

Date: 04-11-2018

Max. Marks: 100

SOLUTIONS

Time allowed: 120 minutes

1. Conductivity of superconductors is :

- (A) Infinite (B) Very large (C) Very Small (D) Zero

Ans. (A)

Sol. Resistivity of the certain material drops to zero at low temp. are called as superconductors.

$$\text{i.e. } \rho = 0, \therefore \frac{1}{\rho} = \sigma = \infty$$

where ρ = resistivity & σ = conductivity.

2. The S.I. unit of magnetic field intensity is :

- (A) Weber (B) Tesla (C) Oerstead (D) Gauss

Ans. (B)

Sol. S.I. unit of intensity of magnetic field is Tesla

3. If the distance travelled by an object is zero, then the displacement of the object is :

- (A) zero (B) not zero (C) negative (D) May or may not be zero

Ans. (A)

Sol. Actual path covered = zero (distance)

\therefore Change in position = zero (displacement)

4. Which of the following is non-conservative force?

- (A) Electrostatics force (B) Gravitational force
(C) Viscous force (D) Spring force

Ans. (C)

Sol. Workdone by electrostatic force, gravitational force & spring force for a closed path is zero but workdone by viscous force for closed path is not zero.

5. Escape velocity of a particle from the earth is approximately.

- (A) 7 km/s (B) 1.1 km/s (C) 11.2 km/s (D) 112 km/s

Ans. (C)

Sol. Escape velocity from the surface of the earth

$$V_e = \sqrt{2gR} = \sqrt{\frac{2GM}{R}} = 11.2 \text{ km/sec.}$$

G = Universal constant of gravitation

M = Mass of the earth.

R = Radius of the earth.

g = acceleration due to gravity.

Ans. = 11.2 km/sec.

6. When a satellite falls to an orbit of smaller radius its kinetic energy :

- (A) decrease (B) increase (C) remain same (D) none of these

Ans. (B)

Sol. K.E. of the satellite = $\frac{GMm}{2r}$

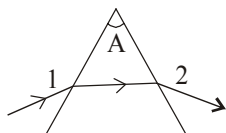
r decreases, K.E. increases.

7. How many time does a ray bend on passing through a prism?

- (A) once (B) twice (C) thrice (D) none

Ans. (B)

Sol. Refraction of light through prism causes refraction at two refracting surfaces.



8. Waves inside a gas are ;

- (A) longitudinal (B) transverse
(C) partly longitudinal partly transverse (D) none of these

Ans. (A)

Sol. Considering mechanical waves - waves inside the gas are longitudinal. (i.e. Sound wave)

9. Choose the source of energy which is different from others.

- (A) Sun light (B) Falling water (C) Wind (D) Petroleum

Ans. (D)

Sol. Sunlight, falling water & wind are directly or indirectly related to the sun (renewable sources of energy) while petroleum is fossil fuel (non renewable source of energy).

10. Which is called Earth's satellite?

- (A) moon (B) sun (C) venus (D) mars

Ans. (A)

Sol. Moon is a natural satellite of the earth.

11. Which is the colour at lower end of visible spectrum?

- (A) red (B) green (C) yellow (D) violet

Ans. (D)

Sol. with reference to the wavelength violet is at the lower end of visible spectrum.

12. How many planets have rings around them?

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

Ans. (C)

Sol. Jovian planets have ring around them. (Four)
(Jupiter, Saturn, Uranus, Neptune)

13. 1k Wh equal to :

- (A) 3.6×10^4 J (B) 3.6×10^5 J (C) 3.6×10^6 J (D) 3.6×10^7 J

Ans. (C)

Sol. 1 kilowatt hour
= 10^3 watt \times 3600 sec.
= 3.6×10^6 watt sec.
= 3.6×10^6 Joule

14. Which one of the following will show Tyndall Effect.

- (A) Solution of salt (B) Milk
(C) Solution of copper sulphate (D) None of the above

Ans. (B)

Sol. As it is colloidal solution of fat disperse in water.

