246. 2

43244975247. 3

43244975248. 4

Question Number : 38 Question Id : 43244919185 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The signal $x(t) = A \cos(\omega t + \varphi)$ is:

(1) An energy signal

(2) A power signal

(3) A power as well as an energy signal

(4) Neither a power nor an energy signal

Options :

43244975249. 1

43244975250. 2

43244975251. 3

43244975252. 4

Question Number : 39 Question Id : 43244919186 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Identify Application layer protocols:

A. HTTP

B. IP

C. DNS

D. TCP

Choose the **correct** answer from the options given below:

(1) A, B and C only

(2) A and C only

(3) C and D only

(4) B and D only

Options :

43244975253. 1

43244975254. 2

43244975255. 3

43244975256. 4

Question Number : 40 Question Id : 43244919187 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For an Op-amp, CMRR = 10^6 and differential gain = 10^6, what is the common mode gain of the Op-amp?

(1) 10^6

(2) 2×10^6

(3) 1

(4) 10

Options :

43244975257. 1

43244975258. 2

43244975259. 3

43244975260. 4

Question Number : 41 Question Id : 43244919188 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Devices)		**List - II (Applications)**
A.	Diode	I.	Amplifier
B.	Transistor	II.	Oscillator
C.	Tunnel diode	III.	Rectifier
D.	Zener diode	IV.	Voltage regulator

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-IV, B-III, C-II, D-I

(3) A-III, B-II, C-I, D-IV

(4) A-III, B-I, C-II, D-IV

Options :

43244975261. 1

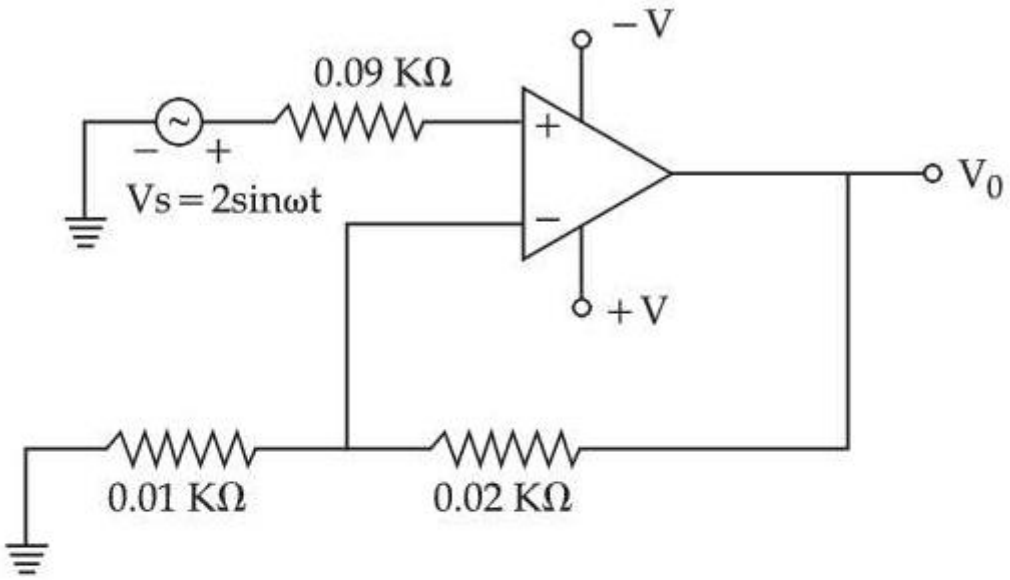
43244975262. 2

43244975263. 3

43244975264. 4

Question Number : 42 Question Id : 43244919189 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Find the gain for the given circuit:



(1) $\frac{1}{3}$

(2) 3

(3) $\frac{2}{3}$

(4) 2

Options :

43244975265. 1

43244975266. 2

43244975267. 3

43244975268. 4

Question Number : 43 Question Id : 43244919190 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

For maximum power transfer in an AC circuit, the load impedance Z_L should be:

(1) Equal to the source impedance Z_s

(2) The complex conjugate of the source impedance Z_s, i.e. Z^*_s

(3) Equal to the magnitude of the source impedance $|Z_s|$

(4) The complex conjugate of the load impedance Z_L, i.e. Z^*_L

Options :

43244975269. 1

43244975270. 2

43244975271. 3

43244975272. 4

Question Number : 44 Question Id : 43244919191 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following are tools or parameters used for transmission line analysis?

