

AERO CET SAMPLE PAPER (4) 2023



PHYSICS

1. In the common base mode of a transistor, the collector current is 5.488 mA for an emitter current of 5.60 mA. The value of the base current amplification factor (β) will be

- A) 48
- B) 49
- C) 50
- D) 51

ANS: (B)

2. Carbon, silicon and germanium have four valence electrons each. At room temperature which one of the following statements is most appropriate?

- A) The number of free electrons for conduction is significant only in Si and Ge but small in C
- B) The number of free conduction electrons is significant in C but small in Si and Ge
- C) The number of free conduction electrons is negligibly small in all the three
- D) The number of free electrons for conduction is significant in all three

ANS: (A)

3. A telephonic communication service is working at a carrier frequency of 10 GHz. Only 10% of it is utilized for transmission. How many telephonic channels can be transmitted simultaneously if each channel requires a bandwidth of 5 kHz?

- A) 2×10^3
- B) 2×10^4
- C) 2×10^5
- D) 2×10^6

ANS: (C)

4. A TV transmission tower has a height of 140 m and the height of the receiving antenna is 40 m. What is the maximum distance up to which signals can be broadcasted from this tower in LOS (Line of Sight) mode? (Given: radius of earth = 6.4×10^6 m)

- A) 65 km
- B) 48 km
- C) 40 km
- D) 80 km

ANS: (A)

5. The phase difference between the alternating current and emf is $\pi/2$. Which of the following cannot be the constituent of the circuit?

- A) LC
- B) L alone
- C) C alone

D) R, L

R and L cause phase difference to lie between 0 and $\pi/2$ but never 0 and $\pi/2$ at extremities

ANS: (D)

6. Alternating current cannot be measured by D.C ammeter because

A) A.C cannot pass through D.C ammeter

B) A.C changes direction

C) The average value of current for the complete cycle is zero

D) D.C. ammeter will get damaged

The average value of A.C for the complete cycle is zero. Hence A.C cannot be measured by D.C ammeter

ANS: (C)

7. The mean intensity of radiation on the surface of the Sun is about 10^8 W/m^2 . The RMS value of the corresponding magnetic field is closest to

A) 10^{-2} T

B) 1 T

C) 10^{-4} T

D) 10^2 T

ANS: (C)

8. A plane electromagnetic wave travels in free space along the x-direction. The electric field component of the wave at a particular point of space and time is $E = 6 \text{ V m}^{-1}$ along the y-direction. Its corresponding magnetic field component, B would be

A) $6 \times 10^{-8} \text{ T}$ along the x-direction

B) $2 \times 10^{-8} \text{ T}$ along the y-direction

C) $2 \times 10^{-8} \text{ T}$ along the z-direction

D) $6 \times 10^{-8} \text{ T}$ along the z-direction

ANS: (C)

9. A convex lens is put 10 cm from a light source and it makes a sharp image on a screen, kept 10 cm from the lens. Now a glass block (refractive index 1.5) of 1.5 cm thickness is placed in contact with the light source. To get the sharp image again, the screen is shifted by a distance d. Then d is

A) 0.55 cm towards the lens

B) 0

C) 1.1 cm away from the lens

D) 0.55 cm away from the lens

ANS: (D)

10. The speed of light in the medium is

A) Maximum on the axis of the beam

- B) Minimum on the axis of the beam
- C) The same everywhere in the beam
- D) Directly proportional to the intensity I

ANS: (B)

11. In Young's double-slit experiment with slit separation 0.1 mm, one observes a bright fringe at angle $1/40$ rad by using the light of wavelength λ_1 . When the light of wavelength λ_2 is used a bright fringe is seen at the same angle in the same setup. Given that 1 and 2 are in the visible range (380 nm to 740 nm), their values are

- A) 400 nm, 500 nm
- B) 625 nm, 500 nm
- C) 380 nm, 525 nm
- D) 380 nm, 500 nm

ANS: (B)

12. In Young's double-slit experiment, the path difference, at a certain point on the screen, between two interfering waves is $(1/8)^{\text{th}}$ of wavelength. The ratio of the intensity at this point to that at the centre of a bright fringe is close to

- A) 0.80
- B) 0.94
- C) 0.85
- D) 0.74

ANS: (C)

13. A sample of radioactive material A, that has an activity of 10 mCi ($1 \text{ Ci} = 3.7 \times 10^{10}$ decays/s) has twice the number of nuclei as another sample of a different radioactive material B, which has an activity of 20 mCi. The correct choices for half-lives of A and B would then be respectively