15. Which one of the following is solution.

- (A) Soil (B) Aerosols (C) Coal (D) Soda-water

Ans. (D)

Sol. As it is Homogeneous mixture

16. Write chemical formula of Magnesium Chloride

- (A) $MgCl_2$ (B) $CaCl_2$ (C) $Cu(NO_3)_2$ (D) $CaCO_3$

Ans. (A)

Sol. $Mg^{2+} \times_2 Cl^- MgCl_2$

17. Isotopes of an element contains

- (A) Similar physical properties (B) Different chemical properties
(C) Different no. of Neutrons (D) Different atomic number

Ans. (C)

Sol. Isotopes have same atomic number (Z) but different mass no. (A) \therefore no. of neutrons will be difference (A-Z)

18. Valency electron in Cl^- ions is

- (A) 16 (B) 8 (C) 17 (D) 18

Ans. (B)

Sol. As it contains 8 electrons in outermost shell. (2, 8, 8)

19. Which one of the following is correct electronic configuration of sodium.

- (A) 2, 8 (B) 8, 2, 1 (C) 2, 1, 8 (D) 2, 8, 1

Ans. (D)

Sol. As its atomic number is 11. So no. of electron will be 11 \therefore 2, 8, 1 (as it is neutral).

20. Physical state of water at $0^\circ C$ is

- (A) Solid (B) Liquid (C) Gas (D) None of the above

Ans. (D)

Sol. As at $0^\circ C$ (Freezing point) both state exist i.e. solid & liquid.

21. Solution is

- (A) Homogeneous mixture (B) Heterogeneous mixture
(C) Colloidal (D) All of the above

Ans. (A)

Sol. Solution is homogeneous mixture.

22. Components present in air can be separated by

- (A) Fractional distillation (B) Evaporation
(C) Boiling (D) None

Ans. (A)

Sol. As air is homogeneous mixture boiling point difference in major components is less than $25^\circ C$.

23. Which one of the following is cation

- (A) Na^+ (B) Cl^-
(C) H_2 (D) None of the above

Ans. (BONUS)

Sol. Question not printed fully.

24. Electron is invented by

- (A) J.J. Thomson (B) Dalton
(C) Niels Bohr (D) None of the above

Ans. (A)

25. The maximum number of electrons in a shell can be show by
(A) $2n^2$ (B) $2n^3$ (C) $2n^2 + 1$ (D) None of the above

Ans. (A)

Sol. Maximum no. of electron accomodate in any shell of an atom is $2n^2$.

26. Distribution of electrons in carbon is as follow
(A) 2, 4 (B) 2, 2, 2 (C) 4, 2 (D) None of the above

Ans. (A)

Sol. Atomic no. of carbon is 6 ∴ electronic configuration 2,4.

27. All fungi are
(A) Parasites (B) Saprophytes (C) Symbiont (D) Heterotrophs

Ans. (D)

Sol. All fungi are heterotrophs as they obtain their organic material from external sources.

28. An exception to cell theory is
(A) Bacteria (B) Virus (C) Algae (D) All

Ans. (B)

Sol. Virus : As they do not have their own cellular apparatus.

29. Chemical composition of chromosome is
(A) DNA and lipid (B) DNA and carbohydrates
(C) Proteins and lipids (D) DNA and proteins

Ans. (D)

Sol. Chromosomes are made up of DNA and proteins.

30. DNA replication (synthesis) occurs in
(A) G-phase (B) S-phase (C) G_2 phase (D) M phase

Ans. (B)

Sol. DNA synthesis takes place in S-phase of interphase.

31. Bacteria 'eater's are
(A) Virus (B) Bacteria (C) Fungi (D) Algae

Ans. (A)

Sol. Virus for eg. Bacteriophage.

32. Cristae is associated with
(A) Nucleus (B) Chloroplast (C) Cell Wall (D) Mitochondria

Ans. (D)

Sol. Inner folds of mitochondria are called as cristae.

33. Association of algae and fungi forms
(A) Mycorrhiza (B) Lichen (C) Flower (D) Bio fertilizer

Ans. (B)

Sol. Symbiotic association of algae and fungi is lichen.

