

NED
UNIVERSITY
ENTRY TEST
PRACTICE
QUESTIONS

FROM THE DESK OF: FAIZAN AHMED

SUBJECT SPECIALIST

SKYPE NAME: ncrfaizan

TEST#01

1. $\lim_{x \rightarrow \infty} \frac{x^3 + x^2 + x + 1}{x^2 + 1}$

- (A) 1
 (B) 2
 (C) 0
 (D) ∞

Ans. D

2. $\left(1 - \frac{x^2}{2}\right)^{12}$, then 6th term is:

- (A) $-\frac{99}{4}x^{10}$
 (B) $\frac{99}{4}x^{10}$
 (C) $\frac{1}{32}x^{10}$
 (D) $-\frac{1}{32}x^{10}$

Ans. A

3. $4x^2 + 25y^2 = 100$,
then equation of directrix is:

- (A) $\sqrt{21}x = \pm 25$
 (B) $\sqrt{21}y = \pm 23$
 (C) $\sqrt{21}y = \pm 27$
 (D) None

Ans. A

4. Angle between the two vectors
 $A = 4i + 2j + 4k, B = 3i + 6j - 2k$ is:

- (A) $\cos^{-1}\left(\frac{5}{4}\right)$
 (B) $\cos^{-1}\left(\frac{7}{21}\right)$
 (C) $\cos^{-1}\left(\frac{8}{21}\right)$
 (D) $\cos^{-1}\left(\frac{11}{21}\right)$

Ans. C

5. If two dice are rolled once, the probability of getting same faces:

- (A) $\frac{1}{36}$

(B) $\frac{2}{36}$

(C) $\frac{1}{6}$

(D) $\frac{3}{4}$

Ans. C

6. $\tan\frac{A}{2} + \cot\frac{A}{2} = :$

- (A) $2\cos A$
 (B) $2\operatorname{cosec} A$
 (C) $2\sec A$
 (D) $2\sin A$

Ans. B

7. $\int e^{1+x^2} x dx$

- (A) $\frac{e^{1+x^2}}{2} + C$
 (B) $e^{1+x^2} + C$
 (C) $xe^{1+x^2} + C$
 (D) None

Ans. A

8. The equation whose roots are reciprocal the roots of $x^2 + 2x + 3 = 0$

- (A) $4x^2 + 2x + 3 = 0$
 (B) $-x^2 + 2x + 3 = 0$
 (C) $2x^2 + 2x + 3 = 0$
 (D) $3x^2 + 2x + 1 = 0$

Ans. D

9. The measure of the acute angle from the line through $(-3,1)$ & $(4,3)$ to the line through $(1,-2)$ & $(6,7)$:

- (A) $\frac{\pi}{3}$
 (B) $\frac{\pi}{6}$
 (C) $\frac{\pi}{3}$
 (D) $\frac{\pi}{4}$

Ans. D

10. $\omega^{99} = :$

- (A) ω^2

From the desk of: *Faizan Ahmed*

- (B) ω
 (C) ω^4
 (D) 1
 Ans. D

11. $\frac{1-\cos 4x}{2} =$:

- (A) $\cos^2 2x$
 (B) $\cos^2 4x$
 (C) $\sin^2 2x$
 (D) $\cos^2 8x$

Ans. C

12. $\int_0^{\frac{\pi}{2}} \cos^4 x \, dx$

- (A) $\frac{\pi}{4}$
 (B) $\frac{3\pi}{16}$
 (C) $\frac{2}{3}$
 (D) $\frac{\pi}{3}$

Ans. B

13. $\int_0^2 e^{x^2} 2x \, dx$

- (A) $e(e^3 - 1)$
 (B) $e^3 - 1$
 (C) $e^4 - 1$
 (D) $e^2 - 1$

Ans. C

14. $y = x^2$ is an example of _____ function.

- (A) implicit
 (B) explicit
 (C) straight line
 (D) constant

Ans. B

15. If the equation of circle

$x^2 + y^2 - 2x - 2y - \frac{3}{2} = 0$, then its centre and radius:

- (A) $(-1, -1); \sqrt{\frac{7}{2}}$

- (B) $(1, 1); \sqrt{\frac{7}{2}}$

- (C) $(-1, 1); \sqrt{\frac{7}{2}}$

- (D) $(1, -1); \sqrt{\frac{7}{2}}$

Ans. B

16. $\int e^{2\ln \sin x} \, dx$

- (A) $e^{2\ln \sin x} + C$

- (B) $2\cot x + C$

- (C) $\frac{x}{2} - \frac{\sin x}{2} + C$

- (D) $\frac{x}{2} - \frac{\sin 2x}{4} + C$

Ans. D

17. $f(x) = \frac{x-2}{x+2}$ then $f^{-1}(2) = ?$

- (A) -6

- (B) 2

- (C) 3

- (D) 4

Ans. A

18. The angle between the vector i and j is:

- (A) $\frac{\pi}{3}$

- (B) $\frac{\pi}{6}$

- (C) $\frac{\pi}{2}$

- (D) $\frac{\pi}{4}$

Ans. C

19. $\frac{d}{dx} (\sin^{-1} x)^3$

- (A) $3(\sin^{-1} x)^2$

- (B) $\frac{3(\sin^{-1} x)^2}{\sqrt{1-x^2}}$

- (C) $\frac{3(\sin^{-1} x)^2}{x}$

- (D) $\frac{3(\sin^{-1} x)^2}{x^2}$

Ans. B

20. The area of $y = \frac{1}{\sqrt{2x-1}}$ between the lines $x = 1$ and $x = 5$ is:

- (A) 2
- (B) 4
- (C) 6
- (D) 8

- (A) 9
 - (B) 7
 - (C) 5
 - (D) 3
- Ans. A

21. If $\begin{bmatrix} k & 2 & k \\ -1 & 0 & 1 \\ 5 & 4 & 3 \end{bmatrix}$ is a non-singular matrix then:

- (A) $k = 2$
- (B) $k \neq 2$
- (C) both A and B
- (D) None

Ans. B

22. If $a=15.3$ cm, $b=20.9$ cm and $c=34.7$ then $\alpha =$:

- (A) 4.09^0
- (B) 34.09^0
- (C) 24.09^0
- (D) 14.09^0

Ans. D

23. The eccentricity of the ellipse $16x^2 + 25y^2 = 400$ is:

- (A) $\frac{3}{5}$
- (B) $\frac{3}{7}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{4}$

Ans. A

24. Gradient of the curve $y = (x - 3)(x^2 + 2)$ at $x = 1$ is:

- (A) -2
- (B) -1
- (C) -4
- (D) -6

Ans. B

25. In the binomial expansion $\left(1 + \frac{1}{4}\right)^n$, its 2nd and 3rd terms are equal. Then value of n is:

TEST#02

1. $\int_0^1 \frac{1}{x^2+4} dx =:$

- (A) $\frac{1}{2} \tan^{-1} \left(\frac{1}{2} \right)$
 (B) $\frac{1}{2} \operatorname{arc tan} \left(\frac{\pi}{2} \right)$
 (C) $-\frac{1}{2} \cot^{-1}(2x)$
 (D) $\frac{1}{2} \ln(x^2 + 4)$

Ans. A

2. $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$

- (A) $\sin \sqrt{x}$
 (B) $2 \sin \sqrt{x} + C$
 (C) $\frac{1}{\sin \sqrt{x}} + C$
 (D) $\frac{2}{\sin \sqrt{x}} + C$

Ans. B

3. $\int \frac{1}{x^2(x^4+1)^{\frac{3}{4}}} dx$

- (A) $-(1+x^{-4})^{\frac{1}{4}} + C$
 (B) $\frac{1}{x^3(x^4+1)^{\frac{3}{4}}} + C$
 (C) $\frac{1}{x^3(x^4+1)^{-\frac{1}{4}}} + C$
 (D) None

Ans. A

4. The sum of third and ninth term of an A.P is 8. Find the sum of the first 11 terms of the progression.

- (A) 45
 (B) 46
 (C) 43
 (D) 44

Ans. D

5. How many 2-digit positive integers are divisible by 4?

- (A) 32
 (B) 22
 (C) 30
 (D) 34

Ans. B

6. If $A = \begin{bmatrix} 1 & 2 & 4 \\ 8 & 16 & 32 \\ 64 & 128 & 256 \end{bmatrix}$, then rank of A is:

- (A) 1
 (B) 2
 (C) 3
 (D) zero

Ans. A

7. The domain of binary relation $y^2 = -4x$ is:

- (A) R
 (B) Z
 (C) R^+
 (D) Negative real numbers including zero

Ans. D

8. $\lim_{n \rightarrow \infty} \left(1 - \frac{5}{n}\right)^n =$

- (A) e^5
 (B) e^{-5}
 (C) e
 (D) none of these

Ans. B

9. The derivative of x^x w.r.t x is:

- (A) $x^{x-1}(x+1)$
 (B) $x(x^x+1)$
 (C) $x^x(1+\ln x)$
 (D) does not exist

Ans. C

10. Extreme value of $\frac{\ln x}{x}$ is _____.

- (A) $\frac{1}{e}$
 (B) does not exist
 (C) 1
 (D) e

Ans. A

From the desk of: *Faizan Ahmed*

11. Find the eccentricity of the ellipse

$$16x^2 - 64x + 9y^2 - 54y + 1 = 0$$

- (A) $\frac{\sqrt{7}}{4}$
 (B) $\frac{\sqrt{7}}{3}$
 (C) $\frac{\sqrt{7}}{2}$
 (D) None