A. S-parameters

B. Bode-plot

C. Smith chart

D. Root loci

Choose the **correct** answer from the options given below:

(1) A and B only

(2) A and D only

(3) A and C only

(4) A, B and C only

Options :

43244975273. 1

43244975274. 2

43244975275. 3

43244975276. 4

Question Number : 45 Question Id : 43244919192 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : The ability of a differential amplifier to reject a differential mode signal is called its figure of merit.

Reason (R) : The ideal value of figure of merit of a differential amplifier is infinite.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975277. 1

43244975278. 2

43244975279. 3

43244975280. 4

Question Number : 46 Question Id : 43244919193 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the following BJT circuits in decreasing order of the input resistance of the configurations:

A. Common base

B. Common emitter

C. Emitter follower

D. Emitter follower using darlington pair

Choose the **correct** answer from the options given below:

(1) A, B, C, D

(2) A, B, D, C

(3) D, C, A, B

(4) D, C, B, A

Options :

43244975281. 1

43244975282. 2

43244975283. 3

43244975284. 4

Question Number : 47 Question Id : 43244919194 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I		**List - II**
A.	High-pass RC circuit	I.	Comparator
B.	Low-pass RC circuit	II.	DC re-storer
C.	Clamping circuit	III.	Integrator
D.	Clipping circuit	IV.	Differentiator

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-III, C-II, D-IV

(3) A-IV, B-III, C-II, D-I

(4) A-IV, B-II, C-III, D-I

Options :

43244975285. 1

43244975286. 2

43244975287. 3

43244975288. 4

Question Number : 48 Question Id : 43244919195 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Time domain function)		**List - II** (Corresponding Laplace transform)
A.	$\sin \omega_0 t \cdot u(t)$	I.	$\frac{\omega_0}{s^2+\omega_0^2}$
B.	$\sin \omega_0 t \cdot u(t-t_0)$	II.	$\frac{1}{\sqrt{s^2+\omega_0^2}} \sin\left(\omega_0 t_0 + \tan^{-1}\frac{\omega_0}{s}\right)$
C.	$\sin \omega_0 (t-t_0) \cdot u(t)$	III.	$-\frac{1}{\sqrt{s^2+\omega_0^2}} \sin\left(\omega_0 t_0 - \tan^{-1}\frac{\omega_0}{s}\right)$
D.	$\sin \omega_0 (t-t_0) \cdot u(t-t_0)$	IV.	$\left\{\frac{\omega_0}{s^2+\omega_0^2}\right\} e^{-t_0 s}$

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-II, C-IV, D-III

(3) A-IV, B-III, C-I, D-II

(4) A-IV, B-III, C-II, D-I

Options :

43244975289. 1

43244975290. 2

43244975291. 3

43244975292. 4

Question Number : 49 Question Id : 43244919196 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following are listed as types of compensators for system design?

A. Lead compensators

B. Stepper motors

C. Lag compensators

D. Servo values

Choose the **correct** answer from the options given below:

(1) A, B and C only

(2) A and C only

(3) A, C and D only

(4) B, C and D only

Options :

43244975293. 1

43244975294. 2

43244975295. 3

43244975296. 4

Question Number : 50 Question Id : 43244919197 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Functions)		**List - II (Fourier transforms)**
A.	Delta function	I.	sinc function
B.	Gaussian function	II.	Constant function
C.	Rectangular function	III.	Delta function
D.	Constant function	IV.	Gaussian function

Choose the **correct** answer from the options given below:

(1) A-III, B-II, C-I, D-IV

(2) A-IV, B-III, C-II, D-I

(3) A-II, B-IV, C-I, D-III

(4) A-II, B-IV, C-III, D-I

Options :

43244975297. 1

43244975298. 2

43244975299. 3

43244975300. 4

Question Number : 51 Question Id : 43244919198 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : A network in which the circuit elements like resistance, inductance and capacitance cannot be physically separated for analysis purpose is called lumped network.

Reason (R) : Most of the electric network are lumped in nature.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975301. 1

43244975302. 2

43244975303. 3

43244975304. 4

Question Number : 52 Question Id : 43244919199 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following circuits are used for interfacing between analog and digital signals?