34. Energy flow in ecosystem is
(A) Tetra directional (B) Tri directional (C) Bi-directional (D) Uni-directional

Ans. (D)

Sol. Energy flow is unidirectional as it cannot be revert back.

35. Absorption of water is associated with
(A) Root apex (B) Root hairs (C) Bark of roots (D) All of these

Ans. (B)

Sol. Absorption of water is associated with root hairs.

- 36.** Which gas is not responsible for global warming
 (A) CO₂ (B) O₃ (C) NO₂ (D) N₂
Ans. (D)
- Sol.** CO₂, O₃ and NO₂ are heat trapping gases.
- 37.** Lipoprotein is found in
 (A) Cell membrane (B) Nucleus (C) Cytoplasm (D) Cell wall
Ans. (A)
- Sol.** Flexibility of plasma membrane is due to lipoproteins.
- 38.** Glycolysis place in
 (A) Mitochondria (B) Cytoplasm (C) Nucleus (D) Chloroplast
Ans. (B)
- Sol.** Glucose is broken down into pyruvic acid in cytoplasm by glycolysis.
- 39.** Amphibians of plant kingdoms are
 (A) Bacteria (B) Gymnosperm (C) Bryophyta (D) Algae
Ans. (C)
- Sol.** Bryophytes require water for fertilisation.
- 40.** When ATP is converted in to ADP it releases
 (A) Enzymes (B) Secretions (C) Energy (D) Hormones
Ans. (C)
- Sol.** ATP → ADP + ip
- 41.** The Harappan towns and cities were divided into large blocks
 (A) Square (B) Rectangular (C) Circular (D) Semi-circular
Ans. (B)
- Sol.** Question is from Class-IX History, Chapter-9. [Ancient History]
- 42.** The most famous centre of learning during the Mauryan period was
 (A) Taxila (B) Ujjain (C) Nalanda (D) Vallabhi
Ans. (A)
- Sol.** Question is from Class-IX History, Chapter-9. [Ancient History]
- 43.** In which year of Ashok coronation did the Kalinga war take place
 (A) Fifth year (B) First year (C) Eighth year (D) Thirteenth year
Ans. (C)
- Sol.** Question is from Class-IX History, Chapter-9. [Ancient History]
- 44.** Who built the stup of Sanchi?
 (A) Saripurtra (B) Mahomogallana (C) Mahinda (D) Ashok
Ans. (D)
- Sol.** Question is from Class-IX History, Chapter-11. [Ancient History]
- 45.** The founder of Vijaynagar kingdom was
 (A) Harihar I (B) Bukkaraya I (C) Both (A) and (B) (D) Krishnadevraya
Ans. (C)
- Sol.** Question is from Class-IX History, Chapter-10. [Medieval History]
- 46.** Taj Mahal is located
 (A) In Agra (B) Fatehpur Sikeri (C) In Delhi (D) None of these
Ans. (A)
- Sol.** Question is from Class-IX History, Chapter-11. [Medieval History]
- 47.** At where Britishers established the first factory in Bengal in 1651 A.D.
 (A) Hugli (B) Murshidabad (C) Kasim Bazar (D) Calcutta
Ans. (A)

Sol. Question is from Class-X History, Chapter-7. [Modern History]

48. Who is associated with the policy of Doctrine of Laps

- (A) Lord Hastings (B) Lord Dalhousie (C) Lord Wellesley (D) Lord Cornwallis

Ans. (B)

Sol. Question is from Class-X History, Chapter-7. [Modern History]

49. At which place was Tanya Tope hanged to death

- (A) Jhansi (B) Kanpur (C) Shivpuri (D) Sagar

Ans. (C)

Sol. Question is from Class-X History, Chapter-7. [Modern History]

50. Rani Laxmibai was also known as by which name

- (A) Chhabili (B) Manu (C) Manikamika (D) All of the above

Ans. (D)

Sol. Out of M.P. Board. [Modern History]

51. What was the real name of Swami Vivekanad

- (A) Narendranath (B) Mula Shankar
(C) Gadadhar Chattopadhyaya (D) Mahes Das

Ans. (A)

