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NATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY (NUST)

Computer Sciences Sample Admission Test 02

MATHEMATICS

Directions: For each question below you are given four choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER

ALL ANSWER MUST BE GIVEN ON THE ANSWER SHEET.

YOUR ANSWERS MUST BE INDICATED BY LETTERS (A, B, C, D) AND NOT BY THE WORDS THEMSELVES.

1. $\sqrt{35}$ is -----

A) A prime number	B) An integer
C) A whole number	D) An irrational number
2. $\forall a, b, \in R \ a \cdot b = b \cdot a$ is called

A) Closure law of addition	B) Associative law of addition
C) Commutative law of multiplication	D) Associative law of multiplication
3. In R, the multiplicative identity is

A) 0	B) 1
C) -1	D) None

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4. The additive inverse of $\frac{2}{3}$ is

A) $\frac{3}{2}$	B) $-\frac{2}{3}$
C) $-\frac{3}{2}$	D) 0
5. The multiplication inverse of 0 is

A) 1	B) -1
------	-------

- C) 0
6. The value of i^7 is
- A) 1
- C) i
7. If $z = 2 + 3i$ then z^{-1} is
- A) $\frac{1}{2} + \frac{1}{3}i$
- C) $\frac{2}{13} + \frac{3}{13}i$
8. The modulus of 3 is
- A) 0
- C) -3
- D) Does not exist
- B) -1
- D) -i
- B) $2 + \frac{1}{3}i$
- D) $\frac{2}{13} - \frac{3}{13}i$
- B) 9
- D) 3
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9. The multiplicative inverse of $1 - 2i$ is
- A) $\frac{1}{5} + \frac{2}{5}i$
- C) $\frac{1}{5} - \frac{2}{5}i$
- B) $-\frac{1}{5} + \frac{2}{5}i$
- D) $-\frac{1}{5} - \frac{2}{5}i$
10. The set of integers is a subset of
- A) The set of natural numbers
- C) The set of prime numbers
- B) The set of whole numbers
- D) The set of rational numbers
11. $\{1, 2, 3\}$ is -----
- A) An infinite set
- C) A singleton set
- B) A finite set
- D) Universal set
12. The sets $\{1, 2, 4\}$ and $\{4, 6, 8, 10\}$ are
- A) Equal sets
- C) Disjoint sets
- B) Equivalent sets
- D) Overlapping sets
13. Write down the power set of $\{9, 11\}$

- A) $\{\{9\},\{11\}\}$
 B) $\{\Phi,\{9\},\{11\}\}$
 C) $\{\{9\},\{11\},\{9,11\}\}$
 D) $\{\Phi,\{9\},\{11\},\{9,11\}\}$
14. $\Phi' = \text{-----}$
 A) A
 B) Φ
 C) A'
 D) U
15. If p and q are two statements then their biconditional 'p iff q' is denoted by
 A) $P \wedge q$
 B) $P \vee q$
 C) $P \rightarrow q$
 D) $P \leftrightarrow q$
16. The number of subsets of a set having three elements is
 A) 4
 B) 6
 C) 8
 D) None of these
17. If $A = \{1,2,3\}$ and $B = \{a,b\}$ then a function from A to B is
 A) $\{(1, a), (2, b), (3, a)\}$
 B) $\{(1, a), (2, B)\}$
 C) $\{(a, 1), (b, 2)\}$
 D) $\{(1, 1), (2, 2)\}$

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18. A matrix with a single row is called a
 A) Column matrix
 B) Row matrix
 C) Null matrix
 D) Identity matrix
19. A square matrix all of whose elements except the main diagonal are zeros is called a
 A) Null matrix
 B) Singular matrix
 C) Symmetric matrix
 D) Diagonal matrix
20. A square matrix A for which $A^t = A$ is called a
 A) Column matrix
 B) Symmetric matrix
 C) Skew-symmetric matrix
 D) Row matrix
21. Two matrices A and B are conformable for the product AB if
 A) Both A and B are square
 B) Both A and B are symmetric
 C) Number of rows of A = number of columns of B
 D) Number of columns of A = number of rows of B
22. The transpose of a square matrix is a