A. ALU (Arithmetic Logic Unit)

B. Instruction pipelining

C. A/D (Analog-to-Digital) converters

D. D/A (Digital-to-Analog) converters

Choose the **correct** answer from the options given below:

(1) A, B and C only

(2) B, C and D only

(3) A, C and D only

(4) C and D only

Options :

43244975305. 1

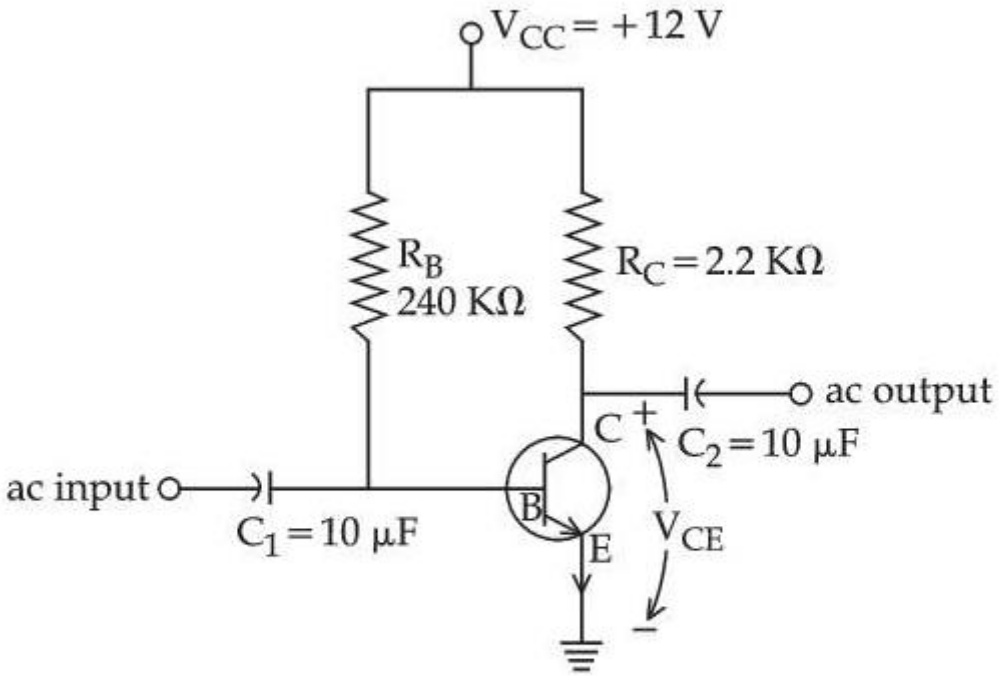
43244975306. 2

43244975307. 3

43244975308. 4

Question Number : 53 Question Id : 43244919200 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following fixed bias circuit configuration find I_C
$[\beta = 50,\ V_{BE} = 0.7V]$



(1) 3.52 mA
(2) 2.35 mA
(3) 4.86 mA
(4) 5.92 mA

Options :

43244975309. 1

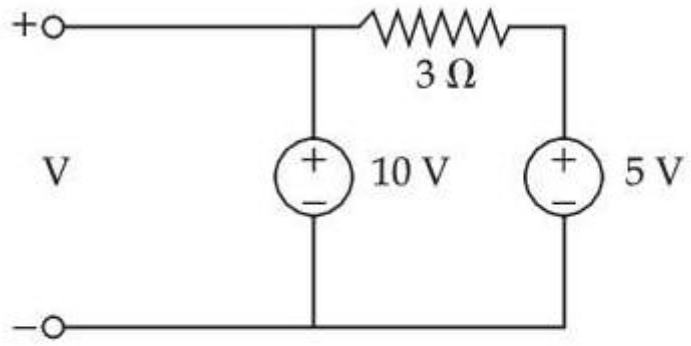
43244975310. 2

43244975311. 3

43244975312. 4

Question Number : 54 Question Id : 43244919201 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The Voltage 'V' in figure is:



(1) 1 V
(2) 5 V
(3) 10 V
(4) 15 V

Options :

43244975313. 1

43244975314. 2

43244975315. 3

43244975316. 4

Question Number : 55 Question Id : 43244919202 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Carson's rule for estimating the bandwidth (B) of an FM signal is:

(1) $B = 2\,fm$
(2) $B = 2\,\Delta f$
(3) $B = 2\,(\Delta f + fm)$
(4) $B = 2\,(\Delta f \times fm)$

Options :

43244975317. 1

43244975318. 2

43244975319. 3

43244975320. 4

Question Number : 56 Question Id : 43244919203 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The steady-state error of a Type 1 system for a unit step input is:

(1) Zero

(2) Infinite

(3) A non-zero constant

(4) Oscillatory

Options :

43244975321. 1

43244975322. 2

43244975323. 3

43244975324. 4

Question Number : 57 Question Id : 43244919204 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : 8-bit PCM system performs better than a 6-bit PCM system.

