iQuest Scholarship Cum Admission Test FOR CLASS $10{ }^{\text {th }}$ MOVING TO CLASS 11th (ASPIRE NM) SAMPLE TEST

Time: 1.5 Hrs
Max Marks : 220

| SYLLABUS \& SCHEME |  |  |
| :--- | :--- | :--- |
| SUBJECTS | Qs. | SYLLABUS |
| PHYSICS | 20 | Full Syllabus |
| CHEMISTRY | 20 | Full Syllabus |
| MATHEMATICS | 15 | Full Syllabus |

## INSTRUCTIONS TO CANDIDATE

$>\quad$ Each subject in this paper consists of multiple choice questions with only one correct answer. $\mathbf{+ 4}$ marks will be awarded for correct answer and -1 mark for wrong answer.
$>\quad$ Please read the instructions given for each question carefully and fill the correct answer against the question numbers on the answer sheet in the respective subject.
$>\quad$ Use blue or black ball point pen to darken the appropriate circle \& mark should completely fill the circle.
$>\quad$ The Question paper contains blank spaces for your rough work. No additional sheet will be provided for rough work.
$>\quad$ Blank papers, Clipboards, Log Tables, Slide rule, Calculators, Cellular phones, Pagers and Electronic gadgets in any form are not allowed.
$>\quad$ Write your Name, Student ID in the block at the top of the Answer Sheet. Also write your Name \& Student ID in the space provided on this cover page of question paper.
$>\quad$ This is a Sample Test Paper. The actual Paper Pattern may vary in terms of duration and sections. However the syllabus will be same.

Name: $\qquad$ Student ID $\qquad$

## PHYSICS

1. The electrostatic force between two point charges $\mathrm{q}_{1}$ and $\mathrm{q}_{2}$ at separation ' r ' is given by
$\mathrm{F}=\frac{\mathrm{Kq}_{1} \mathrm{q}_{2}}{\mathrm{r}^{2}}$. The constant K
(A) depends on the system of units only.
(B) depends on the medium between the charges only.
(C) depends on both the system of units and the medium between the charges.
(D) is independent of both the system of units and the medium between the charges.
2. When the value of each resistor is $10 \Omega$, the equivalent resistance between the terminals X and Y of the circuit is :

