# Note: Collecting by previous test takers interviews

## NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES (FAST)

## Engineering Admission Test 01

**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. Which of the following lists of physical quantities consists only of vectors:
   (a) Time, temperature, velocity (b) Force, volume, momentum
   (c) Velocity, acceleration, mass (d) Force, acceleration, velocity
2. If $(\vec{a} \times \vec{b})$ points along negative z-axis, then the vectors $\vec{a}$ and $\vec{b}$ must lie in
   (a) .zx-plane (b) .yx-plane
   (c) .xy-plane (d) None of the above
3. $k \times \hat{i} =$……
   (a) $j$ (b) $-j$ (c) $k$ (d) $-k$
4. What must be changing when a body is accelerating uniformly along a straight path?
   (a) The force acting on the body (b) The velocity of the body
   (c) The mass of the body (d) The speed of the body
5. The horizontal range of a projectile is maximum when it is thrown at what angle with a certain velocity?
   (a) $30^0$ (b) $45^0$ (c) $60^0$ (d) $90^0$



6. A paratrooper jumping out of an airplane is an example of
   (a) Equilibrium (b) Static Equilibrium (c) Dynamic Equilibrium (d) None
7. The torque on a body will be zero if the angle between $\vec{r}$ and F is zero or:
   (a) $90^0$ (b) $180^0$ (c) $270^0$ (d) None
8. If we go away from the surface of the earth, a distance equal to the one third of the radius of the earth, the value of g will be multiplied by?
   (a) 1/2 (b) 9/16 (c) 1/9 (d) 16/9
9. For certain values F and d, work done is zero when the angle between the force and displacement is:
   (a) $0^0$ (b) $30^0$ (c) $90^0$ (d) $180^0$
10. The force acting on a body in the gravitational field at any point is equal to its:
    (a) Gravitational mass (b) Weight (c) Acceleration (d) Inertia

11. What is kinetic energy of a body of mass 10 kg moving with velocity $1m/s^2$?
(a) 10 Joules (b) 20 Joules (c) 5 Joules (d) 2.5 Joules

12. Simple harmonic motion is mathematically represented as
(a) $.a \alpha - x$ (b) $.a \alpha x$ (c) $V \alpha - x$ (d) $F \alpha - x$

13. The frequency of second pendulum is
(a) 1 hertz (b) 2 hertz (c) 0.5 hertz (d) None of the above

14. A body with frequency f would complete one vibration in
(a) F seconds (b) $\frac{1}{f}$ seconds (c) 1 second (d) $\frac{1}{T}$ seconds

15. The rate of evaporation depends upon:
(a) Nature of liquid (b) The temperature of liquid and air
(c) The area of the exposed surface of the liquid (d) All of the above

16. The saturated vapour pressure of a given liquids:
(a) Increases with rise in temperature (b) Decreases with rise in temperature
(c) May increase or decrease with rise in temperature (d) Remains unchanged with rise in temperature



17. Suppose the co-efficient of linear expansion of copper is 0.000156 per degree C. What will be the co-efficient of volume expansion of copper sphere per degree C?
(a) Same as that of linear expansion (b) Two times as that of linear expansion
(c) Three times as that of linear expansion (d) One half as that of linear expansion

18. Length of metal rod is 100 cm and co-efficient of linear expansion of metal is $0.00002K^{-1}$ By how many centimeters will it contract when cooled through $50^0$ C?
(a) 1.001 (b) 0.150 (c) 0.001 (d) 0.01

19. The Coulomb force in a medium of relative permittivity $\varepsilon_r$ is given by:
(a) $F^{/} = \frac{\varepsilon_r}{F}$ (b) $F^{/} = \frac{F}{\varepsilon_r}$ (c) $F^{/} = F_{\varepsilon_r}$ (d) $F^{/} = \frac{F}{\varepsilon_0 \varepsilon_r}$

20. Capacity of a capacitor depends upon.
(a) The distance between the plates (b) The nature of the dielectric between the plates
(c) The size of the plates (d) All of the above

21. The magnetic force $F_m$ acting on charge q when it moves with a velocity v through a magnetic field B is given by
(a) $F_m = q\, v \times B$ (b) $F_m = q\, v^2 \times B$ (c) $F_m = q\, v^3 \times B$ (d) $F_m = q\, v^4 \times B$

22. A substance which behaves like a magnet in the presence of a strong magnetic field is called
(a) Magnets (b) Ferro magnets (c) Electromagnets (d) None of the above

23. In a circuit , if a resistance of the conductor is increased then current in the circuit will:

(a) Increase (b) Decrease (c) Remain the same (d) First increase and then decrease

24. The phenomenon that the resistance of a metal falls exactly to zero at a few degrees above absolute zero is called:
(a) Conductivity (b) Low conductivity (c) Super-conductivity (d) Low resistivity

25. Why should a resistance be introduced in a circuit in series deliberately?
(a) To increase current and decrease Voltage (b) To decrease current and voltage (c) To make current zero (d) To make voltage zero

26. In a house circuit, all electrical appliances are connected in parallel to each other between the line and neutral wires to get:
(a) Same current and different voltage (b) Same current and same potential difference
(c) Different current but same potential difference (d) Difference current and different potential difference