Reason (R) : 8-bit system produces smaller quantization noise than a 6-bit system.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975325. 1

43244975326. 2

43244975327. 3

43244975328. 4

Question Number : 58 Question Id : 43244919205 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I		List - II
A.	Work	I.	Ampere per meter
B.	Electric field strength	II.	Weber
C.	Magnetic flux	III.	Volt per meter
D.	Magnetic field strength	IV.	Joule

Choose the **correct** answer from the options given below:

(1) A-III, B-IV, C-II, D-I

(2) A-IV, B-II, C-III, D-I

(3) A-IV, B-III, C-II, D-I

(4) A-IV, B-I, C-II, D-III

Options :

43244975329. 1

43244975330. 2

43244975331. 3

43244975332. 4

Question Number : 59 Question Id : 43244919206 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Type of semiconductor)		List - II (Position of fermi level)
A.	Intrinsic semiconductor	I.	Above conduction band
B.	n-type semiconductor	II.	Near but above valance band semiconductor
C.	p-type semiconductor	III.	Near but below conduction band semiconductor
D.	Degenerate n-type	IV.	Middle of band gap

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-I, B-II, C-IV, D-III

(3) A-II, B-I, C-IV, D-III

(4) A-IV, B-III, C-II, D-I

Options :

43244975333. 1

43244975334. 2

43244975335. 3

43244975336. 4

Question Number : 60 Question Id : 43244919207 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I (Types of ADCs)		**List - II (Characteristics)**
A.	Flash type ADC	I.	Most widely used type of A/D Converter
B.	SAR type ADC	II.	Fastest
C.	Ramp type ADC	III.	Simplest type of A/D converter
D.	Integrating type ADC	IV.	Most accurate

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-II, B-I, C-III, D-IV

(3) A-IV, B-III, C-I, D-II

(4) A-IV, B-III, C-II, D-I

Options :

43244975337. 1

43244975338. 2

43244975339. 3

43244975340. 4

Question Number : 61 Question Id : 43244919208 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which of the following theorems are used to simplify a linear circuit into an equivalent form with a single source and impedance?

A. Thevenin's theorem

B. Norton's theorem

C. Superposition theorem

D. Reciprocity theorem

Choose the **correct** answer from the options given below:

(1) A and C only

(2) B, C and D only

(3) A, B and C only

(4) A and B only

Options :

43244975341. 1

43244975342. 2

43244975343. 3

43244975344. 4

Question Number : 62 Question Id : 43244919209 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following statements:

A. The intrinsic concentration of carriers is independent of temperature

B. Current due to carrier drift occurs in both semiconductor and metals

C. Current due to carrier diffusion exists in both semiconductor and metals

D. Metals are unipolar while semiconductors have bipolar nature

Choose the **correct** answer from the options given below:

(1) A and B only

(2) B and D only

(3) A, C and D only

(4) A and D only

Options :

43244975345. 1

43244975346. 2

43244975347. 3

43244975348. 4

Question Number : 63 Question Id : 43244919210 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In a superheterodyne receiver arrange the following components sequentially from input to output:

A. Antenna

B. Mixer

C. IF amplifier

D. Audio amplifier

Choose the **correct** answer from the options given below:

(1) A, B, C, D

(2) D, B, C, A

(3) A, C, B, D

(4) D, C, B, A

Options :

43244975349. 1

43244975350. 2

43244975351. 3

43244975352. 4

Question Number : 64 Question Id : 43244919211 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Gallium arsenide is a direct band semiconductor having faster switching capabilities and high temperature operating capabilities.

Reason (R) : A substance for which the width of the forbidden energy region is relatively small is called a semiconductor.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975353. 1

43244975354. 2

43244975355. 3

43244975356. 4

Question Number : 65 Question Id : 43244919212 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

A minimum phase unity feedback system has a bode plot with a constant slope of -20 dB/decade for all frequencies. What is the value of the maximum phase margin for the system?

(1) -90°

(2) 0°

(3) 90°

(4) 180°

Options :

43244975357. 1

43244975358. 2

43244975359. 3

43244975360. 4

Question Number : 66 Question Id : 43244919213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange these digital modulation schemes, generally, in order of increasing order of bits/symbol:

A. 16-QAM

B. 8-PSK

C. QPSK

D. BFSK

Choose the **correct** answer from the options given below:

(1) A, B, C, D

(2) A, B, D, C

(3) D, C, A, B

(4) D, C, B, A

Options :

43244975361. 1

43244975362. 2

43244975363. 3

43244975364. 4

Question Number : 67 Question Id : 43244919214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Match **List - I** with **List - II**.