Sol. Out of M.P. Board. [Modern History]

52. Chandra Shekhar Azad was born on 23rd July 1806 at

- (A) Jhabua (B) Bangagaon (C) Gurudaspur (D) Gwalior

Ans. (A)

Sol. Question is from Class-X History, Chapter-10. [Modern History]

53. Who gave the title of Mahatma to Gandhiji

- (A) Romain Rolland (B) Louis Fisher (C) Ravindranath Tagore (D) Subhash Chandra Bose

Ans. (C)

Sol. Out of M.P. Board (Freedom struggle - Modern History)

54. The credit of merger of states in India goes to?

- (A) Jawahar Lal Nehru (B) Sardar Patel (C) Fazal Ali (D) Mahatma Gandhi

Ans. (B)

Sol. Question is from Class-X History, Chapter-11 [Modern History].

55. When was the constitution of India adopted

- (A) 9 December 1946 (B) 16 August 1947 (C) 26 November 1949 (D) 26 January 1950

Ans. (C)

Sol. Question is from Class-X History, Chapter-12 [Modern History/Indian Constitution].

56. The resources are those things which

- (A) Satisfy human needs (B) Full fill some specific objective
(C) Are needed for the human welfare (D) All the above

Ans. (D)

Sol. Question is from Class-X Geography, Chapter-1 [Resources of India-I].

57. Meaning of Resource conservation is :

- (A) No use of resources (B) To keep resources reserved
(C) Prevent misuse of resources (D) Balanced use of resources

Ans. (C & D)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

58. The major natural hazard of India is

- (A) Drought (B) Flood (C) Earthquake (D) Volcano

Ans. (B)

Sol. Question is from Class-X Geography, Chapter-6 [Disaster Management].

59. Kagiranga National Park is located in-

- (A) Uttar Pradesh (B) Assam (C) Rajasthan (D) Orissa

Ans. (B)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-I].

60. Suitable soil for cotton production is

- (A) Alluvial soil (B) Black soil (C) Red soil (D) Laterite soil

Ans. (B)

Sol. Question is from Class-X Geography, Chapter-1 [Resources of India-I].

61. Father of Green revolution is

- (A) Dr. Bennett (B) Billcox (C) Norman Borlaug (D) Nixon

Ans. (C)

Sol. Out of M.P. Board

62. Yellow revolution is related to

- (A) Oilseeds production (B) Fruits production (C) Sheep production (D) Fish production

Ans. (A)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

63. Kharif crops are

- (A) Rice, Millet, Maize (B) Wheat, Gram, Jow (C) Jute, Tea, Coffee (D) Tobacco, Rubber, Linseed

Ans. (A)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

64. Metallic Mineral is-

- (A) Iron (B) Diamond (C) Mica (D) Coal

Ans. (A)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

65. Which type is not included in iron-ore

- (A) Hemetite (B) Magnetite (C) Limonite (D) Lignite

Ans. (D)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

66. Which is not a part of Public Distribution System.

- (A) Proper value shop (B) Co-operative customer storage
(C) Super market (D) Buffer stock

Ans. (D)

Sol. Question is from Class-IX Economics, Chapter-18 [Food Security in India].

67. First rank of Diamond Production in India.

- (A) Madhya Pradesh (B) Bihar (C) Uttar Pradesh (D) Orissa

Ans. (A)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

68. Tarapur is famous for

- (A) Nuclear electricity (B) Solar energy (C) Hydro electricity (D) Wind energy

Ans. (A)

Sol. Question is from Class-X Geography, Chapter-2 [Resources of India-II].

69. The manchester of cotton textile in South India is called-

- (A) Secunderabad (B) Coimbatore (C) Thiruvananthapuram (D) Guntur

Ans. (B)

Sol. Question is from Class-X Geography, Chapter-3 [Industries].

70. Which is the cheapest means of transport-
(A) Air transport (B) Water transport (C) Rail transport (D) Road transport

Ans. (B)

Sol. Question is from Class-X Geography, Chapter-4 [Transport and Communication].