27. Power dissipated in a circuit in the form of 'V' and 'R' can be determine as:
(a) $P = \frac{V}{I}$ (b) $P = \frac{V^2}{R}$ (c) $P = \frac{R}{V^2}$ (d) $P = \frac{I}{V^2}$



28. Lyman series lies in
(a) Visible region (b) Ultra violet region (c) Infra red region (d) Far-infra red region

29. According to Bohr's theory of hydrogen atom, an electron can revolve around a proton indefinitely if its path is
(a) A spiral of increasing radius (b) A circle of constantly decreasing radius
(c) A circle of an allowed radius (d) An ellipse

30. According to Bohr's theory of hydrogen atom, the radii $R_n$ of stationary electron is given by the equation
(a) $R_n = \frac{ke^2}{mv_n^3}$ (b) $R_n = \frac{ke^2}{mv_n^2}$ (c) $R_n = \frac{e^2}{mv_n^2}$ (d) $R_n = \frac{he^2}{mv_n^2}$

31. An interesting application of laser is the production of three dimensional images called
(a) Polygons (b) Holograms (c) Ovals (d) None of the above

32. The laser device used to fragment gallstones and kidney stones is called
(a) Laser beam (b) Laser scanner (c) Laser lithotropter (d) Ruby laser

33. Product of x-rays is a reverse phenomenon of
(a) Photoelectric Effect (b) Compton Effect (c) Pair Production (d) Annihilation of matter

34. The nucleus of hydrogen with symbol $_1H^3$ is called

(a) Proton (b) Deuteeron (c) Triton (d) All of the above

35. Elements with atomic number Z > 82 are
(a) Stable (b) Unstable (c) Small (d) None of the above

36. Which of the following particles has very low penetration power?
(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

37. Which of the following particles move with velocity of light?
(a) α-particle (b) β-particle (c) γ-particle (d) All of the above

38. A carbon nucleus emits a particle x and changes into nitrogen according to the equation ${}_6C^{14} + {}_7N^{14} \rightarrow x$ What is x?
(a) An electron (b) A proton (c) An α-particle (d) A neutron

39. During Pair-Production which particles are produced?
(a) Proton & Electron (b) Electron & Neutron (c) Electron & Positron (d) Proton & Neutron

40. The Solid-State Detector is basically
(a) A forward biased PN-junction (b) A reversed biased PN-junction
(c) A forward biased transistor (d) A Photocell

**BASIC MATH:**

***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.***
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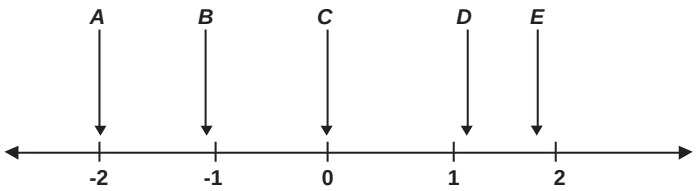
1. If Mario was 32 years old 8 years ago, how old was he *x* years ago?
A. $x-40$ B. $x-24$ C. $40-x$ D. $24-x$ E. $24+x$

2. Running at the same constant rate, 6 identical machines can produce a total of 270 bottles per minute. At this rate, how many bottles could 10 such machines produce in 4 minutes?
A. 648 B. 1,800 C. 2,700 D. 10,800 E. 64,800

3. Three business partners, *Q*, *R*, and *S*, agree to divide their total profit for a certain year in the ratios 2 : 5: 8, respectively. If *Q*'s share was $4,000, what was the total profit of the business partners for the year?
A. $26,000 B. $30,000 C. $52,000 D. $60,000 E. $300,000

4.




Of the five coordinates associated with points *A*, *B*, *C*, *D*, and *E* on the number line above, which has the

greatest absolute value?

A. *A* B. *B* C. *C* D. *D* E. *E*

5. A restaurant meal cost $35.50 and there was no tax. If the tip was more than 10 percent but less than 15 percent of the cost of the meal, then the total amount paid must have beet between

A. $40 and $42 B. $39 and $41 C. $38 and $40 D. $37 and $39 E. $36 and #37

6. Harriet wants to put up fencing around three sides of her rectangular yard and leave a side of 20 feet unfenced. If the yard has an area of 680 square feet, how many feet of fencing does she need?

A. 34 B. 40 C. 68 D. 88 E. 102

7. If $u \circledast t, r \circledast q, s \circledast t, and\ t \circledast r,$ which of the following must be true?

*I.* $u > s$

*II.* $s \circledast q$

*III.* $u \circledast r$

A. I only B. II only C. III only D. I and II only E. II and III only

8. Increasing the original price of an article by 15 percent and then increasing the new price by 15 percent is equivalent to increasing the original price by

A. 32.25% B. 31.00% C. 30.25% D. 30.00% E. 22.50%

9. If *k* is an integer and $0.0010101 \times 10^k$ is greater than 1,000, what is the least possible value of *k*?

A. 2 B. 3 C. 4 D. 5 E. 6



10. If $(b-x)\left(4+\frac{2}{b}\right)=0 \text{and}\, b \neq 3, \text{then}\, b =$

A. –8 B. –2 C. $-\frac{1}{2}$ D. $\frac{1}{2}$ E. 2

**PHYSICS:**

***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.***
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1. Einstein explained the photo-electric effect making the following assumption as a basis that,

