

# Telangana State Council Higher Education

## Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

<b>Question Paper Name :</b>	ELECTRONICS AND INSTRUMENTATION ENGINEERING 06th May 2024 Shift1
<b>Subject Name :</b>	Electronics and Instrumentation Engineering
<b>Creation Date :</b>	2024-05-06 19:15:13
<b>Duration :</b>	180
<b>Total Marks :</b>	200
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console?</b>	Yes
<b>Change Font Color :</b>	No
<b>Change Background Color :</b>	No

<b>Change Theme :</b>	No
<b>Help Button :</b>	No
<b>Show Reports :</b>	No
<b>Show Progress Bar :</b>	No

## **ELECTRONICS AND INSTRUMENTATION ENGINEERING**

<b>Group Number :</b>	1
<b>Group Id :</b>	76144610
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	180
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	200
<b>Is this Group for Examiner? :</b>	No
<b>Examiner permission :</b>	Cant View
<b>Show Progress Bar? :</b>	No

## **Mathematics**

<b>Section Id :</b>	76144635
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	50
<b>Number of Questions to be attempted :</b>	50
<b>Section Marks :</b>	50
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes

**Maximum Instruction Time :** 0  
**Sub-Section Number :** 1  
**Sub-Section Id :** 76144649  
**Question Shuffling Allowed :** Yes  
**Is Section Default? :** null

**Question Number : 1 Question Id : 7614461811 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**  
**: N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 1 Wrong Marks : 0**

If  $A = \begin{pmatrix} k & 1 \\ 1 & k \end{pmatrix}$  and  $|A^3| = 27$ , then  $k =$

**Options :**

7614467201. ✘  $\pm 1$

7614467202. ✔  $\pm 2$

7614467203. ✘  $\pm 4$

7614467204. ✘  $\pm 5$

**Question Number : 2 Question Id : 7614461812 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**  
**: N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 1 Wrong Marks : 0**

If  $A = \begin{pmatrix} 1 & -1 \\ 2 & 1 \end{pmatrix}$  satisfies  $aA^2 + bA + cI = 0$ , then  $b + 2c =$

**Options :**

7614467205. ✓ 4

7614467206. ✘ 2

7614467207. ✘ -4

7614467208. ✘ 3

**Question Number : 3 Question Id : 7614461813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Let  $(x, y, z)$  be the solution of the system of equations  $x + 3y + z = 3$ ,  
 $x + 4y + 2z = 3$ ,  $-x - 2y + 3z = -6$ . Then  $x^2 + y^2 + z^2 =$

**Options :**

7614467209. ✘ 12

7614467210. ✘ 9

7614467211. ✘ 6

7614467212. ✓ 3

**Question Number : 4 Question Id : 7614461814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $A = \begin{pmatrix} 2 & x+9 \\ 1 & 2x \end{pmatrix}$  is invertible, then  $x \neq$

**Options :**

7614467213. ✖ 4

7614467214. ✖ 1

7614467215. ✔ 3

7614467216. ✖ 5

**Question Number : 5 Question Id : 7614461815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The value of  $x$  satisfying  $3^{\log_5(x-5)} = \log_5(125)$  is

**Options :**

7614467217. ✔ 10

7614467218. ✖ 5

7614467219. ✖ 9

7614467220. ✖ 3

**Question Number : 6 Question Id : 7614461816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

$$\text{If } \frac{4x^2 + 1}{x^3 - 1} = \frac{A}{x - 1} + \frac{Bx + C}{x^2 + x + 1}, \text{ then } A - B + C =$$

**Options :**

7614467221. ✖ -3

7614467222. ✔ 0

7614467223. ✖ 2

7614467224. ✖ 1

**Question Number : 7 Question Id : 7614461817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The diameter of the circle  $(x-1)^2 + (y+3)^2 = 3$  is

**Options :**

7614467225. ✖  $\sqrt{3}$

7614467226. ✖  $4\sqrt{3}$

7614467227. ✓  $2\sqrt{3}$

7614467228. ✗ 3

**Question Number : 8 Question Id : 7614461818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the circle  $x^2 + y^2 - 3x - 2y + c = 0$  passes through origin, then  $c =$

**Options :**

7614467229. ✗ -1

7614467230. ✗ 1

7614467231. ✓ 0

7614467232. ✗  $\infty$

**Question Number : 9 Question Id : 7614461819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The latus rectum of parabola  $x^2 = 4y$  is

**Options :**

7614467233. ✓ 4

7614467234. ✖ 8

7614467235. ✖ 12

7614467236. ✖ 2

**Question Number : 10 Question Id : 7614461820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The centre of the circle  $45x^2 + 45y^2 - 60x + 36y + 19 = 0$  is

**Options :**

7614467237. ✖ (0,0)

7614467238. ✖ (60,36)

7614467239. ✖ (-60,36)

7614467240. ✔  $(\frac{2}{3}, -\frac{2}{5})$

**Question Number : 11 Question Id : 7614461821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**



Homogeneous second degree equation  $ax^2 + 2hxy + by^2 = 0$   
represents two real and distinct lines through origin if

Options :

7614467241. ✓  $h^2 > ab$

7614467242. ✗  $h^2 = ab$

7614467243. ✗  $h^2 < ab$

7614467244. ✗  $h^2 = a + b$

Question Number : 12 Question Id : 7614461822 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The equation of the circle with extremities (1,3) and (5, 7) of the  
diameter is

Options :

7614467245. ✗  $x^2 + y^2 + 6x + 10y + 26 = 0$

7614467246. ✓  $x^2 + y^2 - 6x - 10y + 26 = 0$

7614467247. ✗  $x^2 + y^2 - 6x + 10y + 26 = 0$

7614467248. ✗  $x^2 + y^2 - 6x - 10y - 26 = 0$

**Question Number : 13 Question Id : 7614461823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the line passing through the points  $(a,6a)$  and  $(5,6)$  is perpendicular to the line  $3x+4y+5 = 0$ , then  $7a =$

**Options :**

7614467249. ✘ -5

7614467250. ✘ -3

7614467251. ✔ -1

7614467252. ✘ -2

**Question Number : 14 Question Id : 7614461824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $(0, k)$ ,  $(1,3)$  and  $(82,30)$  are collinear, then  $k =$

**Options :**

7614467253. ✔  $\frac{8}{3}$

7614467254. ✘  $\frac{9}{4}$

7614467255. ✘  $\frac{10}{7}$

7614467256. ✘  $\frac{11}{6}$

**Question Number : 15 Question Id : 7614461825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the two parallel sides of a square are  $2x+y+7 = 0, 2x+y+5=0$ , then the area of that square is (in square units is)

**Options :**

7614467257. ✘  $\frac{3}{5}$

7614467258. ✔  $\frac{4}{5}$

7614467259. ✘  $\frac{6}{5}$

7614467260. ✘  $\frac{7}{5}$

**Question Number : 16 Question Id : 7614461826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The point at two circles  $x^2 + y^2 - 4x - 2y - 4 = 0, x^2 + y^2 - 12x - 8y - 12 = 0$  touches is

**Options :**

7614467261. ✓  $\left(\frac{-2}{5}, \frac{-4}{5}\right)$

7614467262. ✗  $\left(\frac{2}{5}, \frac{4}{5}\right)$

7614467263. ✗  $\left(\frac{2}{5}, \frac{-4}{5}\right)$

7614467264. ✗  $\left(\frac{-2}{5}, \frac{4}{5}\right)$

**Question Number : 17 Question Id : 7614461827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $x + y = k$  is a normal to the parabola  $y^2 = 12x$ , then  $k =$

**Options :**

7614467265. ✗ 5

7614467266. ✓ 9

7614467267. ✗ 7

7614467268. ✖ 3

**Question Number : 18 Question Id : 7614461828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The set of all points where the function  $f(x) = x|x|$  is differentiable is

**Options :**

7614467269. ✖  $(0, \infty)$

7614467270. ✔  $(-\infty, \infty)$

7614467271. ✖  $(-\infty, 0) \cup (0, \infty)$

7614467272. ✖  $(-\infty, 0)$

**Question Number : 19 Question Id : 7614461829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$\lim_{x \rightarrow 1} \frac{1+x+x^2+\dots+x^{n-1}-n}{x-1} =$$

**Options :**

7614467273. ✖  $n^2 + n$

7614467274. ✘  $\frac{n^2 + n}{2}$

7614467275. ✔  $\frac{n^2 - n}{2}$

7614467276. ✘  $n^2 - n$

**Question Number : 20 Question Id : 7614461830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $x = 2 \cos t, y = 2 \sin t$ , then  $\frac{d^2y}{dx^2}$  at  $t = \frac{\pi}{4}$  is

**Options :**

7614467277. ✘  $\frac{1}{\sqrt{2}}$

7614467278. ✔  $-\sqrt{2}$

7614467279. ✘  $\sqrt{3}$

7614467280. ✘  $-\frac{1}{\sqrt{3}}$

**Question Number : 21 Question Id : 7614461831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The equation of the tangent to the curve  $y = x^3 - 3x + 2$  at the point  $(2, 4)$  is

**Options :**

7614467281. ✓  $9x - y - 14 = 0$

7614467282. ✗  $9x + y - 14 = 0$

7614467283. ✗  $9x - y + 14 = 0$

7614467284. ✗  $9x + y = 0$

**Question Number : 22 Question Id : 7614461832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

If  $y = a \log x + bx^2 + x$  has its extreme values at  $x = -1$  and  $x = 2$ , then the values of  $a$  and  $b$  are respectively are