71. Which country's parliament is treated as the mother of world parliament.
(A) America (B) Britain (C) India (D) Switzerland

Ans. (B)

Sol. Out of M.P. Board.

72. Who protects the constitution-
(A) Judiciary (B) Legislature (C) Executive (D) Finance Commission

Ans. (A)

Sol. Question is from Class-X Civics, Chapter-13 [Constitution of India and Fundamental Rights].

73. From which country did we adopt fundamental rights?
(A) England (B) China (C) U.S.A. (D) Ireland

Ans. (C)

Sol. Question is from Class-X Civics, Chapter-12 [Constitution of India and Fundamental Rights].

74. How long can an ordinance remain in force?
(A) Three months (B) Four months (C) Five months (D) Six months

Ans. (D)

Sol. Question is from Class-X Civics, Chapter-13 [Parliamentary System in India].

75. The quorum requirement to the Rajya Sabha-
(A) 25 (B) 50 (C) 75 (D) 100

Ans. (A)

Sol. Out of M.P. Board [Parliamentary System in India].

76. The main function of the Foreign Exchange bank is:
(A) Receiving the deposits (B) Advancing loans (C) Exchange of money (D) All above

Ans. (D)

Sol. Question is from Class-X Economics, Chapter-17 [Banking and financial system].

77. Agmark security icon is:
(A) for Jewellery (B) for agricultural products
(C) for woolen clothes (D) for electrical appliances

Ans. (B)

Sol. Question is from Class-X Economics, Chapter-19 [Consumer Rights].

78. Employment is provided in the National Rural Employment Guarantee Scheme for-
(A) 150 days (B) 100 days (C) 200 days (D) One year

Ans. (B)

Sol. Question is from Class-X Economics, Chapter-16 [Rural development and employment guarantee scheme].

79. Expansion of the market is supported by-
(A) Means of Transport (B) Means of Communication
(C) Bank and Financial Institution (D) All of the above

Ans. (D)

Sol. Question is from Class-X Economics, Chapter-18 [Service sector and infrastructure].

80. World Trade Organization has been established :
(A) 1985 year (B) 1995 year (C) 2001 year (D) 2005 year

Ans. (B)

Sol. Question is from Class-X Economics, Chapter-21 [Globalisation].

81. Number r is termed as Rational number if it can be expressed as $\frac{p}{q}$, where p and q are integers and ,

- (A) $p = 0$ (B) $p \neq 0$ (C) $q = 0$ (D) $q \neq 0$

Ans. (D)

Sol. $r = \frac{p}{q}$, p & q are integers and $\boxed{q \neq 0}$

82. Zero os the polynomial $p(x) = 2x + 1$ is :

- (A) $-\frac{1}{2}$ (B) $\frac{1}{2}$ (C) 0 (D) ∞

Ans. (A)

Sol. For zero of the polynomial, $2x + 1 = 0$ $\boxed{x = -\frac{1}{2}}$

83. Number of straight lines passing through the point $(1,2)$ is :

- (A) 1 (B) 2 (C) 3 (D) ∞

Ans. (D)

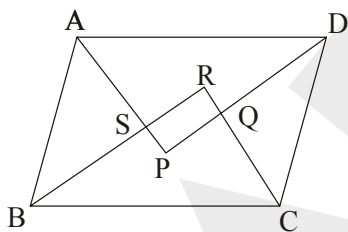
Sol. Infinite lines can pass through a single point.

84. Shape made by the bisectors fo angles of a parallelogram is.

- (A) Rectangle (B) Square (C) Circle (D) Straight line

Ans. (A)

Sol. A parallelogram ABCD in which bisectors of angles A, B, C, D intersect at P, Q, R, S to form a quadrilateral PQRS.



