Question 1

Not yet answered

Marked out of 2.00

Test the convergence of the series

$$\sum \frac{n^3+a}{2^n+a}$$

Select one:

- a. Convergent
- b. Divergent
- c. Both
- d. None

Question 2

Not yet answered

Marked out of 1.00

The series $\sum \frac{n^2}{n!}$ is

Select one:

- convergent
- divergent
- oscillatory
- none of these

Question 3

Not yet answered

Marked out of 1.00

Test for convergence $\int_0^\infty \frac{dx}{x^3}$

Select one:

- a. Integral diverges
- b. Integral converges
- c. Both
- d. None

Question 4

Not yet answered

Marked out of 1.00

Find the value of k so that the equations x+ y + 3z = 0, 4x + 2y + kz = 0, and 2x + y +2z = 0 have a non-trivial solution?

Select one:

- 8
- -8
- 0
- None of these

Question 5

Not yet answered

Marked out of 1.00

For what value of k, the equations

$x+y+z=1$,

$2x+2y+2z=k$,

$4x+y+10z=k^2$

have a sloution?

Select one:

- k=1 or k=2
- k=-1 or k=-2
- k other than 1 and 2
- None of these

Question 6

Not yet answered

Marked out of 1.00

What is 'a', if

$B=\begin{bmatrix}1 & 4\\ 2 & a\end{bmatrix}$ is a singular matrix?

Select one:

- 7
- 8
- 6
- 5

Question 7

Not yet answered

Marked out of 1.00

Evaluate $\int_0^\infty \sqrt[4]{x}\, e^{-\sqrt{x}} dx$

Select one:

- $\frac{3}{2}\sqrt{\Pi}$
- $\frac{2}{3}\sqrt{\Pi}$
- $\frac{1}{2}\sqrt{\Pi}$
- $\frac{3}{2}\Pi$

Question 8

Not yet answered

Marked out of 1.00

Consider the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$. The sum of its eigen values is _____.

Select one:

- 4
- 12
- 8
- 6

Question 9

Not yet answered

Marked out of 1.00

Test for the convergence $\int_0^\infty e^{-x}\,dx$

Select one:

- a. Integral converges
- b. Integral diverges
- c. Both
- d. None

Question 10

Not yet answered

Marked out of 2.00

If f(x)=x^3+8x^2+15x-24 , then the value of $f\left(\frac{11}{10}\right)$ using Taylor theorem is

Select one:

- a. 2.511
- b. 4.511
- c. 1.511
- d. 3.511

Question **11**

Not yet answered

Marked out of 1.00

The Eigen values of the following matrix

$$\begin{vmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{vmatrix}$$

are

Select one:

- 2,3,-6
- 2,3,6
- -2,-3,-6
- -2,3,6

Question 12

Not yet answered

Marked out of 1.00

The given matrix $B=\begin{bmatrix} \cos\theta & \sin\theta & 0 \\ -\sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$ is orthogonal.

Select one:

- True
- False

Question 13

Not yet answered

Marked out of 2.00

Find the eigen vector of the matrix $A=\begin{bmatrix}-2 & 2 & -3\\ 2 & 1 & -6\\ -1 & -2 & 0\end{bmatrix}$ corresponding to the eigen value 5.

Select one:

- $\begin{bmatrix}1\\0\\1\end{bmatrix}$
- $\begin{bmatrix}-1\\-2\\1\end{bmatrix}$
- $\begin{bmatrix}1\\2\\-1\end{bmatrix}$
- $\begin{bmatrix}-1\\-2\\0\end{bmatrix}$

Question **14**

Not yet answered

Marked out of 1.00

Evaluate $\lim_{x\to\infty} \frac{(3x-1)(4x-2)}{(x+8)(x-1)}$

Select one:

- a. 12
- b. 21
- c. 0
- d. ∞

Question 15

Not yet answered

Marked out of 2.00

Expand $\tan^{-1}x$ in powers of (x-1).

Select one:

a. $\frac{1}{2}\left[\frac{\pi}{2}-\frac{(x-1)}{1!}-\frac{(x-1)^2}{2!}-\frac{(x-1)^3}{3!}-\ldots\ldots\ldots\right]$

b. $\frac{1}{2}\left[\frac{\pi}{2}+\frac{(x-1)}{1!}-\frac{(x-1)^2}{2!}+\frac{(x-1)^3}{3!}-\ldots\ldots\ldots\right]$

c. $\frac{1}{2}\left[\frac{\pi}{2}+\frac{(x-1)}{1!}+\frac{(x-1)^2}{2!}+\frac{(x-1)^3}{3!}+\ldots\ldots\ldots\right]$

d. $\frac{1}{2}\left[\frac{\pi}{2}-\frac{(x-1)}{1!}+\frac{(x-1)^2}{2!}-\frac{(x-1)^3}{3!}+\ldots\ldots\ldots\right]$

Question 16

Not yet answered

Marked out of 1.00

$\lim_{x\to\infty} \frac{x-\sin x}{x+\cos x}$ equals

Select one:

- 1
- -1
- Infinity
- None of these

Question 17

Not yet answered

Marked out of 1.00

Evaluate $\lim_{x \to 0} \frac{\sqrt{2+x}-\sqrt{2}}{x}$

Select one:

- a. 0
- b. $\frac{1}{\sqrt{2}}$
- c. $\frac{1}{2\sqrt{2}}$
- d. $\frac{1}{2}$

Question 18

Not yet answered

Marked out of 1.00

If $\sum u_n$ is convergent series of positive terms then $\lim_{n\to\infty} u_n$ is

Select one:

- ∞
- 1
- 0
- ±1

Question **19**

Not yet answered

Marked out of 1.00

Evaluate $\int_0^1 x^4(1-\sqrt{x})^5 dx$

Select one:

- a. $\frac{1}{15}$
- b. $\frac{1}{15015}$
- c. $\frac{1}{15005}$
- d. $\frac{1}{51015}$

Question 20

Not yet answered

Marked out of 1.00

$$\lim_{x\to 0}\left(\frac{x\cos x-\log(1+x)}{x^2}\right)=$$

Select one:

- -1/2
- -1/4
- 1/4
- 1/2