- A) 20 days and 5 days
- B) 10 days and 40 days
- C) 20 days and 10 days
- D) 5 days and 10 days

ANS: (A)

14. Using a nuclear counter the count rate of emitted particles from a radioactive source is measured. At $t = 0$ it was 1600 counts per second and at $t = 8$ seconds it was 100 counts per second. The count rate observed, as counts per second, at $t = 6$ seconds is close to

- A) 200
- B) 360
- C) 150
- D) 400

ANS: (A)

15. A compressive force, F is applied at the two ends of a long thin steel rod. It is heated, simultaneously, such that its temperature increases by ΔT . The net change in its length is zero. Let L be the length of the rod, A is its area of cross-section. Y is Young's modulus, and α is its coefficient of linear expansion. Then, F is equal to

- A). $L^2 Y \alpha \Delta T$
- B). $A Y / \alpha \Delta T$
- C). $A Y \alpha \Delta T$
- D). $L A Y \alpha \Delta T$

ANS: (C)

16. A wire suspended vertically from one of its ends is stretched by attaching a weight of 200 N to the lower end. The weight stretches the wire by 1mm. Then the elastic energy stored in the wire is

- A) 0.2 J
- B) 10 J
- C) 20 J
- D) 0.1 J

ANS: (D)

17. Water flows into a large tank with a flat bottom at the rate of $10^{-4} \text{ m}^3 \text{ s}^{-1}$. Water is also leaking out of a hole of area 1 cm^2 at its bottom. If the height of the water in the tank remains steady, then this height is

- A) 5 cm
- B) 7 cm
- C) 4 cm
- D) 9 cm

ANS: (A)

18. A submarine experiences a pressure of $5.05 \times 10^6 \text{ Pa}$ at depth of d_1 in a sea. When it goes further to a depth of d_2 , it experiences a pressure of $8.08 \times 10^6 \text{ Pa}$. Then $d_1 - d_2$ is approximately (density of water = 10^3 ms^{-2} and acceleration due to gravity = 10 ms^{-2})

- A) 300 m
- B) 400 m
- C) 600 m
- D) 500 m

ANS: (A)

19. A resonance tube is old and has a jagged end. It is still used in the laboratory to determine the velocity of sound in the air. A tuning fork of frequency 512 Hz produces the first resonance when the tube is filled with water to a mark 11 cm below a reference mark, near the open end of the tube. The experiment is repeated with another fork of frequency 256 Hz which produces the first resonance when water reaches a mark 27 cm below the reference mark. The velocity of sound in air, obtained in the experiment, is close to

- A) 335 m s^{-1}
- B) 322 m s^{-1}
- C) 328 m s^{-1}

D) 341 m s^{-1}

ANS: (c)

20. In an engine, the piston undergoes vertical simple harmonic motion with amplitude 7 cm. A washer rests on top of the piston and moves with it. The motor speed is slowly increased. The frequency of the piston at which the washer no longer stays in contact with the piston is close to

A) 0.7 Hz

B) 1.9 Hz

C) 1.2 Hz

D) 0.1 Hz

ANS: (B)

21. A metal wire of resistance 3Ω is elongated to make a uniform wire of double its previous length. This new wire is now bent and the ends joined to make a circle. If two points on this circle make an angle 60° at the centre, the equivalent resistance between these two points will be

A) $(7/2) \Omega$

B) $(5/2) \Omega$

C) $(12/5) \Omega$

D) $(5/3) \Omega$

ANS: (D)

22. On interchanging the resistances, the balance point of a meter bridge shifts to the left by 10 cm. The resistance of the combination is $1 \text{ k}\Omega$. How much was the resistance on the left slot before the interchange?

A) 990

B) 505

C) 550

D) 910

ANS: (c)

23. A solid conducting sphere, having a charge Q , is surrounded by an uncharged conducting hollow spherical shell. Let the potential difference between the surface of the solid sphere and that of the outer surface of the hollow shell be V . If the shell is now given a charge of $-4Q$, the new potential difference between the same two surfaces is

A) $4V$

B) V

C) $2V$

D) $-2V$

ANS: (B)

24. Voltage rating of a parallel plate capacitor is 500 V. Its dielectric can withstand a maximum electric field of 106 V m^{-1} . The plate area is 10^{-4} m^2 . What is the dielectric constant if the capacitance is 15 pF ? (given $\epsilon_0 = 8.86 \times 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$)

- A) 3.8
- B) 8.5
- C) 6.2
- D) 4.5

ANS: (B)

25. The following four wires are made of the same material. Which of these will have the largest extension when the same tension is applied?