**Options :**

7614467285. ✗  $-2, 2$

7614467286. ✗  $-4, 4$

7614467287. ✗

$$-\frac{1}{3}, 4$$

7614467288. ✓  $-\frac{1}{2}, 2$

**Question Number : 23 Question Id : 7614461833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the curves  $y^2 = 2x$  and  $2xy = k$  cut at right angle, then  $k^2 =$

**Options :**

7614467289. ✗ 4

7614467290. ✓ 8

7614467291. ✗ 16

7614467292. ✗ 9

**Question Number : 24 Question Id : 7614461834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $x^y y^x = 1$ , then  $\frac{dy}{dx} =$



Options :

7614467293. ✘  $-\frac{y}{x} \left( \frac{x + y \log x}{y + x \log y} \right)$

7614467294. ✘  $\frac{y}{x} \left( \frac{x - \log x}{y + \log y} \right)$

7614467295. ✘  $\frac{y}{x} \left( \frac{y - x \log y}{x + y \log x} \right)$

7614467296. ✔  $-\frac{y}{x} \left( \frac{y + x \log y}{x + y \log x} \right)$

Question Number : 25 Question Id : 7614461835 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

If  $u = \tan^{-1} \left( \frac{x^3 + y^3}{x - y} \right)$ ,  $x \neq y$  and if  $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} - \sin ku = 0$ , then  $k =$

Options :

7614467297. ✘ 3

7614467298. ✘ 4

7614467299. ✔ 2

7614467300. ✖ 5

**Question Number : 26 Question Id : 7614461836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The slope of the tangent to the curve  $xy=1$  at  $(1,1)$  is

**Options :**

7614467301. ✖ -2

7614467302. ✔ -1

7614467303. ✖ 1

7614467304. ✖ 2

**Question Number : 27 Question Id : 7614461837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The function  $f(x) = xe^{-x}$  ( $x \in R$ ) attains a maximum value at  $x =$

**Options :**

7614467305. ✖ 2

7614467306. ✖  $1/e$

7614467307. ✓ 1

7614467308. ✘ 3

**Question Number : 28 Question Id : 7614461838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The integral value of  $\int \frac{\cos 2x}{\sin^2 x \cos^2 x} dx =$

**Options :**

7614467309. ✘  $\operatorname{Cosec}^2 x - \operatorname{Sec}^2 x + c$

7614467310. ✘  $\operatorname{Cot} x + \operatorname{Tan} x + c$

7614467311. ✓  $-\operatorname{Cot} x - \operatorname{tan} x + c$

7614467312. ✘  $\operatorname{Cosec} x - \operatorname{Sec} x + c$

**Question Number : 29 Question Id : 7614461839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$\int e^{x \operatorname{Cosec} x} \operatorname{Cosec} x (1 - x \operatorname{Cot} x) dx =$

**Options :**

7614467313. ✘  $e^{x\cot x} + c$

7614467314. ✔  $e^{x\operatorname{cosec} x} + c$

7614467315. ✘  $e^{-x\cot x} + c$

7614467316. ✘  $e^{-x\operatorname{cosec} x} + c$

**Question Number : 30 Question Id : 7614461840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The integral value of  $\int_0^{\pi} x \sin x \cos^4 x dx$  is

**Options :**

7614467317. ✘  $\frac{\pi}{10}$

7614467318. ✔  $\frac{\pi}{5}$

7614467319. ✘  $-\frac{\pi}{5}$

7614467320. ✘  $-\frac{\pi}{10}$

**Question Number : 31 Question Id : 7614461841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The area enclosed between the curves  $y^2 = x$  and  $y = |x|$  is

**Options :**

7614467321. ✘  $1/3$

7614467322. ✘  $1$

7614467323. ✘  $2/3$

7614467324. ✔  $1/6$

**Question Number : 32 Question Id : 7614461842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The differential equation of the family of curves  $xy = c_1e^x + c_2e^{-x}$  is

**Options :**

7614467325. ✘  $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - y = 0$

7614467326. ✔  $x\frac{d^2y}{dx^2} + 2\frac{dy}{dx} - xy = 0$

7614467327. ✘  $x\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - y = 0$

7614467328. ✘  $x^2 \frac{d^2y}{dx^2} + 2 \frac{dy}{dx} - y = 0$

Question Number : 33 Question Id : 7614461843 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation  $\frac{dy}{dx} - x \tan(y-x) = 1$  is

Options :

7614467329. ✔  $\sin(y-x) = ce^{\frac{x^2}{2}}$

7614467330. ✘  $\cos(y-x) = ce^{\frac{-x^2}{2}}$

7614467331. ✘  $\sin(y+x) = ce^{\frac{-x^2}{2}}$

7614467332. ✘  $\tan(y-x) = ce^{\frac{x^2}{2}}$

Question Number : 34 Question Id : 7614461844 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The general solution of the differential equation  $xy \frac{dy}{dx} = \frac{1+y^2}{1+x^2}$  is

**Options :**

7614467333. ✘  $(1+x)(1+y) = cx^2y^2$

7614467334. ✔  $(1+x^2)(1+y^2) = cx^2$

7614467335. ✘  $(1+x^2)(1+y^2) = cy$

7614467336. ✘  $(1+x^2)(1+y^2) = cxy$

**Question Number : 35 Question Id : 7614461845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The general solution of the differential equation  $\frac{dy}{dx} - \frac{2}{x}y = 2x^3 + x$  is

**Options :**

7614467337. ✔  $y = x^4 + x^2 \log x + cx^2$

7614467338. ✘  $y = x^3 + x^2 \log x + cx^2$

7614467339. ✘  $y = x^3 + x \log x + cx^2$

7614467340. ✘  $y = x^2 + x \log x + cx^3$

**Question Number : 36 Question Id : 7614461846 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The general solution of the differential equation  $\sec^2 y \frac{dy}{dx} + x \tan y = x^3$  is

**Options :**

7614467341. ✘  $\sin y = x^2 + 2 + ce^{\frac{-x^2}{2}}$

7614467342. ✘  $\cos y = 2x^2 - 1 + ce^{\frac{-x^2}{2}}$

7614467343. ✘  $\cot y = x^2 - 2 + ce^{\frac{-x^2}{2}}$

7614467344. ✔  $\tan y = x^2 - 2 + ce^{\frac{-x^2}{2}}$

**Question Number : 37 Question Id : 7614461847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The particular integral of the differential equation  $\frac{d^2y}{dx^2} + 16y = e^{-3x} + \cos 4x$  is

**Options :**

7614467345. ✘  $\frac{1}{7}e^{-3x} + \frac{x}{8}\cos 4x$



7614467346. ✘  $\frac{1}{23}e^{-3x} + \frac{x}{8}\cos 4x$

7614467347. ✔  $\frac{1}{25}e^{-3x} + \frac{x}{8}\sin 4x$

7614467348. ✘  $\frac{1}{36}e^{-3x} + \frac{x}{9}\sin 4x$

**Question Number : 38 Question Id : 7614461848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A particular integral of the differential equation  $\frac{d^2y}{dx^2} + \frac{dy}{dx} + y = x^2$  is

**Options :**

7614467349. ✘  $x^2 + 4x$

7614467350. ✘  $2x^2 - x$

7614467351. ✘  $x^2 - 8x$

7614467352. ✔  $x^2 - 2x$

**Question Number : 39 Question Id : 7614461849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The solution of the differential equation  $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} - 15y = 0$  subject to the conditions  $y'(0) = 0, y''(0) = 2$  is

**Options :**

7614467353. ✖  $y = \frac{1}{20}e^{3x} + \frac{1}{12}e^{5x}$

7614467354. ✔  $y = \frac{1}{20}e^{5x} + \frac{1}{12}e^{-3x}$

7614467355. ✖  $y = \frac{1}{12}e^{5x} + \frac{1}{20}e^{-3x}$

7614467356. ✖  $y = \frac{1}{20}e^{-5x} + \frac{1}{12}e^{-3x}$

**Question Number : 40 Question Id : 7614461850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$L \left\{ \int_0^t e^{-u} \sin u \, du \right\} =$$

**Options :**

7614467357. ✖  $\frac{1}{s^2 + 2s + 2}$

7614467358. ✖

$$\frac{s}{s^2 + 2s + 2}$$

7614467359. ✓  $\frac{1}{s(s^2 + 2s + 2)}$

7614467360. ✗  $\frac{1}{s(s^2 + 2)}$

**Question Number : 41 Question Id : 7614461851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $L\{f(t)\} = \log\left(\frac{s-1}{s}\right)$ , then  $f(1) =$

**Options :**

7614467361. ✓  $1-e$

7614467362. ✗  $e-1$

7614467363. ✗  $e$

7614467364. ✗  $e+1$

**Question Number : 42 Question Id : 7614461852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\infty} \frac{\sin 2t}{t} dt =$$

Options :

7614467365. ✘  $\pi$

7614467366. ✘ 0

7614467367. ✘  $2\pi$

7614467368. ✔  $\frac{\pi}{2}$

Question Number : 43 Question Id : 7614461853 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

$$\text{If } L\{t \sinh kt\} = \frac{4s}{(s^2 - 4)^2}, \text{ then } k =$$

Options :

7614467369. ✘ 1

7614467370. ✘ 4

7614467371. ✔ 2

7614467372.