	List - I		List - II
A.	Gauss elimination	I.	Solving non-linear equations
B.	Newton-Raphson method	II.	Solving linear simultaneous equations
C.	Runge-Kutta method	III.	Solving ordinary differential equations
D.	Simpson's Rule	IV.	Numerical Integration method

Choose the **correct** answer from the options given below:

(1) A-I, B-II, C-III, D-IV

(2) A-II, B-I, C-III, D-IV

(3) A-II, B-I, C-IV, D-III

(4) A-I, B-II, C-IV, D-III

Options :

43244975365. 1

43244975366. 2

43244975367. 3

43244975368. 4

Question Number : 68 Question Id : 43244919215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the following flags of 8085 get affected by the instruction SUB B:

A. Sign flag

B. Carry flag

C. Zero flag

D. Parity flag

Choose the **correct** answer from the options given below:

(1) A, B, C and D

(2) A, B and C only

(3) B and D only

(4) C and D only

Options :

43244975369. 1

43244975370. 2

43244975371. 3

43244975372. 4

Question Number : 69 Question Id : 43244919216 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If a 3×3 matrix A has eigenvalues 2, 3, -4, what is the determinant of A?

(1) 6

(2) -12

(3) -24

(4) 24

Options :

43244975373. 1

43244975374. 2

43244975375. 3

43244975376. 4

Question Number : 70 Question Id : 43244919217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : AM stereo broadcasting uses quadrature carrier multiplexing (QAM).

Reason (R) : QAM involves more stringent synchronization than FDM system with SSB subcarrier modulation.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975377. 1

43244975378. 2

43244975379. 3

43244975380. 4

Question Number : 71 Question Id : 43244919218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Arrange the steps of the classic 4-stage instruction pipelining:

A. Execute (perform operation in ALU)

B. Fetch (get instruction from memory)

C. Write-back (store result)

D. Decode (determine operation by control unit)

Choose the **correct** answer from the options given below:

(1) B, D, C, A

(2) B, D, A, C

(3) B, A, C, D

(4) D, B, A, C

Options :

43244975381. 1

43244975382. 2

43244975383. 3

43244975384. 4

Question Number : 72 Question Id : 43244919219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The value of the function

$$f(x) = \lim_{x \to 0} \frac{x^3 + x^2}{2x^3 - 5x^2} \text{ is}$$

(1) 0

(2) ∞

(3) $-1/3$

(4) $-1/5$

Options :

43244975385. 1

43244975386. 2

43244975387. 3

43244975388. 4

Question Number : 73 Question Id : 43244919220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Given below are two statements : one is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.

Assertion (A) : Skin depth is the depth by which electromagnetic wave has been increased to 37% of its original value.

Reason (R) : The depth of penetration of wave is a lossy dielectric increases with increasing wavelength.

In the light of the above statements, choose the **most appropriate answer** from the options given below:

(1) Both **(A)** and **(R)** are correct and **(R)** is the correct explanation of **(A)**

(2) Both **(A)** and **(R)** are correct but **(R)** is **not** the correct explanation of **(A)**

(3) **(A)** is correct but **(R)** is not correct

(4) **(A)** is not correct but **(R)** is correct

Options :

43244975389. 1

43244975390. 2

43244975391. 3

43244975392. 4

Question Number : 74 Question Id : 43244919221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation $y'' + 4y' + 4y = 0$ is:

(1) $C_1 e^{2x} + C_2 e^{-2x}$

(2) $C_1 e^{2x} + C_2 e^{2x}$

(3) $e^{-2x}(C_1 \cos(2x) + C_2 \sin(2x))$

(4) $(C_1 + C_2 x) e^{-2x}$

Options :

43244975393. 1

43244975394. 2

43244975395. 3

43244975396. 4

Question Number : 75 Question Id : 43244919222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Consider the statements given below:

A. Discrete time LTI system with impulse response $h(n) = \left(-\frac{1}{2}\right)^n u(n-1)$ is the causal system

B. Response $(-2)^n u(n)$ may or may not be stable

C. Response $(-2)^n u(n)$ is unstable

D. Response $(-2)^n u(-n-1)$ is unstable

Choose the **correct** answer from the options given below:

(1) A, B and D only

(2) A and B only

(3) C and D only

(4) A and C only

Options :

43244975397. 1

43244975398. 2

43244975399. 3

43244975400. 4