- A) Length = 200 cm, diameter = 2 mm
- B) Length = 300 cm, diameter = 3 mm
- C) Length = 50 cm, diameter = 0.5 mm
- D) Length = 100 cm, diameter = 1 mm

ANS: (C)

CHEMISTRY

1. The radius of the second Bohr orbit for the hydrogen atom is :

(Planck's constant, $h = 6.262 \times 10^{-34} \text{ Js}$; Mass of electron = $9.1091 \times 10^{-31} \text{ kg}$; Charge of electron $e = 1.60210 \times 10^{-19} \text{ C}$; permittivity of vacuum $\epsilon_0 = 8.854185 \times 10^{-12} \text{ kg}^{-1} \text{ m}^{-3} \text{ A}^2$)

- A) 1.65 A
- B) 4.76 A
- C) 0.529 A
- D) 2.12 A

ANS: (D)

2. Ionisation energy of He^+ is $19.6 \times 10^{-18} \text{ J atom}^{-1}$. The energy of the first stationary state ($n = 1$) of Li^{2+} is

- A) $8.82 \times 10^{-17} \text{ J atom}^{-1}$
- B) $4.41 \times 10^{-16} \text{ J atom}^{-1}$
- C) $-4.41 \times 10^{-17} \text{ J atom}^{-1}$
- D) $-2.2 \times 10^{-15} \text{ J atom}^{-1}$

ANS: (C)

3. The hybridisation of orbitals of N atom in NO_3^- , NO_2^+ , NH_4^+ are respectively:

- A) sp^2 , sp^3 , sp
- B) sp , sp^3 , sp^2
- C) sp , sp^2 , sp^3
- D) sp^2 , sp , sp^3

ANS: (D)

4. Based on lattice energy and other considerations, which one of the following alkali metal chlorides is expected to have the highest melting point?

- A) RbCl
- B) LiCl
- C) KCl
- D) NaCl

ANS: (D)

5. The ratio of number of oxygen atoms (O) in 16.0g oxygen (O), 28.0 g carbon monoxide (CO) and 32.0g oxygen (O_2) is :

(Atomic mass : $\text{C} = 12$, $\text{O} = 16$ and Avogadro's constant $N_A = 6.0 \times 10^{23} \text{ mol}^{-1}$)

- A) 3 : 1 : 1
- B) 1 : 1 : 2
- C) 3 : 1 : 2

D) 1 : 1 : 1

ANS: (D)

6. An open vessel at 300 K is heated till $\frac{2}{5}$ th of the air in it is expelled. Assuming that the volume of the vessel remains constant, the temperature to which the vessel is heated is :

A) 750 K

B) 400 K

C) 500 K

D) 1500K

ANS: (C)

7. The IUPAC name of $\text{CH}_3\text{COCH}(\text{CH}_3)_2$ is

A) 2-methyl-3-butanone

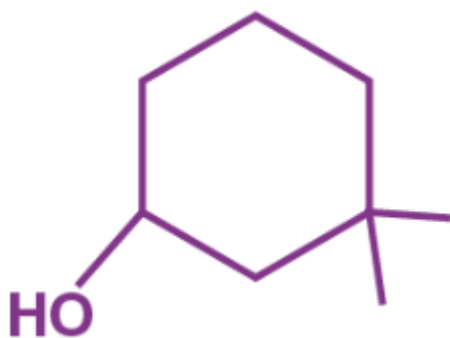
B) 4-methylisopropyl ketone

C) 3-methyl-2-butanone

D) Isopropylmethyl ketone

ANS: (C)

8. The IUPAC name of the compound



A) 3,3- dimethyl -1- hydroxycyclohexane

B) 1,1 – dimethyl -3- cyclohexanol

C) 3,3- dimethyl -1- cyclohexanol

D) 1,1 – dimethyl -3- hydroxycyclohexane

ANS: (B)

9. The general formula $\text{C}_n\text{H}_{2n}\text{O}_2$ could be for open chain

A) carboxylic acids

B) diols

C) dialdehydes

D) diketones

ANS: (A)

10. Which one of the following conformation of cyclohexane is chiral?

- A) Twist boat
- B) Rigid
- C) Chair
- D) Boat

ANS: (A)

11. What is DDT among the following?

- A) A fertilizer
- B) Biodegradable pollutant
- C) Non-biodegradable pollutant
- D) Greenhouse gas

ANS: (D)