- A) Row matrix
C) Square matrix
23. If A is any matrix then its additive inverse is
A) A
C) A^t
24. $\begin{bmatrix} 300 \\ 030 \\ 003 \end{bmatrix}$ is a -----
A) Diagonal matrix
C) Triangular matrix
25. If A is singular then $|A| =$ -----
A) 1
C) 0
- B) Column matrix
D) Null matrix
- B) A^{-1}
D) $-A$
- B) Scalar matrix
D) Identity matrix
- B) 2
D) None of these
26. If A and B are non singular matrices then $(AB)^{-1} =$ -----
A) A^{-1}
C) $A^{-1}B^{-1}$
27. The transpose of a column matrix is a -----
A) Zero matrix
C) Column matrix
28. The transpose of a zero matrix is a -----
A) Column matrix
C) Row matrix
29. Roots of the equation $x^2 - 7x + 10 = 0$ are
A) $\{2, -5\}$
C) $\{2, 5\}$
30. $4^{1+x} + 4^{1-x} = 10$ is called -----
A) Reciprocal equation
- B) B^{-1}
D) $B^{-1}A^{-1}$
- B) Diagonal matrix
D) Row matrix
- B) Zero matrix
D) Scalar matrix
- B) $\{-2, 5\}$
D) $\{-2, -5\}$
- B) Exponential equation

C) Radical equation

D) None of these

31. $W^{15} = \text{-----}$

A) 0

B) 1

C) w

D) W^2

32. The quadratic formula is

A) $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$

B) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{a}$

C) $x = \frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$

D) $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

33. The roots of the equation $ax^2 + Bx + c = 0$ are real and equal if

A) $B^2 - 4ac < 0$

B) $B^2 - 4ac = 0$

C) $B^2 - 4ac \geq 0$

D) None of these

34. Roots of the equation $x^2 + 5x - 1 = 0$ are

A) Rational

B) Irrational

C) Complex

D) None of these

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35. The sum of the four fourth roots of unity is

A) 4

B) 3

C) 1

D) 0

36. The polynomial $x - a$ is a factor of the polynomial $f(x)$ if and only if

A) $F(a)$ is positive

B) $F(a)$ is negative

C) $F(a) = 0$

D) None of these

37. If ω is complex cube root of unity then $\omega^2 = \text{-----}$

A) 0

B) 1

C) ω^3

D) ω^{-1}

38. If α, β are roots of $2x^2 - 4x + 5 = 0$ then $\alpha^2 \beta + \alpha \beta^2 = \text{-----}$

A) 1

B) -1

- C) 5
D) 2
39. $X^3 + 2x^2 - 3x + 5$ is -----
A) A Quadratic equation
B) A polynomial
C) Proper rational fractions
D) Improper rational fraction
40. A fraction in which the degree of the numerator is less than the degree of the denominator is called
A) Polynomial
B) Equation
C) Proper fraction
D) Improper fraction

PHYSICS

Directions: For each question below you are given four choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER

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1. The first frontier in fundamental sciences is
A) World of extremely small bodies
B) World of extremely large bodies
C) World of middle-sized things
D) All of them

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2. The third frontier in fundamental sciences is
A) World of extremely small bodies
B) World of extremely large bodies
C) World of middle-sized things
D) All of them
3. The branch of physics which deals with the atomic nuclei is called
A) Nuclear physics
B) Atomic physics
C) Particle physics
D) Modern physics
4. The branch of physics in which we study the structure and properties of solids is called
A) Nuclear physics
B) Modern physics
C) Particle physics
D) Solid state physics
5. The quantities which cannot be defined in terms of other physical quantities are called
A) Scalar quantities
B) Vector quantities

