

## SAMPLE QUESTIONS

**Total Questions:60**

**Duration: 60 Minutes**

### MATHS

1. Two dice are thrown at the same time. Find the probability of getting different values on both.
  - a.  $\frac{5}{6}$
  - b.  $\frac{1}{2}$
  - c.  $\frac{1}{6}$
  - d.  $\frac{1}{36}$
  
2. If matrices A and B are inverse of each other then
  - a.  $AB = BA$
  - b.  $AB = BA = I$
  - c.  $AB = BA = 0$
  - d.  $AB = 0, BA = I$
  
3. The point diametrically opposite to the point P (1, 0) on the circle  $x^2 + y^2 + 2x + 4y - 3 = 0$  is
  - a. (- 3, - 4)
  - b. (-3, 4)
  - c. (3, 4)
  - d. (-4, -1)
  
4. The conjugate of a complex number is  $\frac{1}{i-1}$ . Then the complex number is
  - a.  $-\frac{1}{i-1}$
  - b.  $\frac{1}{i+1}$
  - c.  $\frac{1}{i-1}$
  - d.  $-\frac{1}{i+1}$
  
5. What is the probability that the minute and hour hands of a clock will form an acute angle at any given time?
  - a.  $P > 0.5$
  - b.  $P = 0.5$
  - c.  $P < 0.5$
  - d.  $P = 0.25$

6. A single die is rolled. The probability of getting 1 or an even number is
- $1/6$
  - $4/6$
  - $5/6$
  - $.3/6$
7. The perpendicular bisector of the line segment joining P (1, 4) and Q (k, 3) has y-intercept - 4. Then a possible value of k is
- 1
  - 4
  - 3
  - 2
8. The mean of the numbers a, b, 8, 5, 10 is 6 and the variance is 6.80. Then which one of the following gives possible values of a and b?
- a = 0, b = 7
  - a = 5, b = 2
  - a = 3, b = 4
  - a = 2, b = 4
9. The line passing through the points (5, 1, a) and (3, b, 1) crosses the yz-plane at the point (0,  $17/2$ ,  $-13/2$ ) Then
- a = 2, b = 8
  - a = 4, b = 6
  - a = 6, b = 4
  - a = 8, b = 2
10. The first two terms of a geometric progression add up to 12. The sum of the third and the fourth terms is 48. If the terms of the geometric progression are alternately positive and negative, then the first term is
- 2
  - 4
  - 12
  - 8

11. How many real solutions does the equation  $x^7 + 14x^5 + 16x^3 + 30x - 560 = 0$  have?

- a. 1
- b. 4
- c. 7
- d. 5

12. A single die is rolled. The probability of getting 1 or an even number is

- a.  $\frac{1}{6}$
- b.  $\frac{4}{6}$
- c.  $\frac{5}{6}$
- d.  $\frac{3}{6}$

13. Each of letters of the word PILOTS is on separate cards, face down on the table. If you pick a card at random, what is the probability that the letter will be a T or an L?

- a.  $\frac{1}{6}$
- b.  $\frac{1}{3}$
- c.  $\frac{1}{2}$
- d.  $\frac{2}{3}$

14. If the system of linear equations

$$x + 2ay + az = 0$$

$$x + 3by + bz = 0$$

$$x + 4cy + cz = 0$$

has a non-zero solution, then a, b, c

- a. are in A. P.
- b. are in G. P.
- c. are in H.P.
- d. satisfy  $a + 2b + 3c = 0$

15. A student is to answer 10 out of 13 questions in an examination such that he must choose at least 4 from the first five questions. The number of choices available to him is

- a. 140
- b. 196
- c. 280
- d. 346

## CHEMISTRY

1. The wave associated with a particle is called
  - A. Electromagnetic Wave
  - B. Matter Wave
  - C. Micro Wave
  - D. All the Above
  