12. The compound formed on heating chlorobenzene with chloral in the presence of concentrated sulphuric acid is 3. For the reaction $A + 2B \rightarrow C$, rate is given by $R = [A] [B]^2$ then the order of the reaction is

- A) 3
- B) 6
- C) 5
- D) 7

ANS: (A)

13. If 50% of a reaction occurs in 100 seconds and 75% of the reaction occurs in 200 seconds, the order of this reaction is

- A) 1
- B) 2
- C) Zero
- D) 3

ANS: (A)

14. Which of the oxide groups among the following cannot be reduced by carbon?

- A) Fe_2O_3 , ZnO
- B) PbO, Fe_2O_4
- C) Cu_2O , SnO_2
- D) CaO, K_2O

ANS: (D)

15. The ore that contains both iron and copper is

- A) Dolomite
- B) Malachite
- C) Copper pyrites
- D) Azurite.

ANS: (C)

16. An unknown alcohol is treated with the "Lucas reagent" to determine whether the alcohol is primary, secondary or tertiary. Which alcohol reacts fastest and by what mechanism: -

- A) Secondary alcohol by SN^1
- B) Tertiary alcohol by SN^1
- C) Secondary alcohol by SN^2
- D) Tertiary alcohol by SN^2

ANS: (B)

17. Phenyl magnesium bromide reacts with methanol to give

- A) a mixture of anisole and $Mg(OH)Br$
- B) a mixture of benzene and $Mg(OMe)Br$
- C) a mixture of toluene and $Mg(OH)Br$
- D) a mixture of phenol and $Mg(Me)Br$

ANS: (B)

18. Which one of the following exhibits the largest number of oxidation states?

- A) Mn(25)
- B) V(23)
- C) Cr (24)
- D) Ti (22)

ANS: (A)

19. The products obtained on heating $LiNO_3$ will be:-

- A) $LiNO_2 + O_2$
- B) $Li_2O + NO_2 + O_2$
- C) $Li_3N + O_2$
- D) $Li_2O + NO + O_2$

ANS: (B)

20. On heating an aliphatic primary amine with chloroform & ethanolic potassium hydroxide the organic compound formed is

- A) An alkyl cyanide

- B) An alkyl isocyanide
- C) an alkanol
- D) an alkane diol

ANS: (C)

21. In the chemical reactions



The compounds 'A' and 'B' are respectively:

- A) Fluorobenzene and phenol
- B) Benzene diazonium chloride and benzonitrile
- C) Nitrobenzene and chlorobenzene
- D) Phenol and bromobenzene

ANS: (B)

22. Which one is classified as a condensation polymer?

- A) Acrylonitrile
- B) Dacron
- C) Neoprene
- D) Teflon

ANS: (B)

23. The species which can best serve as an initiator for the cationic polymerization is

- A) LiAlH_4
- B) HNO_3
- C) AlCl_3
- D) BuLi

ANS: (C)

24. Nylon threads are made of

- A) Polyester polymer
- B) Polyamide polymer
- C) Polyethylene polymer
- D) Polyvinyl polymer

ANS: (B)

25. The formation of which of the following polymers involves hydrolysis reaction?

- A) Nylon 6

- B) Bakelite
- C) Nylon 6, 6
- D) Terylene

ANS: (A)

Mathematics

1. For which of the following ordered pairs (μ, δ) , the system of linear equations

$$x + 2y + 3z = 1$$

$$3x + 4y + 5z = \mu$$

$$4x + 4y + 4z = \delta$$

is inconsistent?

A) (4, 6)

B) (3, 4)

C) (1, 0)

D) (4, 3)

ANS: (D)

2. The system of linear equations

$$\lambda x + 2y + 2z = 5$$

$$2\lambda x + 3y + 5z = 8$$

$$4x + \lambda y + 6z = 10$$
 has:

□□□

A) no solution when $\lambda = 2$

B) infinitely many solutions when $\lambda = 2$

C) no solution when $\lambda = 8$

D) a unique solution when $\lambda = -8$

ANS: (A)

3. Let

$$A = \begin{pmatrix} 1 & 2 \\ -2 & -5 \end{pmatrix}$$

Let $\alpha, \beta \in \mathbb{R}$ be such that $\alpha A^2 + \beta A = 2I$. Then $\alpha + \beta$ is equal to

A) -10

B) -6

C) 6

D) 10

ANS: (D)

4. The remainder when $(2021)^{2022} + (2022)^{2021}$ is divided by 7 is

A) 0

B) 1

C) 2

D) 6

ANS: (A)