✘  $\frac{1}{2}$

**Question Number : 44 Question Id : 7614461854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$\text{Let } L^{-1} \left\{ \frac{e^{-s}}{s^2 + 4s + 5} \right\} = f(t). \text{ If } t > 1, \text{ then } f(t) =$$

**Options :**

7614467373. ✘  $e^{-2t} \sin t$

7614467374. ✔  $e^{-2(t-1)} \sin(t-1)$

7614467375. ✘  $e^{-2(t+1)} \sin(t+1)$

7614467376. ✘  $e^{2t} \sin t$

**Question Number : 45 Question Id : 7614461855 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

$$\text{If } L\{f(t)\} = \frac{2s-1}{(s+1)(s-2)}, \text{ then } L\{f(4t)\} =$$

**Options :**

7614467377. ✖ 
$$\frac{2(s+2)}{(s-4)(s+8)}$$

7614467378. ✖ 
$$\frac{2(s-1)}{(4s+1)(4s-2)}$$

7614467379. ✖ 
$$\frac{s-2}{(s-4)(s+8)}$$

7614467380. ✔ 
$$\frac{2(s-2)}{(s+4)(s-8)}$$

**Question Number : 46 Question Id : 7614461856 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $Y(s)$  is the Laplace transform of the solution  $y(t)$  of  $y'' + y = \sin 3t$ ,  
 $y(0) = 0, y'(0) = 0$ , then  $Y(0) =$

**Options :**

7614467381. ✖ 0

7614467382. ✖ 3

7614467383. ✔  $\frac{1}{3}$

7614467384. ✘  $\frac{1}{9}$

**Question Number : 47 Question Id : 7614461857 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The value of the Fourier coefficient  $a_n$  in the series expansion of  $f(x) = |x|$  in  $(-\pi, \pi)$  when n is odd is

**Options :**

7614467385. ✘  $\frac{4}{\pi n^2}$

7614467386. ✔  $\frac{-4}{\pi n^2}$

7614467387. ✘  $\frac{2}{\pi n^2}$

7614467388. ✘ 0

**Question Number : 48 Question Id : 7614461858 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The value of the Fourier coefficient  $b_0$  in the series expansion of  $f(x) = |x \sin x|$  in  $(-\pi, \pi)$  is

**Options :**

7614467389. ✓ 0

7614467390. ✗ -2

7614467391. ✗ 2

7614467392. ✗ -1

**Question Number : 49 Question Id : 7614461859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If  $f(x) = \sin x$  is expressed as Fourier Cosine series in the interval  $(0, \pi)$ , then the value of  $a_0$  is

**Options :**

7614467393. ✗  $\frac{2}{\pi}$

7614467394. ✗  $\frac{1}{\pi}$

7614467395. ✓  $\frac{4}{\pi}$

7614467396. ✗  $\frac{-2}{\pi}$



Question Number : 50 Question Id : 7614461860 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 1 Wrong Marks : 0

$$\int_0^{\pi} \sin 6x \sin 4x dx =$$

Options :

7614467397. ✘  $\frac{\pi}{2}$

7614467398. ✘  $\pi$

7614467399. ✘ 1

7614467400. ✔ 0

## Physics

Section Id :	76144636
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

**Sub-Section Number :** 1  
**Sub-Section Id :** 76144650  
**Question Shuffling Allowed :** Yes  
**Is Section Default? :** null

**Question Number : 51 Question Id : 7614461861 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**  
**: N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 1 Wrong Marks : 0**

Which one of the following equation is dimensionally incorrect for the expression representing displacement 'y' and amplitude 'A' of a particle executing Simple Harmonic Motion with time period 'T'?

**Options :**

7614467401. ✘ 
$$y = \frac{A}{\sqrt{2}} (\sin\omega t + \cos\omega t)$$

7614467402. ✘ 
$$y = A \sin\omega t$$

7614467403. ✔ 
$$y = \frac{A}{T} \sin\left(\frac{t}{A}\right)$$

7614467404. ✘ 
$$y = A \sin\left(\frac{4\pi t}{T}\right)$$

**Question Number : 52 Question Id : 7614461862 Question Type : MCQ Option Shuffling : Yes**  
**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**  
**: N.A Think Time : N.A Minimum Instruction Time : 0**  
**Correct Marks : 1 Wrong Marks : 0**

The resultant of two equal forces acting at right angles to each other is 1224 N. Then the magnitude of each force in Newtons.

**Options :**

7614467405. ✘ 612, 612

7614467406. ✘ 1224, 1224

7614467407. ✔ 865, 865

7614467408. ✘ 432, 432

**Question Number : 53 Question Id : 7614461863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The magnitude of three vectors  $\vec{A}, \vec{B}$  &  $\vec{C}$  are in order 12,5,13 units and

$\vec{A} + \vec{B} = \vec{C}$ , then what will be the angle between the vectors  $\vec{A}$  &  $\vec{B}$

**Options :**

7614467409. ✔  $90^\circ$

7614467410. ✘  $60^\circ$

7614467411. ✘  $30^\circ$

7614467412. ✘  $45^\circ$

**Question Number : 54 Question Id : 7614461864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A boy pulls a body of mass 50 kg resting on a flat horizontal surface.  
Calculate the frictional force if the coefficient of friction is 0.2

**Options :**

7614467413. ✓ 98.1 kg.m.s<sup>-2</sup>

7614467414. ✗ 15 kg

7614467415. ✗ 98.1 x 10<sup>3</sup> g.cm.s<sup>-2</sup>

7614467416. ✗ 1500 g

**Question Number : 55 Question Id : 7614461865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If a projectile is thrown with a velocity  $u$  at an angle of  $\theta$  with the horizontal,  
then the velocity at maximum height during the projectile motion will be:

**Options :**

7614467417. ✗  $2u \sin\theta$

7614467418. ✗  $u \sin\theta$

7614467419. ✗  $2u \cos\theta$

7614467420. ✓  $u \cos\theta$

**Question Number : 56 Question Id : 7614461866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A child of mass 5 kg is going round a merry-go-round that makes 1 rotation in 3.14 seconds. If the radius of the merry-go-round is 2 m then the centrifugal force on the child will be

**Options :**

7614467421. ✗ 10 Newton

7614467422. ✗ 20 Newton

7614467423. ✗ 30 Newton

7614467424. ✓ 40 Newton

**Question Number : 57 Question Id : 7614461867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A metal plate of area  $100 \text{ cm}^2$  is placed on the surface of a liquid and a force of  $1\mu\text{N}$  is required to move the plate so as to produce a velocity change  $1 \text{ cms}^{-1}$  between two successive layers separated by 1 cm. The coefficient of viscosity of the liquid is

**Options :**

7614467425. ✓  $10^{-4} Pa s$

7614467426. ✗  $10^{-3} Pa s$

7614467427. ✗  $10^{-1} Pa s$

7614467428. ✗  $10 Pa s$

**Question Number : 58 Question Id : 7614461868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Water rises to a height 'h' in a capillary tube of radius 'r' when immersed in water. The mass of the water in the capillary tube is 'm'. The mass of water that will rise in another capillary tube of radius  $\frac{r}{2}$  when immersed in water is

**Options :**

7614467429. ✗ m

7614467430. ✗ 2m

7614467431. ✓  $\frac{m}{2}$

7614467432. ✗ 4m

**Question Number : 59 Question Id : 7614461869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The continuity equation for compressible fluid is (the quantities carry their usual meaning)

**Options :**

7614467433. ✘  $\rho_2 A_1 v_1 = \rho_1 A_2 v_2$

7614467434. ✘  $A_1 v_1 = A_2 v_2$

7614467435. ✘  $\rho_1 v_1 = \rho_2 v_2$

7614467436. ✔  $\rho_1 A_1 v_1 = \rho_2 A_2 v_2$

**Question Number : 60 Question Id : 7614461870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A block of mass 'm' is moving on frictionless horizontal surface with velocity 5m/sec, compresses an ideal spring by 2m and comes to rest. The ratio of mass 'm' of the block to spring constant 'k' is.

**Options :**

7614467437. ✘ 25 : 4

7614467438. ✔ 4 : 25

7614467439. ✘ 1: 25

7614467440. ✘ 4 : 1

**Question Number : 61 Question Id : 7614461871 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Match the following:

- |                       |   |
|-----------------------|---|
| a) Adiabatic Process  | i) no volume change takes place.        |
| b) Isochoric Process  | ii) no pressure change takes place.     |
| c) Isobaric Process   | iii) no temperature change takes place. |
| d) Isothermal Process | iv) no heat transfer takes place.       |

**Options :**

7614467441. ✘ a-iv, b-iii, c-ii, d-i

7614467442. ✘ a-i, b-iv, c-ii, d-iii

7614467443. ✔ a-iv, b-i, c-ii, d-iii

7614467444. ✘ a-i, b-ii, c-iii, d-iv

**Question Number : 62 Question Id : 7614461872 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

First law of thermodynamics represents conservation of



**Options :**

7614467445. ✘ Pressure

7614467446. ✘ Momentum

7614467447. ✘ Entropy

7614467448. ✔ Energy

**Question Number : 63 Question Id : 7614461873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The displacement of a particle executing Simple Harmonic Motion is given by  $x = a \cos \frac{\pi t}{2}$  where 'x' and 'a' are in metre. The distance covered by it in the time interval between  $t = 0$  sec to  $t = 4$  sec in metre is

**Options :**

7614467449. ✘ 0

7614467450. ✘ 2a

7614467451. ✔ 4a

7614467452. ✘ 3a

**Question Number : 64 Question Id : 7614461874 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A simple pendulum 80 cm long oscillates with amplitude of 0.02 m. The acceleration at the ends of its path is (take  $g = 10 \text{ ms}^{-2}$ )