2. De-Broglie concept is significant for
  - A. Electrons
  - B. Protons
  - C. Neutrons
  - D. All the above
  
3. The nodal plane for 2px orbitalis
  - A. XY plane
  - B. YZplane
  - C. XZplane
  - D.Alltheabove
  
4. The molecule with greater bond dissociation energy is
  - A. H<sub>2</sub>
  - B. Li<sub>2</sub>
  - C. O<sub>2</sub>
  - D. N<sub>2</sub>
  
5. Which of the following will have lowest boiling point?
  - A. o-nitro phenol
  - B. m-nitrophenol
  - C. p-nitrophenol
  - D.All the above

6. The number of nodes in s-orbital of any energy level is equal to
- A.  $2n+1$
  - B.  $n+1$
  - C.  $2n-1$
  - D.  $n-1$
7. The hybridization in  $\text{ICl}_4$  is
- A.  $sp^3d$
  - B.  $sp^3d^3$
  - C.  $sp^3$
  - D.  $sp^3d^2$
8. Pauling's method of calculation of ionic radii is not applicable for
- A. NaF
  - B. KCl
  - C. CsCl
  - D. RbBr
9. The contribution of other electrons present in 1 orbital to 'S' value is
- A. 0
  - B. 0.35
  - C. 0.85
  - D. 0.30
10. The metal with comparatively high electron affinity is
- A. Chlorine
  - B. Cesium
  - C. Gold
  - D. Cadmium
11. Inert pair effect is a characteristic feature of-----elements
- A. s-block
  - B. p-block
  - C. d-block
  - D. f-block

12. The oxyacid of phosphorus which is a powerful reducing agent (reduces  $\text{AgNO}_3$ ) is
- A.  $\text{H}_3\text{PO}_3$
  - B.  $\text{H}_3\text{PO}_4$
  - C.  $\text{H}_4\text{P}_2\text{O}_7$
  - D.  $\text{PH}_3$
13. The compound with rotten fish odour is
- A.  $\text{P}_2\text{O}_3$
  - B.  $\text{H}_3\text{PO}_3$
  - C.  $\text{PH}_3$
  - D.  $\text{P}_2\text{O}_5$
14. Which of the following is not possible?
- A.  $\text{I}^{3-}$
  - B.  $\text{F}^3$
  - C.  $\text{Br}^{3-}$
  - D.  $\text{Cl}^{3-}$
15. Which of the following inert gas is not found in air?
- A. Helium
  - B. Neon
  - C. Krypton
  - D. Radon

### PHYSICS

1. Which of the following is an electromagnetic spectrum?
- A. Gamma rays
  - B. X rays
  - C. Visible rays
  - D. All of the above
2. Two balls at the same temperature collide. What is conserved?
- A. Momentum
  - B. Kinetic energy
  - C. Velocity
  - D. Temperature

3. When light travels from air to water, which parameter does not change?
  - A. Wavelength
  - B. Frequency
  - C. Velocity
  - D. All of these
  
4. Exothermic processes:
  - A. Absorb energy
  - B. Have no energy change
  - C. Are impossible to predict the energy change
  - D. Give off energy.
  
5. A force is completely defined if we specify
  - A. Magnitude and direction
  - B. Magnitude and point of application.
  - C. Direction and point of application
  - D. Magnitude, direction and point of application
  
6. On dipping an electrically conducting rod in boiling water, its conductivity
  - A. Increases
  - B. Decreases
  - C. Remains unchanged
  - D. Decreases for thin rod but increases for thick rod
  
7. According to the triangle law of forces,
  - A. Three forces acting at a point will be in equilibrium
  - B. Three forces acting at a point can be represented in magnitude by the faces of a triangle taken in order then the three forces are in equilibrium
  - C. Three forces acting at a point can be represented in magnitude and direction by the faces of a triangle taken in order then the three forces are in equilibrium
  - D. None of these
  
8. If Young's interference experiment is performed using two separate identical sources of light instead of using two slits and one bulb, then