5. Suppose $a_1, a_2, \dots, a_n, \dots$ be an arithmetic progression of natural numbers. If the ratio of the sum of first five terms to the sum of first nine terms of the progression is 5 : 17 and $110 < a_{15} < 120$, then the sum of the first ten terms of the progression is equal to

A) 290

B) 380

C) 460

D) 510

ANS: (B)

6. The value of the definite integral,

$$\int_1^{\infty} (e^{x+1} + e^{3-x})^{-1} dx \text{ is}$$

(A) $\frac{\pi}{4e^2}$

(B) $\frac{\pi}{4e}$

(C) $\frac{1}{e^2} \left(\frac{\pi}{2} - \tan^{-1} \frac{1}{e} \right)$

(D) $\frac{\pi}{2e^2}$

ANS:(A)

7. The value of the definite integral,

$$\int_0^{\sqrt{\ln\left(\frac{\pi}{2}\right)}} \cos\left(e^{x^2}\right) \cdot 2x e^{x^2} dx \text{ is}$$

A) 1

B) $1 + (\sin 1)$

C) $1 - (\sin 1)$

D) $(\sin 1) - 1$

ANS: (C)

8. Feasible solution to linear programming problem?

A) Must satisfy all of the problem's constraints simultaneously

B) Need not satisfy all of the constraints, only the non-negativity constraints

C) Must be a corner point of feasible region

D) Must give the maximum possible profit

ANS: (A)

9. The value of the determinant

$$\begin{vmatrix} a^2 & a & 1 \\ \cos(nx) & \cos(n+1)x & \cos(n+2)x \\ \sin(nx) & \sin(n+1)x & \sin(n+2)x \end{vmatrix}$$

is independent of :

- A) n
- B) a
- C) x
- D) a , n and x

ANS: (A)

10. If A and B are symmetric matrices, then ABA is

- A) Symmetric matrix
- B) Skew symmetric
- C) Diagonal matrix
- D) Scalar matrix

ANS: (A)

11. If A and B are invertible matrices, which one of the following statements is not correct

- (A) $\text{Adj. } A = |A| A^{-1}$
- (B) $\det(A^{-1}) = |\det(A)|^{-1}$
- (C) $(A + B)^{-1} = B^{-1} + A^{-1}$
- (D) $(AB)^{-1} = B^{-1}A^{-1}$

ANS: (C)

12. If A and B are non-singular Matrices of same order then $\text{Adj. } (AB)$ is

- A) $\text{Adj. } (A) (\text{Adj. } B)$
- B) $(\text{Adj. } B) (\text{Adj. } A)$
- C) $\text{Adj. } A + \text{Adj. } B$
- D) None of these

ANS: (B)

13. The following system of equations $3x - 7y + 5z = 3$; $3x + y + 5z = 7$ and $2x + 3y + 5z = 5$ are

- A) Consistent with trivial solution
- B) Consistent with unique non trivial solution
- C) Consistent with infinite solution
- D) Inconsistent with no solution

ANS: (B)

14. The system of equations $(\sin\theta)x + 2z = 0$, $(\cos\theta)x + (\sin\theta)y = 0$, $(\cos\theta)y + 2z = a$ has

- A) no unique solution
- B) a unique solution which is a function of a and θ
- C) a unique solution which is independent of a and θ
- D) a unique solution which is independent of θ only

ANS: (B)

15. $\sin 3\theta = 4 \sin \theta \sin 2\theta \sin 4\theta$ in $0 \leq \theta \leq \pi$ has :

- A) 2 real solutions
- B) 4 real solutions
- C) 6 real solutions
- D) 8 real solutions.

ANS: (D)

16. In a ΔABC , $\cos 3A + \cos 3B + \cos 3C = 1$ then:

- A) ΔABC is right angled
- B) ΔABC is acute angled
- C) ΔABC is obtuse angled
- D) Nothing definite can be said about the nature of the Δ .

ANS: (C)

17. The medians of a ΔABC are 9 cm, 12 cm and 15 cm respectively. Then the area of the triangle is

- A) 96 sq cm
- B) 84 sq cm
- C) 72 sq cm
- D) 60 sq cm

ANS: (C)

18. The product of the arithmetic mean of the lengths of the sides of a triangle and harmonic mean of the Lengths of the altitudes of the triangle is equal to:

- A) Δ
- B) 2Δ
- C) 3Δ
- D) 4Δ

[where Δ is the area of the triangle ABC]

ANS: (B)

19. In a potato race, 8 potatoes are placed 6 metres apart on a straight line, the first being 6 metres from the Basket which is also placed in the same line. A contestant starts from the basket and puts one potato at

A time into the basket. Find the total distance he must run in order to finish the race.