**Options :**

7614467453. ✘  $0 \text{ ms}^{-2}$

7614467454. ✔  $0.25 \text{ ms}^{-2}$

7614467455. ✘  $2.5 \text{ ms}^{-2}$

7614467456. ✘  $10 \text{ ms}^{-2}$

**Question Number : 65 Question Id : 7614461875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A particle undergoing Simple Harmonic Motion passes through the mean position with a velocity of  $2 \text{ ms}^{-1}$ . The velocity of the particle at the point where its displacement is half the amplitude is

**Options :**

7614467457. ✘  $2\sqrt{3} \text{ ms}^{-1}$

7614467458. ✘  $4\sqrt{3} \text{ ms}^{-1}$

7614467459. ✘  $0 \text{ ms}^{-1}$

7614467460. ✓  $\sqrt{3} \text{ ms}^{-1}$

**Question Number : 66 Question Id : 7614461876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A boy standing between two parallel walls fires a gun. He hears the first echo after 4 sec and next after 6 sec. The distance between the two walls is (take velocity of sound in air as 340 m/s)

**Options :**

7614467461. ✗ 680 m

7614467462. ✗ 1020 m

7614467463. ✓ 1700 m

7614467464. ✗ 340 m

**Question Number : 67 Question Id : 7614461877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a good acoustic hall the distribution of sound should be

**Options :**

7614467465. ✗ Gradually increasing

7614467466. ✘ Exponentially increasing

7614467467. ✘ Randomly change

7614467468. ✔ Uniform

**Question Number : 68 Question Id : 7614461878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Two magnetic poles placed 5cm apart in air attract each other with a force of 100 dyne. How far from each other should they be placed to get the force of attraction 25 dyne?

**Options :**

7614467469. ✔ 10 cm

7614467470. ✘ 4 cm

7614467471. ✘ 2 cm

7614467472. ✘ 6 cm

**Question Number : 69 Question Id : 7614461879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a Wheatstone bridge, the four arms have each a resistance of 50 ohm. The galvanometer current is:

**Options :**

7614467473. ✘ 0.05 A

7614467474. ✘ 0.5 A

7614467475. ✔ 0 A

7614467476. ✘ 5 A

**Question Number : 70 Question Id : 7614461880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a transformer, the number of turns in secondary and primary coils are 50 and 200 respectively. If 4 A of current is flowing through the primary, the current flowing through the secondary coil is

**Options :**

7614467477. ✔ 1 A

7614467478. ✘ 2 A

7614467479. ✘ 3 A

7614467480. ✘ 4 A

**Question Number : 71 Question Id : 7614461881 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Electrons are ejected when a photosensitive material is illuminated by violet light but not by blue light. Would electrons come out from the same material when it is illuminated by red light?

**Options :**

7614467481. ✘ Yes

7614467482. ✔ No

7614467483. ✘ Yes, if intensity of incident light is increased

7614467484. ✘ Yes, if material is illuminated for a long time

**Question Number : 72 Question Id : 7614461882 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Optical fibres are electrically

**Options :**

7614467485. ✘ Conductors

7614467486. ✘ Superconductors

7614467487. ✘ Semiconductors

7614467488. ✓ Insulators

**Question Number : 73 Question Id : 7614461883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In superconducting state the material behaves as

**Options :**

7614467489. ✓ Perfect diamagnetic

7614467490. ✗ Weak diamagnetic

7614467491. ✗ Perfect ferromagnetic

7614467492. ✗ Weak paramagnetic

**Question Number : 74 Question Id : 7614461884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In semiconductors at room temperature

**Options :**

7614467493. ✗ The conduction band is completely empty

The valence band is partially empty and the conduction band is partially

7614467494. ✓ filled

The valence band is completely filled and the conduction band is partially

7614467495. ✘ filled

7614467496. ✘ The valence band is completely filled

**Question Number : 75 Question Id : 7614461885 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Semiconductors are doped

**Options :**

7614467497. ✘ To increase the resistivity

7614467498. ✔ To get the desired level of conductivity

7614467499. ✘ To reduce the conductivity

7614467500. ✘ To get the positive temperature coefficient of resistance

## Chemistry

**Section Id :** 76144637

**Section Number :** 3

**Section type :** Online

**Mandatory or Optional :** Mandatory



<b>Number of Questions :</b>	25
<b>Number of Questions to be attempted :</b>	25
<b>Section Marks :</b>	25
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	76144651
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 76 Question Id : 7614461886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Number of neutrons present in an element with atomic number 19 and mass number 39.

**Options :**

7614467501. ✖ 19

7614467502. ✖ 58

7614467503. ✖ 39

7614467504. ✔ 20

**Question Number : 77 Question Id : 7614461887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The dative bond is present in

**Options :**

7614467505. ✘ Ammonia

7614467506. ✔ Ammonium ion

7614467507. ✘ Urea

7614467508. ✘ Nitrogen

**Question Number : 78 Question Id : 7614461888 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following molecules contains coordinate covalent bond?

**Options :**

7614467509. ✘  $\text{NH}_2^-$

7614467510. ✘  $\text{N}_2\text{H}_4$

7614467511. ✔  $\text{H}_3\text{O}^+$

7614467512. ✘  $\text{H}_2\text{O}_2$

**Question Number : 79 Question Id : 7614461889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Concentrated hydrochloric acid contains 37% (by mass) HCl. The density of its solution is 1.18 g/mL. The molarity of HCl is

**Options :**

7614467513. ✓ 12.0

7614467514. ✗ 16.03

7614467515. ✗ 6.0

7614467516. ✗ 1.20

**Question Number : 80 Question Id : 7614461890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A colloidal solution can be purified by the method of

**Options :**

7614467517. ✗ Peptization

7614467518. ✓ Dialysis

7614467519. ✗ Mechanical Dispersion

7614467520. ✗ Oxidation

**Question Number : 81 Question Id : 7614461891 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The compound that does not act as a Lewis acid.

**Options :**

7614467521. ✓  $\text{BaCl}_2$

7614467522. ✗  $\text{AlCl}_3$

7614467523. ✗  $\text{BF}_3$

7614467524. ✗  $\text{BeCl}_2$

**Question Number : 82 Question Id : 7614461892 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The pH value of 0.001 M NaOH solution is

**Options :**

7614467525. ✗ 3

7614467526. ✗ 9

7614467527. ✗ 7

7614467528. ✓ 11

**Question Number : 83 Question Id : 7614461893 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The solvent not used for green synthesis is

**Options :**

7614467529. ✓ Aniline

7614467530. ✗ Room temperature ionic liquids

7614467531. ✗ Bio solvents

7614467532. ✗ Supercritical fluids

**Question Number : 84 Question Id : 7614461894 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of these days is celebrated in the form of World Environment Day all around the world?

**Options :**

7614467533. ✗ July 5<sup>th</sup>

7614467534. ✗ June 10<sup>th</sup>

7614467535. ✘ October 20<sup>th</sup>

7614467536. ✔ June 5<sup>th</sup>

**Question Number : 85 Question Id : 7614461895 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Extra pure water can be obtained by using

**Options :**

7614467537. ✘ Lime – Soda process

7614467538. ✘ Permutit process

7614467539. ✘ Ion-exchange process

7614467540. ✔ Electrolysis process

**Question Number : 86 Question Id : 7614461896 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Sterilization of water can be done by using

**Options :**

7614467541. ✔ Ozone

7614467542. ✘ Oxygen

7614467543. ✘ Caustic Potash

7614467544. ✘ Hydrogen peroxide

**Question Number : 87 Question Id : 7614461897 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The product formed at cathode when Pt electrodes are used in the electrolysis of Fused NaCl.

**Options :**

7614467545. ✘ Cl<sub>2</sub>

7614467546. ✘ NaOH

7614467547. ✘ HCl

7614467548. ✔ Na

**Question Number : 88 Question Id : 7614461898 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What is the electrochemical equivalent ( $z$ ) of copper, when 0.3950 g of copper is deposited by a current of 0.5 amperes in 40 minutes.

**Options :**

7614467549. ✓ 0.0003292 g

7614467550. ✗ 0.003950 g

7614467551. ✗ 0.0001646 g

7614467552. ✗ 0.00164 g

**Question Number : 89 Question Id : 7614461899 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Extraction of zinc from zinc blende is achieved by

**Options :**

7614467553. ✗ Electrolytic reduction

7614467554. ✓ Roasting followed by reduction with carbon

7614467555. ✗ Roasting followed by reduction with another metal

7614467556. ✗ Roasting followed by self-reduction

**Question Number : 90 Question Id : 7614461900 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**



**Correct Marks : 1 Wrong Marks : 0**

In blast furnace iron oxide is reduced by

**Options :**

7614467557. ✘ Silica

7614467558. ✔ Carbon monoxide

7614467559. ✘ Carbon

7614467560. ✘ Limestone

**Question Number : 91 Question Id : 7614461901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

During electrochemical corrosion in acidic environment

**Options :**

7614467561. ✘ Oxygen evolution occurs

7614467562. ✔ Hydrogen evolution takes place

7614467563. ✘ Oxygen absorption occurs

7614467564. ✘ Hydrogen absorption takes place

**Question Number : 92 Question Id : 7614461902 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The process of cementation of iron with zinc powder is known as

**Options :**

7614467565. ✓ Sheradising

7614467566. ✗ Galvanizing

7614467567. ✗ Zincing

7614467568. ✗ Tinning

**Question Number : 93 Question Id : 7614461903 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Bakelite is manufactured by the reaction between