(A) $1 \Omega$
(B) $3 \Omega$
(C) $5 \Omega$
(D) $8 \Omega$
3. In a circuit two or more cells of the same e.m.f are connected in parallel in order to:
(A) increase the P.D across a resistance in the circuit
(B) decrease the P.D across a resistance in the circuit
(C) facilitate drawing more current from the battery system
(D) change the e.m.f. across the system of batteries
4. Two electrical bulbs have tungsten filament of same length. If one of them gives 60 watts and other 100 watts, then
(A) 100 watts bulb has thicker filament
(B) 60 watt bulb has thicker filament
(C) both filaments are of same thickness
(D) it is impossible to get different wattage unless lengths are different
5. An electric current passes through a long straight wire. At a distance 5 cm from wire, the magnetic field is $B$. The field at 20 cm from the wire would be:
(A) 2 B
(B) $B / 4$
(C) $\mathrm{B} / 2$
(D) B
6. An electric charge in uniform motion produces:
(A) an electric field only
(B) a magnetic field only
(C) both electric and magnetic fields
(D) no such field at all
7. The fact that magnetic field is produced around a wire carrying a current, was discovered by
(A) Faraday
(B) Oersted
(C) Maxwell
(D) Joule
8. When the current is passing through the straight wire then, the associated magnetic field is
(A) Straight
(B) Elliptical
(C) Circular
(D) Parabolic.
9. When current is circular, the associated magnetic field is
(A) Straight
(B) Elliptical
(C) Circular
(D) Parabolic.
10. When current flows clockwise in a loop, the polarity of its face is
(A) East
(B) South
(C) West
(D) North.
11. When current flows anticlockwise in a loop the magnetic polarity of the face is
(A) East
(B) South
(C) West
(D) North.
12. For a solenoid carrying a current I and having $n$ turns per unit length, wrapped on a core of permeability m , the correct expression for magnetic field intensity (B) is
(A) $\mathrm{B}=\frac{\mu_{0}}{\mu} \mathrm{nI}$
(B) $\mathrm{B}=\frac{\mu_{0} \mu \mathrm{I}}{\mathrm{n}}$
(C) $B=m_{0} \mathrm{mnI}$
(D) $B=\frac{\mu_{0} \mu \mathrm{n}}{\mathrm{I}}$
13. A mirror forms a virtual image of a real object.
(A) It must be a convex mirror.
(B) It must be a concave mirror.
(C) It must be a plane mirror.
(D) It may be any of the mirrors mentioned above.
14. The angle of incidence is the angle between
(A) the incident ray and the surface of the mirror
(B) the reflected ray and the surface of the mirror
(C) the normal to the surface and the incident ray
(D) the normal to the surface and the reflected ray
15. A ray of light is incident on a concave mirror. If it is parallel to the principal axis, the reflected ray will
(A) pass through the focus
(B) pass through the centre of curvature
(C) pass through the pole
(D) retrace its path
16. If an incident ray passes through the centre of curvature of a spherical mirror, the reflected ray will
(A) pass through the pole
(B) pass through the focus
(C) retrace its path
(D) be parallel to the principal axis
17. Other names for myopia are
(A) hyperopia and hypermetropia
(B) long-sightedness and hyperopia
(C) near-sightedness and presbyopia
(D) near-sightedness and short-sightedness
18. The wavelengths corresponding to violet, yellow and red lights are $\lambda_{\mathrm{v}}, \lambda_{\mathrm{y}}$ and $\lambda_{\mathrm{r}}$ respectively.
(A) $\lambda_{\mathrm{v}}>\lambda_{\mathrm{y}}>\lambda_{\mathrm{r}}$
(B) $\lambda_{v}<\lambda_{y}<\lambda_{r}$
(C) $\lambda_{\mathrm{y}}<\lambda_{\mathrm{v}}<\lambda_{\mathrm{r}}$
(D) $\lambda_{y}<\lambda_{r}<\lambda_{v}$
19. When light rays enter the eye, most of the refraction occurs at the :
(A) crystalline lens
(B) outer surface of the cornea
(C) iris
(D) pupil
20. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?
(A) Dispersion of light
(B) Scattering of light
(C) Total internal reflection of light
(D) Reflection of light from the earth