- A) 420
- B) 210
- C) 432
- D) None

ANS: (C)

20. Along a road lies an odd number of stones placed at intervals of 10 m. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried out the job starting with the stone in the middle, carrying stones in succession, thereby covering a distance of 4.8 km. Then The number of stones is

- A) 15
- B) 29
- C) 31
- D) 35

ANS: (C)

21. Concentric circles of radii 1, 2, 3.....100 cms are drawn. The interior of the smallest circle is coloured red and the angular regions are coloured alternately green and red, so that no two adjacent regions are of the same colour. The total area of the green regions in sq. cm is equal to

- A) 1000π
- B) 5050π
- C) 4950π
- D) 5151π

ANS: (C)

22. Which one of the following statements is NOT CORRECT?

- A) The derivative of a differentiable periodic function is a periodic function with the same period.
- B) If $f(x)$ and $g(x)$ both are defined on the entire number line and are aperiodic then the function $F(x) = f(x) \cdot g(x)$ cannot be periodic.
- C) Derivative of an even differentiable function is an odd function and derivative of an odd differentiable function is an even function.
- D) Every function $f(x)$ can be represented as the sum of an even and an odd function

ANS: (B)

23. Point 'O' is the centre of the ellipse with major axis AB & minor axis CD. Point F is one focus of the Ellipse. If $OF = 6$ & the diameter of the inscribed circle of triangle OCF is 2, then the product $(AB)(CD)$ is equal to

- A) 65
- B) 52
- C) 78
- D) none

ANS: (A)

24. If a number of ellipse be described having the same major axis $2a$ but a variable minor axis then the Tangents at the ends of their latera recta pass through fixed points which can be

- A) (0, a)
- B) (0, 0)
- C) (0, -a)
- D) (a, a)

ANS: (A) & (C)

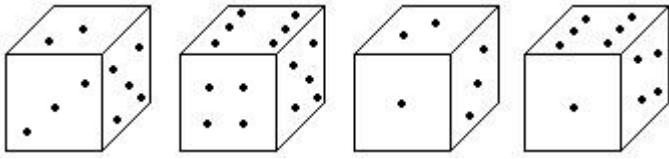
25. The vertex of a parabola is (2, 2) and the co-ordinates of its two extremities of the latus rectum are (-2,0) And (6, 0). The equation of the parabola is

- A) $y^2 - 4y + 8x - 12 = 0$
- B) $x^2 + 4x - 8y - 12 = 0$
- C) $x^2 - 4x + 8y - 12 = 0$
- D) $x^2 - 8y - 4x + 20 = 0$

ANS: (C)

APPTITUDE

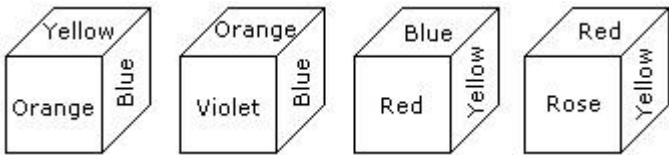
1. How many points will be on the face opposite to in face which contains 2 points?



- A) 1
- B) 5
- C) 4
- D) 6

ANS: (D)

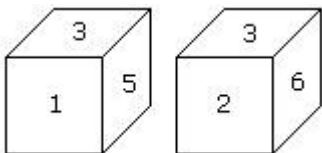
2. From the four positions of a dice given below, find the color which is opposite to yellow?



- A) Violet
- B) Red
- C) Rose
- D) Blue

ANS: (A)

3. Two positions of a dice are shown below. Which number will appear on the face opposite to the face with the number 5?



- A) 2/6
- B) 2
- C) 6
- D) 4

ANS: (C)

4. After walking 6 kms, I turned right and travelled a distance of 2 kms, then turned left and covered a distance of 10 km. In the end I was moving towards the north. From which direction did I start my journey?

- A) North
- B) South
- C) South-West
- D) 4 North-East

ANS: (B)

5. From her school Meenu walks 20 metres towards north. She, then turns left and walks 40 metres. She again turns left and walks 20 metres. Further she moves 20 metres after turning to the right. How far is she from her original position?

- A) 20m
- B) 30m
- C) 50m
- D) 60m

ANS: (D)

6. If '-' stands for 'x', 'x' stands for '+', '+' stands for '÷' and '÷' stands for '-', then what is the value of $9 \div 18 \times 15 + 3 - 6 \times 12$?