**Options :**

7614467569. ✗ Urea and formaldehyde

7614467570. ✗ Phthalic acid and ethylene glycol

7614467571. ✗ Ethylene glycol and formaldehyde

7614467572. ✓ Phenol and formaldehyde

**Question Number : 94 Question Id : 7614461904 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is an elastomer

**Options :**

7614467573. ✘ Polystyrene

7614467574. ✔ Buna-S rubber

7614467575. ✘ Melamine

7614467576. ✘ Dacron

**Question Number : 95 Question Id : 7614461905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A good fuel has

**Options :**

7614467577. ✔ Moderate ignition temperature and high calorific value

7614467578. ✘ High ignition temperature and high calorific value

7614467579. ✘ Low ignition temperature and low calorific value

7614467580. ✘ Low ignition temperature and high calorific value

**Question Number : 96 Question Id : 7614461906 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The best example of splash lubrication is

**Options :**

7614467581. ✘ Wick feed lubricator

7614467582. ✔ Ring lubricator

7614467583. ✘ Grease Gun

7614467584. ✘ Pump lubricator

**Question Number : 97 Question Id : 7614461907 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Saturated calomel electrode standard reduction potential value in Volts is

**Options :**

7614467585. ✘ 0

7614467586. ✘ 0.6990

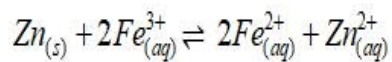
7614467587. ✘ - 0.242

7614467588. ✔ + 0.242

**Question Number : 98 Question Id : 7614461908 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For the following cell reaction,  $E^\circ$  for the cell is



(Standard Reduction potentials of Zn and Fe electrodes are  $-0.76\text{V}$  and  $+0.77\text{V}$  respectively)

**Options :**

7614467589. ✔ 1.53 V

7614467590. ✘ 0.01 V

7614467591. ✘  $-1.53\text{ V}$

7614467592. ✘ 0.78 V

**Question Number : 99 Question Id : 7614461909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The gas that is responsible for Bhopal gas tragedy is

**Options :**

7614467593. ✓ Methyl isocyanate

7614467594. ✗ Methyl chloroformate

7614467595. ✗ Methyl isopropyl ether

7614467596. ✗ Methyl isobutyrate

**Question Number : 100 Question Id : 7614461910 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following gases is largely responsible for acid – rain?

**Options :**

7614467597. ✗ CO and CO<sub>2</sub>

7614467598. ✗ NO and NO<sub>2</sub>

7614467599. ✓ SO<sub>2</sub> and NO<sub>2</sub>

7614467600. ✗ N<sub>2</sub> and O<sub>2</sub>

## **ELECTRONICS AND INSTRUMENTATION ENGINEERING**

**Section Id :** 76144638

**Section Number :** 4

<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	100
<b>Number of Questions to be attempted :</b>	100
<b>Section Marks :</b>	100
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	76144652
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 101 Question Id : 7614461911 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

A voltage source  $V_s(t) = 6 \sin(200\pi t)$  has an internal impedance of  $(2 + j0.1)\Omega$ . What should be the value of load impedance to transfer maximum power

**Options :**

7614467601. ✘  $(2 + j0.1)\Omega$

7614467602. ✔  $(2 - j0.1)\Omega$

7614467603. ✘  $2\Omega$

7614467604. ✘  $0.1\Omega$

**Question Number : 102 Question Id : 7614461912 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What should be the value of internal impedance of an ideal voltage and current source respectively

**Options :**

7614467605. ✓  $0\Omega$  and  $\infty\Omega$

7614467606. ✗  $\infty\Omega$  and  $\infty\Omega$

7614467607. ✗  $0\Omega$  and  $0\Omega$

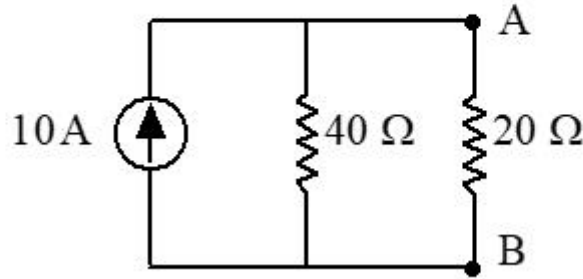
7614467608. ✗  $\infty\Omega$  and  $0\Omega$

**Question Number : 103 Question Id : 7614461913 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**



Find the current through the  $20\ \Omega$  resistor.



Options :

7614467609. ✘ 10 A

7614467610. ✘ 3.33 A

7614467611. ✔ 6.66 A

7614467612. ✘ 4.5 A

Question Number : 104 Question Id : 7614461914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

An RLC series circuit has quality factor ( $Q$ ) = 100 and the resonant frequency  $f_0=100\text{ kHz}$ . Then the bandwidth is

Options :

7614467613. ✔ 1 kHz

7614467614. ✘

100 kHz

7614467615. ✘ 200 kHz

7614467616. ✘ 2 kHz

**Question Number : 105 Question Id : 7614461915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The commutator of DC generator will act as

**Options :**

7614467617. ✘ An amplifier

7614467618. ✔ A rectifier

7614467619. ✘ An attenuator

7614467620. ✘ A load

**Question Number : 106 Question Id : 7614461916 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following motor is used in house hold refrigerator

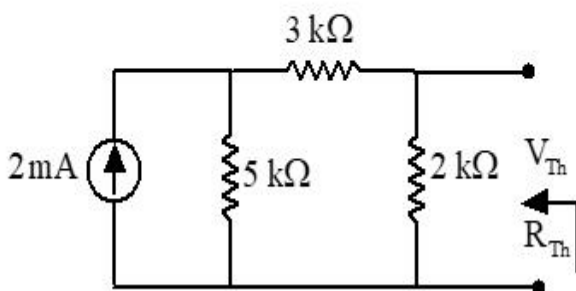
Options :

- 7614467621. ✘ Synchronous motor
- 7614467622. ✘ DC shunt motor
- 7614467623. ✘ 3-phase induction motor
- 7614467624. ✔ 1-phase induction motor

Question Number : 107 Question Id : 7614461917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

For the circuit shown below the Thevinin's equivalent voltage and resistance is



Options :

- 7614467625. ✔  $V_{Th}=2 V, R_{Th}=1.6 k\Omega$
- 7614467626. ✘  $V_{Th}=10 V, R_{Th}=5 k\Omega$

7614467627. ✘  $V_{Th}=2 V, R_{Th}=2.3 k\Omega$

7614467628. ✘  $V_{Th}=4 V, R_{Th}=1.6 k\Omega$

**Question Number : 108 Question Id : 7614461918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Two voltage phasors A and B have  $2 \sin(100\pi t+0^\circ)$ ,  $4 \sin(100\pi t-90^\circ)$ . With reference to phasors A and B which of the following statement is true

**Options :**

7614467629. ✔ Voltage A is leading B by  $90^\circ$

7614467630. ✘ Voltage A is lagging B by  $90^\circ$

7614467631. ✘ Voltage A is leading B by  $180^\circ$

7614467632. ✘ Voltage A is lagging B by  $180^\circ$

**Question Number : 109 Question Id : 7614461919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a Junction diode with forward bias, the width of the depletion layer

**Options :**

7614467633. ✘ Does not change

7614467634. ✘ Increases

7614467635. ✔ Decreases

7614467636. ✘ Becomes zero

**Question Number : 110 Question Id : 7614461920 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

GaAs LEDs emit radiation in the

**Options :**

7614467637. ✘ Ultraviolet region

7614467638. ✘ Violet-blue green range of the visible region

7614467639. ✘ Visible region

7614467640. ✔ Infrared region

**Question Number : 111 Question Id : 7614461921 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The impurity commonly used for realizing the base region of a silicon npn transistor is

**Options :**

7614467641. ✘ Gallium

7614467642. ✘ Indium

7614467643. ✔ Boron

7614467644. ✘ Phosphorus

**Question Number : 112 Question Id : 7614461922 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Early effect in BJT refers to a reduction of the effective base-width caused by

**Options :**

7614467645. ✘ The forward biasing of base-collector junction

7614467646. ✘ Electron-hole recombination at the base

7614467647. ✘ The forward biasing of emitter-base junction

7614467648. ✔ The reverse biasing of the base-collector junction

**Question Number : 113 Question Id : 7614461923 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following has the lowest input resistance?

**Options :**

7614467649. ✔ NPN transistor in CB configuration

7614467650. ✘ NPN transistor in CE configuration

7614467651. ✘ N type channel MOSFET

7614467652. ✘ P type channel MOSFET

**Question Number : 114 Question Id : 7614461924 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

N-channel FETs are superior to P-channel FETs because they have

**Options :**

7614467653. ✘ Lower switching time

7614467654. ✘ Lower pinch-off voltage

7614467655. ✔ Mobility of electrons in N-channel is greater than mobility of holes in P-channel

7614467656. ✘ Higher input impedance

**Question Number : 115 Question Id : 7614461925 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The dc output voltage with the same input voltage is larger for

**Options :**

7614467657. ✘ L-section filter

7614467658. ✘ Shunt capacitor filter

7614467659. ✘ Series inductor filter

7614467660. ✔



## II filter

Question Number : 116 Question Id : 7614461926 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 1 Wrong Marks : 0

If  $h_{ie} = 1500 \Omega$  ,  $h_{fe} = 50$ , the input impedance  $h_{ib}$  is

Options :

7614467661. ✘ 30  $\Omega$

7614467662. ✔ 29.41  $\Omega$

7614467663. ✘ 3.33  $\Omega$

7614467664. ✘ 30.61  $\Omega$

Question Number : 117 Question Id : 7614461927 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0  
Correct Marks : 1 Wrong Marks : 0

The effect of cascading the amplifier stages is to

Options :