- A. Interference fringes will be brighter
  - B. Interference fringes will be coloured
  - C. Interference fringes will be darker
  - D. No fringes will be obtained
9. A needle floats on the surface of the water because of
- A. Light weight
  - B. Adhesive force
  - C. Viscosity
  - D. Surface tension
10. The sky looks blue because the sun light is subjected to
- A. Compton scattering
  - B. Rayleigh scattering
  - C. Both of the above
  - D. None of the above
11. A particle is taken around a circle by the application of force. Then, the work done
- A. By the force is zero
  - B. By the force is +ve non zero
  - C. By the particle is +ve non zero
  - D. On the particle is +ve non zero
12. A satellite revolves around the earth in an elliptical orbit. Its speed:
- A. Is the same at all points in the orbit
  - B. Is greatest when it is closest to the earth
  - C. Is greatest when it is farthest from the earth
  - D. Goes on increasing or decreasing continuously depending upon the mass of the satellite
13. How many millimetres are in 24 cm?
- A. 240
  - B. 2400
  - C. 24,000
  - D. 240,000

14. The drift velocity of free electrons in a conductor is 'v' when a current 'i' is flowing in it. If both the radius and current are doubled, then drift velocity will be
- A. V
  - B. V/2
  - C. V/4
  - D. V/8
15. The amount of material found in an object is known as its
- A. Density
  - B. Mass
  - C. Volume
  - D. Temperature

### **GENERAL KNOWLEDGE**

1. On which animal/bird did Thailand announce to test Coronavirus vaccine?
  - A. Monkeys
  - B. Lizards
  - C. Hens
  - D. Kites
  
2. In a study, which cells are found in COVID-19 patients 'bode well' for long term immunity?
  - A. P-cell
  - B. D-Cell
  - C. T-Cell
  - D. Endothelial Cells
  
3. Which type of drugs are Hydroxychloroquine and Chloroquine?
  - A. Anti-Viral
  - B. Anti-Malarial
  - C. Anti-Bacterial
  - D. Anti-Fungal

4. What is Coronavirus?
  - A. It is a large family of viruses
  - B. It belongs to the family of Nidovirus
  - C. Both A&B
  - D. It is originated from insects
  
5. Which of the following diseases are related to coronavirus?
  - A. MERS
  - B. SARS
  - C. Both A and B
  - D. Neither A nor B
  
6. Which country has conferred Manipuri doctor, ThangjamDhabali Singh with “Order of Rising SunGold and Silver Rays”?
  - A. Indonesia
  - B. South Korea
  - C. Japan
  - D. China
  
7. Name the Indian state which topped the list of providing maximum employment under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) as per data of Rural development ministry.
  - A. Chhattisgarh
  - B. Rajasthan
  - C. Uttar Pradesh
  - D. West Bengal
  
8. Global Day of Parents is celebrated on \_\_\_\_\_.
  - A. July 28
  - B. August 04
  - C. June 01
  - D. April 13
  
9. My Life My Yoga was launched by\_\_\_\_\_.
  - A. PM Modi

- B. Nirmala Sitharaman
  - C. CM Bodge
  - D. AmrishPandeyhuman
10. Which company has become the first private rocket company to send astronauts to space?
- A. SpaceX
  - B. Blue Origin
  - C. Tesla
  - D. The Boring Company
11. Who is the only Indian in the Forbes' list of world's highest-paid athletes?
- A. Rohit Sharma
  - B. PV Sindhu
  - C. Virat Kohli
  - D. Hima Das
12. Which state has become the first state to complete the migration of workers to their home state through Shramik Special trains?
- A. Madhya Pradesh
  - B. Gujarat
  - C. Andhra Pradesh
  - D. Tamil Nadu
13. Who has been appointed as Food Safety Regulator Chief?
- A. Rahul Bothan
  - B. Pratheep Singh
  - C. Arun Singhal
  - D. HasiniShangal
14. Bobby Joe Morrow who passed away at 84 is associated with\_\_\_\_\_.
- A. Politics
  - B. Science
  - C. Agriculture
  - D. Sports

15. "Ultra Swachh" Booth was developed by \_\_\_\_\_.

A. DRDO

B. ICMR

C. NLC

D. None of these