- A) 24
- B) 30
- C) 33
- D) 42

ANS: (C)

7. If $a \$ b = a^2 b^2 - ab$, then $3 \$ 8 =$

- A) 600
- B) 552
- C) 576
- D) 625

ANS: (B)

8. If '?' means 'is less than', '\$' means 'is greater than' and '=' means 'is equal to' and given that $a ? b$ and $b \$ c$, then which of the following is true?

- A) $d ? a$
- B) $b \$ d$
- C) $a \& c$
- D) $a ? b ? c$

ANS: (A)

9. If $5 @ 6 = 61$ and $8 @ 10 = 164$, then $7 @ 9 = ?$

- A) 125
- B) 63
- C) 130
- D) 32

ANS: (C)

10. If $5 @ 6 = 61$ and $8 @ 10 = 164$, then $7 @ 9 = ?$

- A) 125
- B) 63

- C) 130
- D) 32

ANS: (C)

11. Event (1): Senior students ragged junior students
Event (2): Senior students were suspended

- A) If '1' is the effect and '2' is its immediate and principal cause
- B) If '1' is the immediate and principal cause and '2' is its effect
- C) If '1' is an effect but '2' is not its immediate and principal cause
- D) If '2' is an effect but '1' is not its immediate and principal cause

ANS: (B)

12. Event (1): An earthquake of magnitude 8.2 rocked the islands of Maldives
Event (2): A devastating Tsunami struck the coastal belt of Maldives

Mark answer (A) if statement (1) is the cause and statement (2) is its effect
Mark answer (B) if statement (2) is the cause and statement (1) is its effect
Mark answer (C) if both the statements (1) and (2) are independent causes
Mark answer (D) if both the statements (1) and (2) are effects of independent causes

ANS: (A)

Directions- In the questions below the sentences have been given in Active/Passive voice. From the given alternatives, choose the one which best expresses the given sentence in Passive/Active voice.

13. After driving professor Kumar to the museum she dropped him at his hotel

- A) After being driven to the museum, Professor Kumar was dropped at his hotel
- B) Professor Kumar was being driven dropped at his hotel
- C) After she had driven Professor Kumar to the museum she had dropped him at his hotel
- D) After she was driven Professor Kumar to the museum she had dropped him at his hotel

ANS: (A)

ANS: (D)

14. Which of the following set is equivalent to set $A = \{a, b, c, d, e\}$

- A) $B = \{1, 2, 3, 4, 5\}$
- B) $B = \{c, a, b, f\}$
- C) $B = \{-1, 0, 2, 4\}$
- D) None of these

ANS: (A)

15. If A and B are two sets, then $(A-B) \cup B$ is.....

- A) A
- B) B

- C) $A \cup B$
- D) $A \cap B$

ANS: (C)

16. If a number is chosen at random from the set $\{1, 2, 3, \dots, 100\}$, then the probability that the chosen number is a perfect cube is

- A) $1/25$
- B) $1/2$
- C) $4/13$
- D) $1/10$

ANS: (A)

17. A number n is chosen from $\{2, 4, 6 \dots 48\}$. The probability that ' n ' satisfies the equation $(2x - 6)(3x + 12)(x - 6)(x - 10) = 0$ is

- A) $1/24$
- B) $1/12$
- C) $1/8$
- D) $1/6$

ANS: (B)

18. All the four mangoes are spoiled.

- A) $1/495$
- B) $494/495$
- C) $1/395$
- D) $394/395$

ANS: (A)

19. If m and n are whole numbers such that $m^n = 169$, then the value of $(m - 1)^{n+1}$ is:

- A) 1
- B) 13
- C) 169
- D) 1728

ANS: (D)

20. If $\sqrt{3 + \sqrt[3]{x}} = 2$, then x is equal to:

- A) 1
- B) 2
- C) 4
- D) 8

ANS: (A)

21. $\sqrt{[200\sqrt{[200\sqrt{[200\sqrt{[200\sqrt{\dots\infty}}]}]}]}]} = ?$

- A) 200
- B) 10
- C) 1
- D) 20

ANS: (A)

22. Solve for $2y^{\sqrt{2^2}} = 729$.

- A) ± 3
- B) ± 1
- C) ± 2
- D) ± 4

ANS: (C)

23. If $ax = by = cz$ and $b^2 = ac$, then y equals:

- A) $xz/x + z$
- B) $xz/2(x + z)$
- C) $xz/2(x - z)$
- D) $2xz/(x + z)$

ANS: (D)