7614467665. ✘ Increase the voltage gain and increase the bandwidth

7614467666. ✔

Increase the voltage gain and decrease the bandwidth

7614467667. ✘ Decrease the voltage gain and increase the bandwidth

7614467668. ✘ Decrease the voltage gain and decrease the bandwidth

**Question Number : 118 Question Id : 7614461928 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The transformer coupled class-B push-pull power amplifier

**Options :**

7614467669. ✘ Device ratings are higher than those of class-A power amplifier

7614467670. ✘ Collector circuit efficiency is more than that of class-C power amplifier

7614467671. ✔ Eliminates even harmonic distortion

7614467672. ✘ Eliminates odd harmonic distortion

**Question Number : 119 Question Id : 7614461929 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The bipolar junction transistor amplifier in Darlington connection offers

**Options :**

7614467673. ✘ High voltage gain

7614467674. ✔ High current gain

7614467675. ✘ Low voltage gain

7614467676. ✘ Low current gain

**Question Number : 120 Question Id : 7614461930 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the resistances in the positive feedback circuit of wien bridge oscillator are decreased, the frequency

**Options :**

7614467677. ✔ Increases

7614467678. ✘ Decreases

7614467679. ✘ Remains same

7614467680. ✘ fluctuates

**Question Number : 121 Question Id : 7614461931 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

Simplify the following Boolean equation into minimum number of literals

$$f(A, B, C) = \bar{A}BC + A\bar{B}C + ABC\bar{C} + ABC$$

**Options :**

7614467681. ✘  $\bar{A}BC + A\bar{B}C + ABC\bar{C} + ABC$

7614467682. ✘  $\bar{A}BC + A\bar{B}C + ABC\bar{C} + AB$

7614467683. ✘  $BC + A\bar{B}C + AB$

7614467684. ✔  $BC + AC + AB$

**Question Number : 122 Question Id : 7614461932 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

A synchronous counter of mod-12 design is needed, how many minimum number of flip flops required

**Options :**

7614467685. ✓ 4

7614467686. ✗ 3

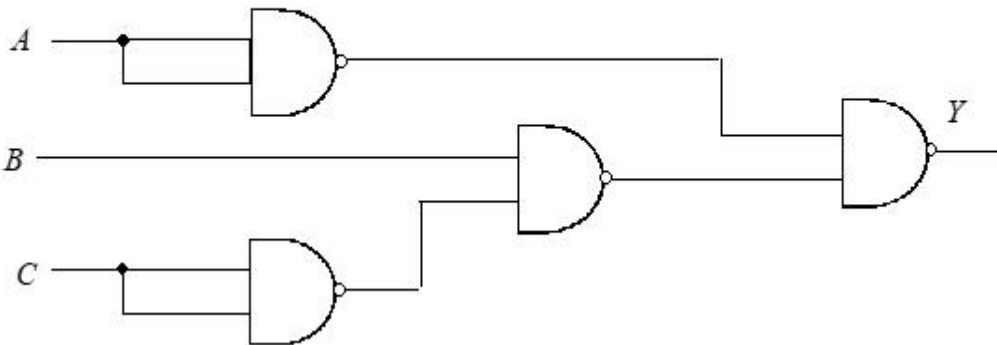
7614467687. ✗ 5

7614467688. ✗ 2

**Question Number : 123 Question Id : 7614461933 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Find the Boolean equation for the following logic diagram.



**Options :**

7614467689. ✓  $A + B\bar{C}$

7614467690. ✗  $A(B + \bar{C})$

7614467691. ✗  $A + \bar{B}\bar{C}$

$AB+BC$

7614467692. ✘

Question Number : 124 Question Id : 7614461934 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following logic family consumes lowest power dissipation

Options :

7614467693. ✘ TTL

7614467694. ✘ ECL

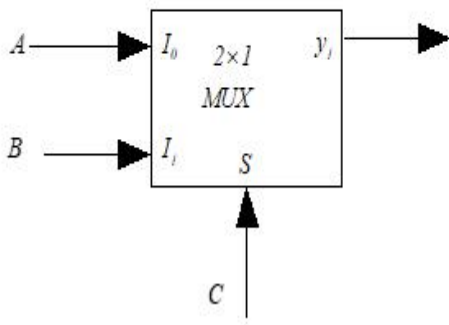
7614467695. ✔ CMOS

7614467696. ✘ RTL

Question Number : 125 Question Id : 7614461935 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Identify the operation performed by the following logic diagram consisting of a of multiplexer.



Options :

7614467697. ✓  $y_1 = A\bar{C} + BC$

7614467698. ✗  $y_1 = AC + B\bar{C}$

7614467699. ✗  $y_1 = \bar{A}\bar{C} + \bar{B}C$

7614467700. ✗  $y_1 = (A \oplus B)C$

Question Number : 126 Question Id : 7614461936 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The 8's complement of  $(5632)_8$

Options :

7614467701. ✗  $(5632)_8$

7614467702. ✘ (2145)<sub>8</sub>

7614467703. ✔ (2146)<sub>8</sub>

7614467704. ✘ (4367)<sub>8</sub>

**Question Number : 127 Question Id : 7614461937 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For a JK flip flop 2 inputs are joined and given logic '1'. The input clock frequency is 1024 kHz, then what will be its output frequency

**Options :**

7614467705. ✘ 1024 kHz

7614467706. ✘ 2048 kHz

7614467707. ✔ 512 kHz

7614467708. ✘ 4096 kHz

**Question Number : 128 Question Id : 7614461938 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**



**Correct Marks : 1 Wrong Marks : 0**

In an  $n$  bit ring counter how many clock cycles required to repeat the same states

**Options :**

7614467709. ✓  $n$  clock cycles

7614467710. ✗  $2n$  clock cycles

7614467711. ✗  $n+1$  clock cycles

7614467712. ✗  $2^n$  clock cycles

**Question Number : 129 Question Id : 7614461939 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For a typical mod-16 counter, the output of the flip flops after counting 24 clock cycles

**Options :**

7614467713. ✗ 0000

7614467714. ✗ 1111

7614467715. ✓ 1000

7614467716.

✘ 0100

**Question Number : 130 Question Id : 7614461940 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In a typical computer it has 26-bit address lines, how much memory the CPU can address

**Options :**

7614467717. ✘ 24 MB

7614467718. ✘ 32 MB

7614467719. ✔ 64 MB

7614467720. ✘ 16 MB

**Question Number : 131 Question Id : 7614461941 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following transducers is an active transducer?

**Options :**

7614467721. ✘ Metallic strain gauge

7614467722. ✓ Piezoelectric pressure transducer

7614467723. ✘ Semiconductor strain gauge

7614467724. ✘ Platinum resistance thermometer

**Question Number : 132 Question Id : 7614461942 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Sensitivity of LVDT is mainly due to

**Options :**

7614467725. ✘ Magnetic shielding of the core

7614467726. ✘ Permeability of the core

7614467727. ✓ Exact cancellation of secondary voltages

7614467728. ✘ Insulation used in the windings

**Question Number : 133 Question Id : 7614461943 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

One of the characteristics of Thermocouple is

**Options :**

- 7614467729. ✘ Modulated output
- 7614467730. ✘ Negative temperature coefficient
- 7614467731. ✘ Resistance changes with pressure
- 7614467732. ✔ Constant temperature at one end

**Question Number : 134 Question Id : 7614461944 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ is used as the medium in Dead weight pressure gauges.

**Options :**

- 7614467733. ✔ Oil
- 7614467734. ✘ Vacuum
- 7614467735. ✘ Air
- 7614467736. ✘ Water

**Question Number : 135 Question Id : 7614461945 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which gauge measures pressures by sensing changes in the thermal conductivity of a gas?

**Options :**

7614467737. ✘ Slack diaphragm gauge

7614467738. ✘ Strain gauge

7614467739. ✘ Pirani gauge

7614467740. ✔ Mcleod gauge

**Question Number : 136 Question Id : 7614461946 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Flowmeter that can inherently measure the mass flow rate is

**Options :**

7614467741. ✘ Magnetic

7614467742. ✔ Thermal

7614467743. ✘ Vortex

7614467744. ✘ Flow nozzle

**Question Number : 137 Question Id : 7614461947 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The viscosity of water as compared to mercury is

**Options :**

7614467745. ✘ Same

7614467746. ✘ Higher

7614467747. ✔ Lower

7614467748. ✘ Depending on the temperature

**Question Number : 138 Question Id : 7614461948 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In Ultrasonic level gauge ,the ultrasonic source is placed at the

**Options :**

7614467749. ✓ Bottom of the vessel containing the liquid

7614467750. ✘ Top of the vessel containing the liquid

7614467751. ✘ Middle of the vessel containing the liquid

7614467752. ✘ Far from the vessel containing the liquid

**Question Number : 139 Question Id : 7614461949 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The circuit used in Resistance Thermometer to measure resistance is

**Options :**

7614467753. ✘ Aurdino

7614467754. ✘ Diode bridge

7614467755. ✓ Wheatstone bridge

7614467756. ✘ Potentiometer

**Question Number : 140 Question Id : 7614461950 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In radiation level detector, the amount of radiation reduces as the liquid level in the tank

**Options :**

7614467757. ✓ Increases

7614467758. ✗ Decreases

7614467759. ✗ Unchanged

7614467760. ✗ Becomes Zero

**Question Number : 141 Question Id : 7614461951 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

An inert gas is filled in the Geiger Muller tube to

**Options :**

7614467761. ✗ Regulate pressure

7614467762. ✗ React with the sample

7614467763. ✗ Facilitate the flow of electric current



Provide chemical stability during repeated ionizations

7614467764. ✓

**Question Number : 142 Question Id : 7614461952 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ sensor is used for tracking the robot arm twisting

**Options :**

7614467765. ✘ Pressure

7614467766. ✓ Gyroscope

7614467767. ✘ Proximity

7614467768. ✘ Temperature

**Question Number : 143 Question Id : 7614461953 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

IOT mostly uses \_\_\_\_\_ accelerometer.