Ans. A

12. The number of terms in the expansion of

$$(1 + x + x^2)^6$$

- (A) 7
 (B) 18
 (C) 19
 (D) 28

Ans. D

13. The sum of first n terms of the series

$$\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$$
 is equal to:

- (A) $2^n - n - 1$
 (B) $1 - 2^n$
 (C) $2^{-n} + n - 1$
 (D) $2^n - 1$

Ans. C

14. $x, y, z > 1$ are in G.P., then

$$\frac{1}{1+\ln x}, \frac{1}{1+\ln y}, \frac{1}{1+\ln z}$$
 are in:

- (A) A.P
 (B) G.P
 (C) H.P
 (D) None

Ans. C

15. The first term of an Arithmetic Progression is

22 and the last term is -11. If the sum is 66, the number of terms in the sequence are:

- (A) 10
 (B) 12
 (C) 9

(D) 8

Ans. B

$$16. 11^2 + 12^2 + 13^2 + \dots + 20^2$$

- (A) 2485
 (B) 2486
 (C) 2487
 (D) 1324

Ans. A

17. Set of non-zero real number is a group w.r.t.:

- (A) +
 (B) -
 (C) \times
 (D) \div

Ans. C

$$18. \int \cos 3x \cos x dx$$

- (A) $\left[\frac{1}{4} \sin 4x + \frac{1}{2} \sin 2x \right]$
 (B) $\frac{1}{2} \left[\frac{1}{4} \sin 4x + \frac{1}{2} \sin 2x \right] + C$
 (C) $\frac{1}{3} \left[\frac{1}{4} \sin 4x + \frac{1}{2} \sin 2x \right]$
 (D) None

Ans. B

19. Two cards are drawn simultaneously. The probability of getting a king and a queen is:

- (A) $\frac{8}{665}$
 (B) $\frac{7}{665}$
 (C) $\frac{8}{663}$
 (D) None

Ans. C

20. All the sequences are the function whose domain is the set of:

- (A) irrational number
 (B) Imaginary number
 (C) Natural number
 (D) Whole number

From the desk of: *Faizan Ahmed*

Ans. C

21. The vectors

$\vec{a} = i + 2j + 3k$ and $\vec{b} = 2i + 4j + 6k$ are:

- (A) Perpendicular
- (B) Parallel
- (C) Not parallel
- (D) None of these

Ans. B

22. In the ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$ the length of minor

axis is

- (A) 3
- (B) 6
- (C) 9
- (D) 4

Ans. B

23. If the radius of the sphere is increases by 0.2% then the volume increases by about _____.

- (A) 0.2%
- (B) 0.6%
- (C) 0.3%
- (D) 0.5%

Ans. B

24. $\tan^{-1} \frac{1}{2} + \tan^{-1} \frac{1}{3} =$

- (A) $\frac{\pi}{2}$
- (B) $\frac{\pi}{3}$
- (C) $\frac{\pi}{4}$
- (D) $\frac{\pi}{6}$

Ans. C

25. $\frac{\sqrt{2x+1}-\sqrt{x}}{\sqrt{2x+1}+\sqrt{x}} = \frac{1}{5}$; then x=?

- (A) 1
- (B) 2
- (C) 3
- (D) 4

Ans. D

TEST#03

1. If $f(x)$ and $g(x)$ are any two functions then:

- (A) $(f + g)(x) = f(x) - g(x)$
 (B) $(f - g)(x) = f(x) - g(x)$
 (C) $(f \cdot g)(x) = f(x)g(x)$
 (D) both B and C

Ans. D

2. $(x + \frac{1}{x})^{10}$, the term independent of x is:

- (A) T_4
 (B) T_5
 (C) T_6
 (D) T_7

Ans. C

3. $x^2 + y^2 + 4x + 6y + 7 = 0$,
the centre of circle is:

- (A) $(-2, -3)$
 (B) $(-2, -4)$
 (C) $(4, 6)$
 (D) $(-4, -6)$

Ans. A

4. The imaginary part in $(1 + 2i)^4$ is:

- (A) $-24i$
 (B) 25
 (C) -24
 (D) -7

Ans. C

5. If three coins are tossed at a time, the probability of at least one head is:

- (A) $\frac{1}{2}$
 (B) $\frac{15}{16}$
 (C) $\frac{3}{4}$
 (D) $\frac{7}{8}$

Ans. D

6. $\int e^{\tan^{-1} x} \cdot \frac{1}{x^2+1} dx$

- (A) $e^{\sin^{-1} x} + C$
 (B) $e^{\tan^{-1} x} + C$
 (C) $e^{\tan^{-1} x} \cdot \frac{1}{x^2+1} + C$
 (D) none