24. If $A : B = 4 : 7$ and $B : C = 5 : 9$ then $A : B : C$ is:

- A) 20 : 35 : 63
- B) 35 : 36 : 63
- C) 30 : 35 : 65
- D) 25 : 34 : 68

ANS: (A)

25. If 15% of A is the same as 20% of B , then $A : B$ is :

- A) 3 : 4
- B) 4 : 3
- C) 17 : 16
- D) 16 : 17

ANS: (B)

AVIATION AFFAIRS

1. The name of first animal sent to space?

- A) Laker
- B) Laiker
- C) Laika
- D) Maika

ANS: (C)

2. Which is the largest Centre of ISRO?

- A) Satish Dhawan Space Centre
- B) Vikram Sarabhai Space Centre
- C) Indian Deep Space Network
- D) Indian Space Science Data Centre

ANS: (B)

3. Which type of fuel is used in aircraft for ignition and required amount of thrust?

- A) Aviation turbine fuel
- B) Aircraft turbine fuel
- C) Aircraft turbojet fuel
- D) Aviation turbine fuel

ANS: (A)

4. What is the color of aviation turbine fuel?

- A) Colorless
- B) Red
- C) Orange
- D) Blue

ANS: (A)

5. Where is the headquarters of Vistara airline?

- A) Mumbai
- B) Bangalore
- C) Gurgaon
- D) Delhi

ANS: (C)

6. Which of the following is regional type airline?

- A) Spice jet
- B) Air India
- C) Indigo
- D) Alliance Air

ANS: (D)

7. FlyBig airline is headquartered in?

- A) Guru gram
- B) Delhi
- C) Dehradun
- D) Mumbai

ANS: (A)

8. How many destinations Air India has all over the world?

- A) 105
- B) 103
- C) 56
- D) 31

ANS: (B)

9. Which plane has the longest range?

- A) Airbus A320
- B) Airbus A320 neo
- C) Airbus A319
- D) Both A and B

ANS: (A)

10. Types of satellite:

- A) GEO
- B) LEO
- C) MEO
- D) All the above

ANS: (D)

11. Rockets made up of:

- A) Grade aluminum and titanium
- B) Nickel and chrome
- c) Aluminum alloy
- D) Copper alloy

ANS:(A)

12. Which fuel used in rocket?

- A) ATF
- B) Liquid hydrogen
- C) Liquid nitrogen
- D) Diesel

ANS: (A)

13. Types of flight

- A) Buoyant flight
- B) Aerodynamic flight
- C) Ballistic
- D) All the above

ANS: (D)

14. What are the 3 objects found in space?

- A) Planets
- B) Meteor
- C) Crater
- D) All the above

ANS: (D)

15. Which is the logo of airline?



- A) JC airlines
- B) Singapore airlines
- C) Lufthansa airlines
- D) Emirates airlines

ANS: (A)

16. which is the logo of airline?



- A) JC airlines
- B) Singapore airlines
- C) Lufthansa airlines
- D) Qantas airlines

ANS: (B)

17. which is the logo of airline?



- A) Cathay pacific airlines
- B) Singapore airlines
- C) Lufthansa airlines
- D) Eritrean airlines

ANS: (C)

18. which is the logo of airlines?



- A) JC airlines
- B) Singapore airlines
- C) Lufthansa airlines
- D) Eritrean airlines

ANS: (D)

19. what airlines has yellow aircraft

- A) Spirit airlines
- B) Singapore airlines
- C) Jet airways
- D) Spice jet

ANS: (A)

20. Who made logo of air india

- A) Tata group
- B) Mascot maharaja
- C) Walter Thompson
- D) Benoy Sarkar

ANS: (C)

21. What airline logo is green?

- A) frontier
- B) british airline
- C) star ailine
- D) indigo

ANS: (A)

22. What is the slogan of spicejet?

- A) Your place in the sky

- B) Red.Hot.Spicy
- C) To fly. To serve
- D) They make an airline

ANS: (B)

23. What is the slogan of indigo?

- A) Fly smart
- B) Go indigo
- C) The joy of flying
- D) Nonstop you

ANS: (B)

24. Which is the number one airline in india?

- A) Air India
- B) Indigo
- C) Spice jet
- D) Qatar

ANS: (A)

25. Who was the first woman pilot of India?

- A) Shweta Singh
- B) Bhawna Kanth
- C) Gunjan Saxena
- D) Sarla Thakral

ANS: (D)

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