**Options :**

7614467769. ✘ 1-axis

7614467770. ✘ 2-axis

7614467771. ✔ 3-axis

7614467772. ✘ Combination of 1-axis and 2-axis

**Question Number : 144 Question Id : 7614461954 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The output of Thermocouple is

**Options :**

7614467773. ✘ AC voltage

7614467774. ✔ DC voltage

7614467775. ✘ Alternating current

7614467776. ✘ Direct current

**Question Number : 145 Question Id : 7614461955 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Which of the following is used in photo conductive cell?

Options :

761446777. ✘ Quartz

761446778. ✘ Rochelle salt

761446779. ✘ Lithium sulphate

761446780. ✔ Selenium

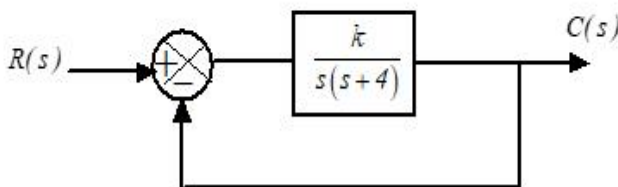
Question Number : 146 Question Id : 7614461956 Question Type : MCQ Option Shuffling : Yes

Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

The closed loop transfer function of the following unity gain feedback system is



Options :

761446781. ✔  $\frac{k}{S^2 + 4S + k}$

7614467782. ✘  $\frac{k}{S(S+4)}$

7614467783. ✘  $\frac{4}{S^2+4S+4}$

7614467784. ✘  $\frac{k}{S^2(S+2)}$

**Question Number : 147 Question Id : 7614461957 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Gain of the open loop system is 100, feedback fraction in 0.1, then find the gain of negative feedback system is

**Options :**

7614467785. ✘ 100

7614467786. ✘ 0.1

7614467787. ✘ 50

7614467788. ✔ 9

**Question Number : 148 Question Id : 7614461958 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Slow response of an over damped system can be improved with the help of following system.

**Options :**

7614467789. ✓ Proportional

7614467790. ✗ Proportional derivative

7614467791. ✗ Proportional integral derivative

7614467792. ✗ Proportional integral

**Question Number : 149 Question Id : 7614461959 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which type of valve has a rotating disc that controls the flow of fluid or gas?

**Options :**

7614467793. ✗ Ball valve

7614467794. ✓ Butterfly valve

7614467795. ✘ Globe valve

7614467796. ✘ Solenoid valve

**Question Number : 150 Question Id : 7614461960 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In general the basic purpose of control valve is to

**Options :**

7614467797. ✔ Regulate the flow of fluid or gas

7614467798. ✘ Filter impurities from the fluid

7614467799. ✘ Measure the flow rate

7614467800. ✘ Create pressure in the system

**Question Number : 151 Question Id : 7614461961 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The device that produces the incremental motion through equal pulses

**Options :**

7614467801. ✘ AC servomotor

7614467802. ✘ DC servomotor

7614467803. ✔ Stepper motor

7614467804. ✘ Series motor

**Question Number : 152 Question Id : 7614461962 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In Bode diagram (log magnitude plot) the factor  $(j\omega)$  in the transfer function gives a line having slope

**Options :**

7614467805. ✔ 20 dB/decade

7614467806. ✘ -20 dB/decade

7614467807. ✘ 40 dB/decade

7614467808. ✘ -40 dB/decade

**Question Number : 153 Question Id : 7614461963 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The gain margin for a stable system has a

**Options :**

7614467809. ✓ Positive decibel value

7614467810. ✗ Negative decibel value

7614467811. ✗ Zero value

7614467812. ✗ Very large value

**Question Number : 154 Question Id : 7614461964 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

In general a lead compensator is a

**Options :**

7614467813. ✓ High pass filter

7614467814. ✗ Low pass filter

7614467815. ✗ Band pass filter



7614467816. ✘ Band reject filter

**Question Number : 155 Question Id : 7614461965 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

An integral control is used to

**Options :**

7614467817. ✘ To improve transient response

7614467818. ✘ Reduce the offset

7614467819. ✔ Eliminate the offset

7614467820. ✘ Reduce the settling time

**Question Number : 156 Question Id : 7614461966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The signal to noise ratio of integrator is \_\_\_\_\_ that of differentiator.

**Options :**

7614467821. ✘ Lower than

7614467822. ✓ Higher than

7614467823. ✗ Same

7614467824. ✗ Not comparable

**Question Number : 157 Question Id : 7614461967 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

What causes phase shift through an op-amp?

**Options :**

7614467825. ✗ External RC circuits

7614467826. ✗ Internal RC circuits

7614467827. ✓ Gain roll off of the internal transistor

7614467828. ✗ Negative feedback

**Question Number : 158 Question Id : 7614461968 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A three op-amp instrumentation amplifier is preferred over a single op-amp differential amplifier because

**Options :**

- 7614467829. ✓ Elimination of the need for accurate matching of resistors
- 7614467830. ✗ Lower values of CMRR
- 7614467831. ✗ Lower noise
- 7614467832. ✗ Simple gain adjustment

**Question Number : 159 Question Id : 7614461969 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The slew rate of an op-amp is  $9V/\mu s$  when closed loop gain is unity. If the maximum amplitude of input sinusoid is 10V, then the minimum frequency at which the slew rate limited distortion would set in at the output is

**Options :**

- 7614467833. ✗ 14.3 KHz
- 7614467834. ✓ 143 KHz
- 7614467835. ✗ 1.43 KHz

7614467836. ✘ 0.143 KHz

**Question Number : 160 Question Id : 7614461970 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A dual slope ADC uses an N-bit counter. When the input signal  $V_i$  is being integrated, the counter is allowed to count up to a value

**Options :**

7614467837. ✘ Equal to  $2^N-1$

7614467838. ✘ Equal to  $2^N-2$

7614467839. ✔ Inversely proportional to  $V_i$

7614467840. ✘ Proportional to  $V_i$

**Question Number : 161 Question Id : 7614461971 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The resolution of a 10-bit analog-to-digital converter in percent is

**Options :**

7614467841. ✔ 0.0976

7614467842. ✘ 0.0488

7614467843. ✘ 0.0244

7614467844. ✘ 0.0122

**Question Number : 162 Question Id : 7614461972 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A D/A converter with a full scale output voltage of 5V has a resolution of close to 10 mV. Its bit size is

**Options :**

7614467845. ✘ 11

7614467846. ✔ 9

7614467847. ✘ 7

7614467848. ✘ 5

**Question Number : 163 Question Id : 7614461973 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ requires trigger for reverse transition.

**Options :**

7614467849. ✘ Astable Multivibrator

7614467850. ✘ Monostable Multivibrator

7614467851. ✔ Bistable Multivibrator

7614467852. ✘ Pulse Generator

**Question Number : 164 Question Id : 7614461974 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The voltage regulation of the ideal voltage regulator should be

**Options :**

7614467853. ✘ Unity

7614467854. ✔ Zero

7614467855. ✘ 10

7614467856. ✘ 100

**Question Number : 165 Question Id : 7614461975 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The lock range of a certain PLL is specified to be  $\pm 25\%$  of the centre frequency. The minimum frequency for which the PLL will maintain lock if  $f_0 = 50$  kHz is

**Options :**

7614467857. ✓ 37.5 kHz

7614467858. ✗ 49.75 kHz

7614467859. ✗ 50.25 kHz

7614467860. ✗ 62.5 kHz

**Question Number : 166 Question Id : 7614461976 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The function of address latch enable signal in 8051 microcontroller is to

**Options :**

7614467861. ✗ Initiate data transfer to memory

7614467862. ✗ Initiate data transfer to I/O device

7614467863. ✓ Control de-multiplexing of address and data bus

7614467864. ✘ Control serial and parallel data transmission

**Question Number : 167 Question Id : 7614461977 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Intel 8051 is a

**Options :**

7614467865. ✘ 16 bit microcontroller

7614467866. ✘ 32 bit microcontroller

7614467867. ✘ 4 bit microcontroller

7614467868. ✓ 8 bit microcontroller

**Question Number : 168 Question Id : 7614461978 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**



Which of the following represents the interfacing device for serial communication

**Options :**

7614467869. ✘ 8255

7614467870. ✔ 8251

7614467871. ✘ 8257

7614467872. ✘ 8259

**Question Number : 169 Question Id : 7614461979 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The register which holds the address of the next instruction to be fetched in 8051 microcontroller is

**Options :**

7614467873. ✘ Stack pointer

7614467874. ✔ Program counter

Accumulator

7614467875. ✘

7614467876. ✘ Data pointer

**Question Number : 170 Question Id : 7614461980 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

For the following 8051 microcontroller program how many times the instruction INC R0 will be executed.

MOV R0, #23 H

MOV R2, #10 H

BACK: INC R0

DJNZ R2, BACK

DEC R0

**Options :**

7614467877. ✘ 10 times

7614467878. ✘ Infinity times

7614467879. ✔ 16 times

7614467880. ✘ 12 times

**Question Number : 171 Question Id : 7614461981 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**

**: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In which scenario, the DMA data transfer is necessary for interfacing?