## CHEMISTRY

21. The following reaction is an example of a
$4 \mathrm{NH}_{3}(\mathrm{~g})+5 \mathrm{O}_{2}(\mathrm{~g}) \rightarrow 4 \mathrm{NO}(\mathrm{g})+6 \mathrm{H}_{2} \mathrm{O}(\mathrm{g})$
(i) displacement reaction
(ii) combination reaction
(iii) redox reaction
(iv) neutralisation reaction
(A) (i) and (iv)
(B) (ii) and (iii)
(C) (i) and (iii)
(D) (iii) and (iv)
22. Which of the following are exothermic processes?
(i) Reaction of water with quick lime
(ii) Dilution of an acid
(iii) Evaporation of water
(iv) Sublimation of camphor (crystals)
(A) (i) and (ii)
(B) (ii) and (iii)
(C) (i) and (iv)
(D) (iii) and (iv)
23. What happens when a solution of an acid is mixed with a solution of a base in a test tube?
(i) The temperature of the solution increases
(ii) The temperature of the solution decreases
(iii) The temperature of the solution remains the same
(iv) Salt formation takes place
(A) (i) only
(B) (i) and (iii)
(C) (ii) and (iii)
(D) (i) and (iv)
24. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to
(A) absorb the evolved gas
(B) moisten the gas
(C) absorb moisture from the gas
(D) absorb $\mathrm{Cl}^{-}$ions from the evolved gas
25. Aluminium is used for making cooking utensils. Which of the following properties of aluminium are responsible for the same?
(i) Good thermal conductivity
(ii) Good electrical conductivity
(iii) Ductility
(iv) High melting point
(A) (i) and (ii)
(B) (i) and (iii)
(C) (ii) and (iii)
(D) (i) and (iv)
26. What happens when calcium is treated with water?
(i) It does not react with water
(ii) It reacts violently with water
(iii) It reacts less violently with water
(iv) Bubbles of hydrogen gas formed stick to the surface of calcium
(A) (i) and (iv)
(B) (ii) and (iii)
(C) (i) and (ii)
(D) (iii) and (iv)
27. Which of the following is an example of a 'decomposition' reaction -
(A) $\mathrm{CaO}+\mathrm{CO}_{2} \rightarrow \mathrm{CaCO}_{3}$
(B) $\mathrm{CaCO}_{3} \rightarrow \mathrm{CaO}+\mathrm{CO}_{2}$
(C) $\mathrm{Cu}+2 \mathrm{Ag}^{+} \rightarrow \mathrm{Cu}^{2+}+2 \mathrm{Ag}$
(D) $\mathrm{CuSO}_{4}+\mathrm{H}_{2} \mathrm{~S} \rightarrow \mathrm{CuS}+\mathrm{H}_{2} \mathrm{SO}_{4}$
28. The process of oxidation involves -
(A) The absorption of hydrogen atoms
(B) The absorption of electrons
(C) The release of electrons
(D) Neither absorption nor release of electrons
29. The number of molecules of water of crystallisation present in washing soda crystals is:
(A) five
(B) two
(C) ten
(D) seven
30. The formula of baking soda is :
(A) $\mathrm{K}_{2} \mathrm{CO}_{3}$
(B) $\mathrm{KHCO}_{3}$
(C) $\mathrm{NaHCO}_{3}$
(D) $\mathrm{Na}_{2} \mathrm{CO}_{3}$
(A) $\mathrm{CH}_{3} \mathrm{CH}_{2} \mathrm{OH}$
(B) $\mathrm{HOCH}_{2} \mathrm{CH}_{2} \mathrm{CH}_{3}$
(C) $\mathrm{CH}_{3} \mathrm{CHOH} \mathrm{CH}_{3}$
31. The aqua regia is
(A) $3 \mathrm{HNO}_{3}$ (conc.) +1 HCl (conc.)
(B) 3 HCl (conc.) $+1 \mathrm{HNO}_{3}$ (conc.)
(C) $\mathrm{HNO}_{3}$ (conc.) $+\mathrm{H}_{2} \mathrm{SO}_{4}$ (conc.)
(D) $\mathrm{HNO}_{3}$ (conc.) +HCl (conc.)
32. Which of the following protects us from harmful ultraviolet rays coming from sun.
(A) $\mathrm{O}_{2}$
(B) $\mathrm{H}_{2} \mathrm{O}$
(C) $\mathrm{O}_{3}$
(D) $\mathrm{H}_{2} \mathrm{O}_{2}$
33. Heating of concentrated ore in absence of air for conversion in oxide ore is known as -
(A) Roasting
(B) calcination
(C) reduction
(D) none of these
34. Common name of $\mathrm{CaOCl}_{2}$ is -
(A) Bleaching powder
(B) Baking soda
(C) Plaster of paris
(D) Washing soda
35. Open-chain saturated hydrocarbons are called
(A) paraffins
(B) alkynes
(C) alkenes
(D) alkyl groups
36. Which of the following structures represents 1-propanol?

37. The IUPAC name of the compond

(A) Propanone
(B) Butanone
(C) Butanoic Acid
(D) Butanal.
38. According to Mendeleev's periodic law, the properties of elements are a periodic function of their
(A) atomic numbers
(B) atomic masses
(C) atomic volumes
(D) atomic sizes
39. Magnesium belongs to
(A) group 1 of the periodic table
(B) group 2 of the periodic table
(C) the family of nonmetals
(D) group 8 of the periodic table
40. Which of the following elements is expected to show nonmetallic character?
(A) As
(B) Be
(C) B
(D) Br

## MATHEMATICS

41. Three bells, toll at intervals of $36 \mathrm{sec}, 40 \mathrm{sec}$ and 48 sec respectively. They start ringing toll at particular time. They next toll together after -
(A) 18 minutes
(B) 12 minutes
(C) 6 minutes
(D) 24 minutes
42. Find the remainder obtained when $\mathrm{x}^{2007}$ is divisible by $x^{2}-1$.
(A) $x^{2}$
(B) x
(C) $x+1$
(D) -x
43. The fare of 3 full tickets and 2 half tickets is Rs 204 and the fare of 2 full tickets and 2 half tickets is Rs. 186. Find the fare of a full ticket and a half ticket.
(A) Rs 94
(B) Rs 93
(C) Rs 86
(D) Rs 62
44. Quadratic equation whose one of the roots is $4+\sqrt{5}$ is :
(A) $\mathrm{x}^{2}+8 \mathrm{x}-1=0$
(B) $x^{2}+8 x+18=0$
(C) $\mathrm{x}^{2}-8 \mathrm{x}+1=0$
(D) $x^{2}-8 x+11=0$
45. If $\sin \theta \mathrm{s}+\sin ^{2} \theta=1$ then $\cos ^{2} \theta+\cos ^{4} \theta=$
(A) 1
(B) $\frac{\sin \theta}{\cos ^{2} \theta}$
(C) $\frac{\cos ^{2} \theta}{\sin \theta}$
(D) one
46. The area of a rhombus is $2016 \mathrm{~cm}^{2}$ and its side is 65 cm . The lengths of the diagonals (in cm) respectively are :
(A) 125, 35
(B) 126,32
(C) 132, 26
(D) 135,25
47. In the given figure, $\overline{\mathrm{DE}} \| \overline{\mathrm{AC}}$. Find the value of x .