Since ABCD is a parallelogram. Therefore,

$$AD \parallel BC$$

Now, $AD \parallel BC$ and transversal AB intersects them at A and B respectively. Therefore,

$$\angle A + \angle B = 180^\circ \quad [\because \text{Sum of consecutive interior angles is } 180^\circ]$$

$$\Rightarrow \frac{1}{2}\angle A + \frac{1}{2}\angle B = 90^\circ$$

$$\Rightarrow \angle BAS + \angle ABS = 90^\circ \quad \dots\dots(i) \quad \left[\because AS \text{ and } BS \text{ are bisectors of } \right. \\ \left. \angle A \text{ and } \angle B \text{ respectively} \right]$$

But, in $\triangle ABS$, we have

$$\angle BAS + \angle ABS + \angle ASB = 180^\circ$$

$$\Rightarrow 90^\circ + \angle ASB = 180^\circ$$

$$\Rightarrow \angle ASB = 90^\circ$$

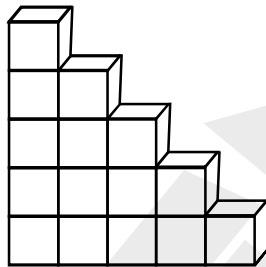
$$\Rightarrow \angle RSP = 90^\circ \quad \left[\begin{array}{l} \because \angle ASB \text{ and } \angle RSP \text{ are vertically opposite} \\ \text{angles } \therefore \angle RSP = \angle ASB \end{array} \right]$$

Similarly, we can prove that

$$\angle SRQ = 90^\circ, \angle RQP = 90^\circ \text{ and } \angle SPQ = 90^\circ$$

Hence, PQRS is a rectangle.

85. If side of each cube is 3 cm. then Volume of given figure is.



(A) 3 cm^3

(B) 27 cm^3

(C) 15 cm^3

(D) 405 cm^3

Ans. (D)

Sol. Each side of cube is 3 cm.

$$\therefore \text{volume of one cube} = (\text{side})^3 \Rightarrow (3)^3 = 27 \text{ cm}^3$$

$$\text{These are 15 cubes } \therefore 27 \times 15 = 405 \text{ cm}^3$$

86. Hero's formula for the Area of triangle is :

(A) $\frac{1}{2}(\text{Base} \times \text{Height})$

(B) $\sqrt{s(s-a)(s-b)(s-c)}$

(C) $\frac{a+b+c}{2}$

(D) $\sqrt{s \cdot a \cdot b \cdot c}$

Ans. (B)

Sol. It is direct formula for Area of triangle = $\sqrt{s(s-a)(s-b)(s-c)}$

87. If the number of observations n is even, then median is.

(A) $\left(\frac{n+1}{2}\right)^{\text{th}}$ term

(B) $\left(\frac{n}{2}\right)^{\text{th}}$ term

(C) Mean of $\left(\frac{n}{2}\right)^{\text{th}}$ and $\left(\frac{n}{2}+1\right)^{\text{th}}$ term

(D) None of these

Ans. (C)

Sol. Let the rational no. be $\frac{x}{y}$ is b numerator & y be the denominator

Case I : $\frac{x-1}{y} = \frac{1}{3} \therefore y = 3x - 3$ (1)

Case II : $\frac{x}{y+8} = \frac{1}{4} \Rightarrow 4x = y + 8$ (2)

from (1) & (2)
 $4x = 3x - 3 + 8$
 $\therefore x = 5$
 $\therefore y = 3 \times 5 - 3 = 12$

\therefore rational number is $\frac{5}{12}$

- 92.** How many numbers of two digits are divisible by 3
 (A) 30 (B) 32 (C) 40 (D) 35

Ans. (A)

Sol. 12, 15,.....99.

$a = 12, d = 3$
 $a_n = a + (n - 1) d$
 $\Rightarrow 99 = 12 + (n - 1) 3$
 $\Rightarrow 87 = 3n - 3 \Rightarrow 3n = 90 \Rightarrow \therefore n = 30$

- 93.** Co-ordinates of a point on y-axis which is equidistant from the points (6,5) and (-4,3) are
 (A) (9,0) (B) (0,9) (C) (3,2) (D) (0,0)

Ans. (B)

Sol. Let point on y axis be P(0, y), it is equidistance from Point A (6, 5) and point B (-4, 3) are equal