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9. The cross product between two vectors will be maximum if the two vectors are
 - A) Perpendicular to each other
 - B) Parallel to each other
 - C) Both of them
 - D) None of them
10. The perpendicular distance from the line of action of force to the pivot point is called
 - A) Couple arm
 - B) Angular distance
 - C) Moment arm
 - D) None of them
11. A body is said to be in a state of complete equilibrium if
 - A) Its translational acceleration is zero
 - B) Its rotational acceleration is zero
 - C) Its rotational as well as translational acceleration is zero
 - D) Its angular momentum is zero
12. A change in position of a body from its initial position to its final position is known as
 - A) Relative motion
 - B) Displacement
 - C) distance
 - D) Acceleration
13. Velocity is a
 - A) Scalar quantity
 - B) Vector quantity

- A) Less than the change in its K. E
B) Greater than the change in its K. E
C) Equals to the change in its K. E
D) None of them
22. We can obtain bio-gas by rotting of bio-mass in a closed tank called
A) Tanker
B) Boiler
C) Container
D) Digester
23. A layer of a rock holding water that allows water to percolate through it with pressure is
A) Aquifer
B) Deaquifer
C) Both of these
D) None of these
24. The direction associated with the angular displacement is
A) Along the radius
B) Perpendicular to radius
C) Along the axis of rotation
D) All of them
25. Which of the following quantity has direction along the axis of rotation
A) Angular displacement
B) Angular velocity
C) Angular acceleration
D) All of them

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26. The three angular equations hold true in the case when
A) There is no fixed axis of rotation
B) There is a axis of rotation
C) There is no axis of rotation
D) All of them
27. The force which is needed to move the body in circular path is known as
A) Centrifugal force
B) Centripetal force
C) Gravitational force
D) None of them
28. The moment of inertia depends upon
A) Mass of the object
B) Square of the radius
C) Both of them
D) None of them
29. Who says that gravity follow an inverse square law (except in strong gravitational fields)?
A) Einstein
B) Newton

C) Plank

D) Maxwell

30. Einstein's theory was hailed as

A) Natural triumph

B) Scientific triumph

C) Both of them

D) None of them

COMPUTER

Directions: For each question below you are given four choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER

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BY THE

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1. A bar code represents the product's

(a) CGA

(b) LCD

(c) OMR

(d) UPC

2. A printer that forms characters from series of dots is called

(a) dot-matrix

(b) scanner

(c) MICR

(d) Plotter

3. Another word for printer

(a) monochrome

(b) microfiche

(c) pixel

(d) cursor

4. The density of data stored on magnetic tape is expressed as

(a) unit per inch

(b) tracks per inch

(c) bytes per inch

(d) packs per inch

5. Another name for secondary storage :

(a) cylinder

(b) auxiliary

- (c) density
- (d) memory
- 6. A magnetized spot represents
 - (a) CPI
 - (b) MB
 - (c) 0 bit
 - (d) 1 bit
- 7. A field contains one or more
 - (a) characters
 - (b) records
 - (c) databases files
- 8. The real that is changed on a magnetic tape unit is the
 - (a) take up reel
 - (b) supply reel
 - (c) RAID
 - (d) Record

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- 9. A hard disk can be backed up efficiently using
 - (a) zoning
 - (b) a transaction
 - (c) a tape backup system
 - (d) WORM
- 10. A limitation of magnetic tape as a method of storing data is that it is
 - (a) not reusable
 - (b) relatively expensive
 - (c) organized sequentially
 - (d) not portable
- 11. DASD refers to
 - (a) disk storage
 - (b) field
 - (c) tape storage
 - (d) sorting
- 12. optical disk technology uses
 - (a) helical scanning
 - (b) laser beam
 - (c) DAT
 - (d) RAID
- 13. The mechanism for reading or writing data in a disk is called