**Options :**

7614467881. ✘ The I/O device data transfer rate is slower than CPU

7614467882. ✔ The I/O device data transfer rate is higher than CPU

7614467883. ✘ In DMA data transfer is handled by CPU only

7614467884. ✘ In DMA data transfer is slower data transfer mechanism

**Question Number : 172 Question Id : 7614461982 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time**

**: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In general what type of programming language will be used in programmable logic controller is

**Options :**

7614467885. ✘ Python

7614467886. ✘ Java

7614467887. ✘ C++

### Ladder

7614467888. ✓

**Question Number : 173 Question Id : 7614461983 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The second generation of SCADA systems were developed in the year

#### Options :

7614467889. ✗ 1950

7614467890. ✗ 1970

7614467891. ✗ 1960

7614467892. ✓ 1980

**Question Number : 174 Question Id : 7614461984 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

SCADA displays data to the human operators through

#### Options :

7614467893. ✗ PLC

7614467894. ✗ RTU

7614467895. ✘ Actuators

7614467896. ✔ HMI

**Question Number : 175 Question Id : 7614461985 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

According to Nyquist sampling theorem what should be the minimum value of sampling frequency is

**Options :**

7614467897. ✔ Twice the highest frequency component present in it

7614467898. ✘ Equal to highest frequency component present in it

7614467899. ✘ Thrice the highest frequency component present in it

7614467900. ✘ 1.5 times the highest frequency component present in it

**Question Number : 176 Question Id : 7614461986 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following module of data acquisition system (DAQ) controls the complete data acquisition system?

**Options :**

7614467901. ✘ Input module

7614467902. ✘ Output module

Control module

7614467903. ✔

7614467904. ✘ Sampling module

**Question Number : 177 Question Id : 7614461987 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In CNC, the function of driving system is

**Options :**

7614467905. ✘ Speed and position control

7614467906. ✔ Amplifier circuits and motors

7614467907. ✘ Auxiliary function control

7614467908. ✘ Position of tool

**Question Number : 178 Question Id : 7614461988 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A device which is a general purpose, programmable machine processing with human like characteristics

**Options :**

7614467909. ✘ Aeronautics

7614467910. ✔ Robot

7614467911. ✘ Mechatronics

7614467912. ✘ Manipulator

**Question Number : 179 Question Id : 7614461989 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following can be used to measure only alternating current?

**Options :**

7614467913. ✘ PMMC

7614467914. ✘ Hot wire

7614467915. ✘ Electrostatic

7614467916. ✔ Induction

**Question Number : 180 Question Id : 7614461990 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

When heavy currents are to be measured,

**Options :**

7614467917. ✔ Major part of the current is bypassed through low resistance

7614467918. ✘ Major part of the current is bypassed through high resistance

7614467919. ✘ Minor part of the current is bypassed through low resistance

7614467920. ✘ Minor part of the current is bypassed through high resistance

**Question Number : 181 Question Id : 7614461991 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The principle behind moving iron instruments is

**Options :**



7614467921. ✓ Magnetic Induction

7614467922. ✗ Electro magnetic

7614467923. ✗ Piezo electric

7614467924. ✗ Electrostatic

**Question Number : 182 Question Id : 7614461992 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

A rectifier type AC voltmeter consists of a

**Options :**

7614467925. ✗ Shunt resistance, an ideal full-wave bridge rectifier, PMMC instrument

7614467926. ✗ Shunt resistance, an ideal half-wave rectifier and a PMMC instrument

7614467927. ✓ Series resistance, ideal full-wave bridge rectifier, PMMC instrument

Series resistance, an ideal half-wave rectifier and a PMMC instrument

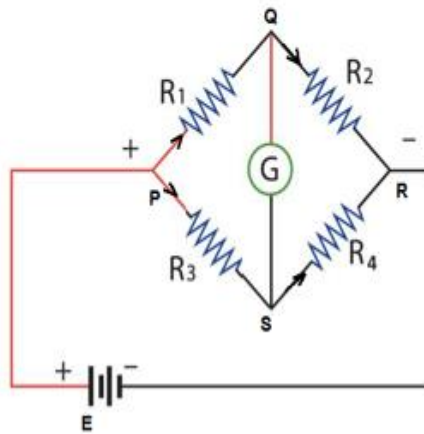
7614467928. ✗

**Question Number : 183 Question Id : 7614461993 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

If the ratio of  $R_1$  to  $R_2$  is equal to the ratio of  $R_3$  to  $R_4$  in a Wheatstone bridge as shown below, the bridge will be \_\_\_\_\_.



**Options :**

7614467929. ✘ Unbalanced

7614467930. ✘ No effect on balance

7614467931. ✔ Balanced

7614467932. ✘ Doesn't work

**Question Number : 184 Question Id : 7614461994 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following minimizes loading on the circuit being measured?

**Options :**

7614467933. ✘ Differential voltmeter

7614467934. ✘ Electrostatic voltmeter

7614467935. ✘ Moving Iron voltmeter

7614467936. ✔ FET voltmeter

**Question Number : 185 Question Id : 7614461995 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which one of the following is not an application of CRO?

**Options :**

7614467937. ✘ Analyzing frequency components in signals

7614467938. ✘ Measuring voltage waveforms

7614467939. ✔ Determining the resistance of a circuit component

7614467940. ✘ Measuring frequency of the signals

**Question Number : 186 Question Id : 7614461996 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following cannot be directly measured by digital multimeter?

**Options :**

7614467941. ✘ Current

7614467942. ✘ Voltage

7614467943. ✘ Resistance

7614467944. ✔ Frequency

**Question Number : 187 Question Id : 7614461997 Question Type : MCQ Option Shuffling : Yes  
Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time  
: N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Digital LCR meters are preferred over analog LCR meters because of

**Options :**

7614467945. ✘ High accuracy

7614467946. ✘ Lower cost

7614467947. ✘ Simplicity of operation

7614467948. ✔ Better resolution

**Question Number : 188 Question Id : 7614461998 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

Q-Meter is used to

**Options :**

7614467949. ✘ Measure distortion factor of a signal

7614467950. ✘ Test digital integrated circuits

7614467951. ✘ Generate radio frequency signals

7614467952. ✔ Measure the quality factor (Q) of a tuned circuit

**Question Number : 189 Question Id : 7614461999 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 1 Wrong Marks : 0**

The ratio of reactance to resistance indicates

**Options :**

7614467953. ✘ RMS value

7614467954. ✔ Quality factor

7614467955. ✘ Average value

7614467956. ✘ Power P

**Question Number : 190 Question Id : 7614462000 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Unwanted alteration or deformation of the original waveform is measured by

**Options :**

7614467957. ✘ AF Oscillator

7614467958. ✘ Function generator

7614467959. ✘ Q-Meter

7614467960. ✔ Distortion Factor Meter

**Question Number : 191 Question Id : 7614462001 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

An optical fiber is characterized by

**Options :**

7614467961. ✓ Total internal reflection

7614467962. ✘ A core material of a refractive index lower than that of cladding

7614467963. ✘ Scattering loss

7614467964. ✘ Diffraction

**Question Number : 192 Question Id : 7614462002 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

X-rays are absorbed more by

**Options :**

7614467965. ✘ Air or gas

7614467966. ✘ Soft tissue

7614467967. ✓ Bones

7614467968. ✘ Blood

**Question Number : 193 Question Id : 7614462003 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In Beer Lambert's Law, if the path length is doubled with the same concentration then the output

**Options :**

7614467969. ✘ Becomes Zero

7614467970. ✘ Remains Same

7614467971. ✔ Becomes Double

7614467972. ✘ Becomes Half

**Question Number : 194 Question Id : 7614462004 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The variation of the electrical potential associated with the passage of a pulse along the membrane of a muscle cell or a nerve cell is called

**Options :**



7614467973. ✘ Muscle potential

7614467974. ✔ Action potential

7614467975. ✘ Resting potential

7614467976. ✘ Half-cell potential

**Question Number : 195 Question Id : 7614462005 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The following filtering operation is required to eliminate the power line interference from ECG signals

**Options :**

7614467977. ✘ Low pass filter

7614467978. ✘ High pass filter

7614467979. ✘ Band pass filter

7614467980. ✔ Notch filter

**Question Number : 196 Question Id : 7614462006 Question Type : MCQ Option Shuffling : Yes**

**Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

In general the frequency range of typical EEG signals are

**Options :**

7614467981. ✓ 0.5 to 50 Hz

7614467982. ✗ 1 to 200 Hz

7614467983. ✗ 0.05 to 5 Hz

7614467984. ✗ 50 to 500 Hz

**Question Number : 197 Question Id : 7614462007 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following analytical methods can be used to distinguish flavor compounds?

**Options :**

7614467985. ✗ Hydrometry

7614467986. ✗ Near infrared spectroscopy

7614467987. ✗ Polarimetry

7614467988. ✓ Gas Chromatography

**Question Number : 198 Question Id : 7614462008 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The primary function of pacemaker in heart is to

**Options :**

7614467989. ✗ Pump blood throughout the body

7614467990. ✓ Regulate the heart rate

7614467991. ✗ Prevent blood clots

7614467992. ✗ Normalize the blood pressure

**Question Number : 199 Question Id : 7614462009 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

Which of the following is the main principle of the dialysis?

**Options :**

7614467993. ✗ Capillary action

7614467994. ✓ Diffusion

7614467995. ✘ Adhesion

7614467996. ✘ Renal cavity

**Question Number : 200 Question Id : 7614462010 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1 Wrong Marks : 0**

The penetrating power of X-ray can be increased by

**Options :**

7614467997. ✘ Increasing the current in the filament

7614467998. ✘ Decreasing the potential difference between cathode and anode

7614467999. ✘ Decreasing the current in the filament

7614468000. ✓ Increasing the potential difference between cathode and anode