$\therefore PA^2 = PB^2$
 $(0 - 6)^2 + (5 - y)^2 = (-4 - 0)^2 + (3 - y)^2$
 $36 + 25 + y^2 - 10y = 16 + 9 + y^2 - 6y$
 $\Rightarrow 36 + 25 - 25 = 4y$

$\therefore y = \frac{36}{4} = 9$

\therefore Point is (0, 9)

- 94.** Value of $\sec A(1 - \sin A)(\sec A + \tan A)$ is
 (A) 0 (B) 2 (C) 1 (D) ∞

Ans. (C)

Sol. $\sec A(1 - \sin A)(\sec A + \tan A)$

$= \frac{1}{\cos A}(1 - \sin A)\left(\frac{1}{\cos A} + \frac{\sin A}{\cos A}\right)$

$$= \frac{(1 - \sin A)(1 + \sin A)}{\cos^2 A} = \frac{1 - \sin^2 A}{\cos^2 A} = \frac{\cos^2 A}{\cos^2 A} = 1$$

95. Length of Minute hand of a clock is 14cm. Area formed by this hand in 5 minutes is:

- (A) $\frac{154}{3}$ (B) 154 (C) $\frac{215}{3}$ (D) $\frac{205}{3}$

Ans. (A)

Sol. Angle made by minute hand in one minute is 6°

\therefore in 5 minutes it is 30° . It forms a sector in 5 minutes.

$$\frac{30}{360} \times \pi \times (14)^2 = \frac{1}{12} \times \frac{22}{7} \times 14 \times 14 = \frac{154}{3}$$

96. Mean of first n natural numbers is :

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

Ans. (B)

Sol. Mean of first n natural number is $\frac{n+1}{2}$

because sum of n natural number = $\frac{n(n+1)}{2}$

Total number of terms = n

$$\text{mean} = \frac{\text{sum of all observation}}{\text{Total number of observation}} = \frac{n+1}{2}$$

97. A box contain 3 blue, 2 white and 4 red marbles. A marble is drawn randomly. Probability of getting white marble is.

- (A) $\frac{3}{5}$ (B) $\frac{2}{6}$ (C) $\frac{2}{9}$ (D) $\frac{2}{5}$

Ans. (C)

Sol. Total marbles = 9

White marbles = 2

$$\text{Probability (white marbles)} = \frac{2}{9}$$

98. Choose false statement from following:

- (A) All equilateral triangles are isosceles triangle (B) Some rational numbers are integers
(C) All integers are not rational number (D) Some Isosceles triangles are equilateral triangles

Ans. (C)

Sol. All integers are rational numbers.

99. Angle of elevation of a tower from a point at a distance of 15 meter from foot of the tower is 60° . Height of tower is

- (A) 15 meter (B) $\sqrt{3}$ meter (C) $15\sqrt{3}$ meter (D) $\frac{15}{\sqrt{3}}$ meter

Ans. (C)

Sol. Let the height of tower is $BC = h$ m.

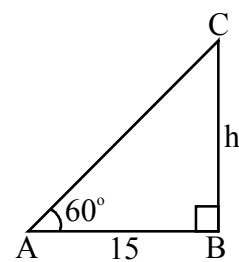
Now in right angle triangle $\triangle ABC$

$$\tan 60^\circ = \frac{BC}{AB}$$

$$\sqrt{3} = \frac{h}{15}$$

$$15\sqrt{3} = h$$

$$h = 15\sqrt{3} \text{ m}$$



100. nth term of a list of numbers is given by $a_n = (3 + 2n)$. Sum of first 24 terms will be

(A) 672

(B) 670

(C) 570

(D) 572

Ans. (A)

Sol. Given, $a_n = 3 + 2n$

Now, $a_1 = 5$

$$a_2 = 3 + 2 \times 2 = 7$$

$$d = a_2 - a_1 = 7 - 5 = 2$$

$$d = 2$$

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

$$S_{24} = \frac{24}{2} [2 \times 5 + 23 \times 2]$$

$$= 12 [10 + 46]$$

$$= 12 \times 56$$

$$= 672$$