- (a) track
- (b) key
- (c) WORM
- (d) Access arm

14. The time require for the access arm to get into position over a particular track is

- (a) rotational delay
- (b) data transfer
- (c) seek time
- (d) head switching

15. A disk pack within a sealed data module is a

- (a) backup unit
- (b) Winchester
- (c) Diskette
- (d) CE-ROM

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For Online Test Preparation: www.thecatonline.com **ENGLISH**

Directions: For each question below you are given choices. SELECT ANY ONE THAT IS MOST APPROPRIATE ANSWER

SENTENCE COMPLETION

Directions for Q 1 – 3: Each sentence below has one or two blanks, each blank indicating that something has been omitted. Beneath in sentence are five lettered words or sets of words. Choose the word or set of words that best fits the meaning of the sentence as a whole.

1. We need both ornament and implement in our society; we need the artist and the _____.
 A. beautician
 B. Writer
 C. politician
 D. Artisan
 E. Model
2. When such _____ remarks are circulated, we can only blame and despise those who produce them.
 A. adulatory
 B. Chance
 C. reprehensible
 D. redundant
3. The stereotypical image of masculinity assumes that weeping is _____ "unmanly" behaviour, and not simply a human reaction which may be _____ by either sex.
 A. Inexplicably. repented
 B. Excessively...discerned

C. Essentially...defined

D. Inherently...adopted

ANALOGY

Direction: Each question below consists of a related pairs of words or phrases, followed by five lettered pairs of words or phrases, Select the lettered pair that best expresses a relationship similar to that expressed in the original pair.

4. FRAGILE : BREAK ::

- (a) vital : destroy
- (b) hostile : invite
- (c) vivid : grow
- (d) flexible : bend
- (e) fertile : smell

5. SPOKE : WHEEL ::

- (a) square : circle
- (b) balance : lever
- (c) door : latch
- (d) book : shelf
- (e) rung : ladder

6. VESSEL : FLEET ::

- (a) wolf : pack
- (b) forest : clearing
- (c) vehicle : truck
- (d) carriage : horse
- (e) squadron : rank

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7. PICADOR : BULL ::

- (a) heckler : speaker
- (b) executioner : victim
- (c) shepherd : sheep
- (d) singer : song
- (e) matador : cow

8. CORPULENCE : STOUT ::

- (a) baldness : hirsute
- (b) erudition : learned
- (c) gauntness : beautiful
- (d) steadfastness : mercurial

ANTONYM

Direction: In each of the following antonym questions, a word printed in capital letters precedes five lettered words or phrases. From these five lettered words or phrases, pick the one most nearly opposite in meaning to the capitalized word.

9. OMNIPOTENT:
(A) Weak (B) Strong (C) Sour (D) Safe
10. OBLIGATORY:
(A) Friendly (B) Optional (C) Facile (D) Divorced
11. OBSOLETE:
(A) Desolate (B) Frightful (C) Heated (D) Renovated
12. OPTIMUM:
(A) Minimum (B) Chosen (C) Worst (D) Knowledgeable

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READING COMPREHENSION

Direction: Please read the passage below and answer the questions on the basis of what is stated or implied.

Passage:

The Nile is the largest river of the world. Although it forms many falls and cataracts, it is navigable for quite a long distance. Floods in the Nile are caused by heavy summer rains in Ethiopia. The water overflows the banks and spreads over a large area. When it recedes, it leaves behind a thick layer of mud which makes the land rich and fertile.

QUESTIONS

13.	The river Nile is navigable for a long distance because			
	A)	It forms cataracts and falls	B)	The cataracts and falls facilitate sailing
	C)	There is little obstruction	D)	The river is very wide
14.	The fertility of the land is caused by			
	A)	Summer rain in Ethiopia	B)	Floods in the river
	C)	Water spreading over a large area	D)	Slime left by the river
15.	"Cataract" means			
	A)	Whirlpool	B)	Tidal flurry

	C) Water fall	D) Under current
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END OF TEST

For Answer Key: www.entrytest.com/testprep/answers.aspx