(A) 1
(B) 2
(C) 3
(D) 4
48. $8^{\text {th }}$ term of the series $2 \sqrt{2}, \sqrt{2}, 0, \ldots .$. will be -
(A) $-5 \sqrt{2}$
(B) $5 \sqrt{2}$
(C) $10 \sqrt{2}$
(D) $-10 \sqrt{2}$
49. There are 60 terms in an A.P. of which the first term is 8 and the last term is 185 . The $31^{\text {st }}$ term is
(A) 56
(B) 94 (C) 85 (D) 98
50. The centroid of a triangle, whose vertices are $(2,1)$, $(5,2)$ and $(3,4)$ is -
(A) $\left(\frac{8}{3}, \frac{7}{3}\right)$
(B) $\left(\frac{10}{3}, \frac{7}{3}\right)$
(C) $\left(-\frac{10}{3}, \frac{7}{3}\right)$
(D) $\left(\frac{10}{3},-\frac{7}{3}\right)$
51. The angle of elevation of the top of a building 50 m high, from a point on the ground is $45^{\circ}$. The distance of the point from the foot of the building is:
(A) 100 m
(B) 50 m
(C) 45 m
(D) 60 m
52. The figure, shows two concentric circles with centre $\mathrm{O} . \mathrm{AB}$ and AP are tangents to the inner circle from point A lying on the outer circle. If $\mathrm{AB}=7.5 \mathrm{~cm}$, then AQ is equal to :

(A) 18 cm
(B) 15 cm
(C) 12 cm
(D) 10 cm
53. In the given figure, the area of shaded region is

(A) $462 \mathrm{~cm}^{2}$
(B) $308 \mathrm{~cm}^{2}$
(C) $616 \mathrm{~cm}^{2}$
(D) $154 \mathrm{~cm}^{2}$
54. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. The ratio of their volumes is:
(A) $3: 2: 1$
(B) $1: 3: 2$
(C) $2: 3: 1$
(D) $1: 2: 3$
55. If a letter of English alphabet is chosen at random, then the probability that the letter is a consonant is
(A) $\frac{5}{26}$
(B) $\frac{21}{26}$
(C) $\frac{10}{13}$
(D) $\frac{11}{13}$


## ANSWER KEY <br> PHYSICS

| 1. | (C) | 2. | (C) | 3. | (C) | 4. | (A) | 5. | (B) | 6. | (C) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 7. | (B) | 8. | (C) | 9. | (A) | 10. | (B) | 11. | (D) | 12. | (C) |
| 13. | (D) | 14. | (C) | 15. | (A) | 16. | (C) | 17. | (D) | 18. | (B) |
| 19. | (B) | 20. | (B) |  |  |  |  |  |  |  |  |

## Chemistry

| 21. | (C) | 22. | (A) | 23. | (D) | 24. | (C) | 25. | (B) | 26. | (D) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 27. | (B) | 28. | (C) | 29. | (C) | 30. | (C) | 31. | (B) | 32. | (C) |
| 33. | (B) | 34. | (A) | 35. | (A) | 36. | (B) | 37. | (C) | 38. | (B) |
| 39. | (B) | 40. | (D) |  |  |  |  |  |  |  |  |

## Mathematics

| 41. | (C) | 42. | (B) | 43. | (B) | 44. | (D) | 45. | (A) | 46. | (B) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 47. | (A) | 48. | (A) | 49. | (D) | 50. | (B) | 51. | (B) | 52. | (B) |
| 53. | (D) | 54. | (D) | 55. | (B) |  |  |  |  |  |  |