(a) The mass of the electrons increases (b) Light consists the photons or quanta

(c) The energy of light increases with speed (d) The photo-electrons are identical with atomic electrons

2. An elevator initially accerlerates upward from rest and ascends with uniform speed. Time period of a simple pendulum in the elevator will,

(a) Increase and then decrease (b) Decrease and then increase (c) Increase (d) Decrease

3. A simple arrangement by means of which e.m.f,s. are compared is known

(a) Voltmeter (b) *Potentiometer* (c) Ammeter (d) None of the above

4. The physics underlying the operation of a refrigerator most closely resembles the physics underlying,

(a) The freezing of water (b) The melting of ice (c) The evaporation of water (d) A heat engine

5. Let a certain body of mass 'm' placed on a horizontal surface move down the inclined plane then downward component of weight is

(a) .mgCosθ (b) .mgSinθ (c) .mg Tanθ (d) None

6. The plane faces of two identical plano convex lens, each having focal length 40 cm are pressed against each other to form a usual convex lens. The distance from this lens at which an object must be placed to obtain a real, inverted image with magnification one is.

(a) 40 cm (b) 80 cm (c) 20 cm (d) 60 cm

7. The law which gives definition of force is

(a) Newton's law of gravitation (b) Third law of motion
(c) Second law of motion (d) First law of motion

8. Hygrometer is an instrument used for measuring

(a) The compression of water vapour with temperature (b) The amount of water vapour in the atmosphere
(c) Specific gravity of air (d) The density of air



9. An inertial frame of reference is one whose:

(a) Acceleration is zero (b) Velocity is changing with time
(c) Acceleration is uniform (d) Inertia is not zero

10. A moving car whose engine is switched off. comes to rest after some time due to:

(a) Inertia (b) Its mass (c) Friction (d) Earth's gravitation

11.

(a) When two bodies separate instantaneously after collision, the collision is said to be perfectly elastic.
(b) When to bodies separate instantaneously after collision, the collision is said to be perfectly inelastic

12. According to the second law of motion, acceleration is proportional to:

(a) Fores (b) Time (c) Mass (d) Distance

14. When the object is placed at 2f of convex lens then the image formed behind the lens will be

A) At the focus B) At 2f C) Beyond 2f D) Between f and 2f

15. When the object is placed at principal focus of a convex lens then the image is formed at

A) Same distance B) Infinity C) Same side of lens D) Centre of curvature

16. Which one of the following cannot measure wavelength of X-rays in any way

A) Bragg's law B) Diffraction grating C) Compton effect D) Photo electric effect

17. Which one of the following properties is not found in both sound and light

A) Interference B) Diffraction C) Polarization D) Reflection

18. The relation between time period T and angular velocity ω is given by

(a) $T = 2\pi\omega$ (b) $T = \omega/2\pi$ (c) $T = 2\pi / \omega$ (d) $T = v\,\omega$

19. When a body moves in a circle, the angle between its linear velocity v and angular velocity ω is

(a) $0^0$ (b) $45^0$ (c) $90^0$ (d) $180^0$

20. Π radians =

(a) $90^0$ (b) $180^0$ (c) $60^0$ (d) $30^0$

**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. Miss Watson termed Hock's behavior_____because in her opinion noting could excuse his deliberate disregard of her commands.
   A. devious B. intolerant
   C. Irrevocable D. indefensible
   E. Boisterous
2. Either the surfing at Maui is_____, or I went there on an off day.
   A. Consistent B. Thrilling
   C. Invigorating D. Overrated
   E. Scenic
3. Your_____remarks spoil the effect of your speech; try not to stray from your subject.
   A. innocuous B. Digressive
   C. Derogatory D. Persistent
   E. Enigmatic

**ANALOGIES**

**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. TELLER : BANK ::
   (a) Artist : museum
   (b) Cashier : check
   (c) Waiter : restaurant
   (d) Borrower : loan
   (e) Mourner : funeral
5. INNING : BASEBALL ::
   (a) round : boxing
   (b) puck : hockey
   (c) touchdown : football
   (d) serve : tennis
   (e) outing : hiking
6. DEGREE : TEMPERATURE ::
   (a) ounce : weight
   (b) fathom : volume
   (c) mass : energy
   (d) time : length
   (e) light : heat



7. PICK : GUITAR ::
   (a) peg : ukelele
   (b) string : banjo
   (c) pipe : organ
   (d) bow : violin
   (e) head : tambourine

**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.

8. NERVOUS:
   (A) Courageous (B) Puzzle (C) Bold (D) Trainee
9. NOTORIOUS:
   (A) Renowned (B) Invincible (C) Inactive (D) Fashionable
10. NOCTURNAL:
    (A) Patrolling (B) Daily (C) Harsh (D) Marauding

# END OF TEST

**For Answer Key: www.learnospot.com**