Ans. B

7. The points $(1, -1)$, $(2, -2)$, $(4, -4)$ are

- (A) collinear
 (B) non collinear
 (C) on three lines
 (D) vertices of a triangle

Ans. A

8. If the two lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ are perpendicular then,

- (A) $a = b$
 (B) $h = ab$
 (C) $a + b = 0$
 (D) $h = a + b$

Ans. C

9. The derivative of $\frac{ax+b}{cx+d}$ w.r.t $\frac{ax+b}{cx+d}$ is:

- (A) $\frac{ax+b}{cx+d}$
 (B) $\frac{ax+b}{cx^2+d^2}$
 (C) 2
 (D) 1

Ans. D

10. If the radius of the sphere is increases by 0.2% then the volume increases by about _____.

- (A) 0.2%
 (B) 0.6%
 (C) 0.8%
 (D) None

Ans. B

11. $\frac{1-\cos 4x}{2} =$:

- (A) $\cos^2 2x$
 (B) $\cos^2 4x$
 (C) $\sin^2 2x$
 (D) $\cos^2 8x$

Ans. C

12. $\int_0^{\frac{\pi}{2}} \cos^4 x \, dx$

- (A) $\frac{\pi}{4}$
 (B) $\frac{3\pi}{16}$
 (C) $\frac{2}{3}$
 (D) $\frac{\pi}{3}$

Ans. B

13. Domain of $\cot x$ is:

- (A) $\{x \mid x \neq n\pi, n \text{ is not integer}\}$
 (B) $\{x \mid x \neq n\pi, n \text{ is integer}\}$
 (C) R
 (D) N

Ans. B

14. The shaded region bounded by the curves $y = x^2$ and $y = x$.

- (A) $\frac{1}{2}$
 (B) $\frac{1}{3}$
 (C) $\frac{1}{4}$
 (D) $\frac{1}{6}$

Ans. D

15. The general term of the sequence is given by:
 1, 8, 27, 64, ...

- (A) n^2
 (B) n^3
 (C) n^4
 (D) n^5

Ans. B

16. A figure of 7 sides will have _____ diagonals.

- (A) 21
 (A) 22
 (A) 23
 (A) 24

Ans. A

17. If $f = \{(1,2)(2,4)(4,5)\}$
 the domain of f^{-1} is:

- (A) $\{1,2,4\}$
 (B) $\{-1,-2,-4\}$
 (C) $\{2,4,6\}$
 (D) $\{2,4,5\}$

Ans. D

18. No. of octagons in 3D are:

- (A) 8
 (B) 4
 (C) 6
 (D) 9

Ans. A

19. $\frac{d}{dx} e^{(\cos 3x)^3}$

- (A) $e^{(\cos 3x)^3}$
 (B) $e^{(\cos 3x)^3} [-9(\cos 3x)^2 \sin 3x]$
 (C) $e^{(\cos 3x)^3} [-9(\cos 3x)^2]$
 (D) $e^{(\cos 3x)^3} [-(\cos 3x)^2 \sin 3x]$

Ans. B

20. Which is odd function:

- (A) $\sin x$
 (B) $\cos x$
 (C) $\tan x$
 (D) both A and C

Ans. D

21. If $\begin{bmatrix} k & 2 & k \\ -1 & 0 & 1 \\ 5 & 4 & 3 \end{bmatrix}$ is a singular matrix then:

- (A) $k = 2$

From the desk of: *Faizan Ahmed*

- (B) A^{-1} is not possible
(C) determinant is zero
(D) all above

Ans. D

22. If $a=3$ cm, $b=4$ cm and $c=5$ then area of triangle is:

- (A) 6
(B) 5
(C) 7
(D) 8

Ans. A

23. For the ellipse is:

- (A) $e > 1$
(B) $e < 1$
(C) $e = 0$
(D) $e = 1$

Ans. B

24. Slope of normal line to the curve

$y = (x^2 + 2)$ at $x = 1$ is:

- (A) 2
(B) $-\frac{1}{2}$
(C) -4
(D) -6

Ans. B

25. Total arrangements that can be made using three letters of the word COURAGE.

- (A) 210
(B) 35
(C) 5
(D) 3

Ans. A

Best of luck to all Students, my good sentiments are with you all.

From the desk of: *Faizan Ahmed*