

SRMJEEE 2017

Q1 : _____ system of units was accepted by the scientist of the general conference on weights and measures.

- A** FPS
- B** CGS
- C** MKS
- D** SI

Correct Ans : **D**

Q2 : The SI unit of gravitational constant is _____

- A** Nm kg
- B** $\text{Nm}^2 \text{kg}^{-2}$
- C** $\text{Nm}^2 \text{kg}$
- D** $\text{N}^{-1} \text{m}^{-2} \text{kg}$

Correct Ans : **B**

Q3 : A Circular disc is rotating with angular velocity ω . A man standing at the edge walks towards the centre of the disc then the angular velocity ω .

- A** Decreases
- B** Increases
- C** No change
- D** Halved

Correct Ans : **B**

Q4 : For ordinary terrestrial experiments, the observer in an inertial frame in the following cases is

- A** giant revolving in giant wheel
- B** a driver in sports car moving with constant speed of 200 km / h on a straight road
- C** the pilot of an aeroplane which is taking off
- D** a cyclist negotiating a sharp curve

Correct Ans : **B**

Q5 : The two factors on which the momentum of a body depends are _____ and _____ .

- A** Velocity, time
- B** Mass, weight
- C** Mass, distance
- D** Mass, velocity

Correct Ans : **D**

Q6 : Two forces of magnitude 5 N and 10 N act on a wooden block of mass 2 kg. If 5 N force acts towards right and 10 N force acts towards left, which one of following statements is correct?

- A** Resultant force is 15 N towards left.
- B** Resultant force is 15 N towards right.

C Resultant force is 5 N towards right.

D Resultant force is 5N towards left.

Correct Ans : **D**

Q7 : What is the dimension of stress?

A MLT^{-2}

B $ML^{-1}T^{-2}$

C MLT^{-1}

D $M^{-1}LT^{-1}$

Correct Ans : **B**

Q8 : If the temperature of a liquid is raised, then its surface tension is _____

A decreased

B increased

C does not change

D equal to viscosity

Correct Ans : **A**

Q9 :

Equal masses of two substances of densities ρ_1 and ρ_2 are mixed together. The density of the mixture would be

A $\frac{1}{2}(\rho_1 + \rho_2)$

B $\sqrt{\rho_1 \rho_2}$

C $\frac{\rho_1 \rho_2}{\sqrt{(\rho_1 \rho_2)}}$

D $\frac{2\rho_1 \rho_2}{(\rho_1 + \rho_2)}$

Correct Ans : **D**

Q10

: For aluminium the bulk modulus of elasticity is $7.5 \times 10^{10} \text{ N/m}^2$ and density is $2.7 \times 10^3 \text{ kg/m}^3$. The velocity of longitudinal waves in aluminium is

A 2.63 m/s

B $5.27 \times 10^3 \text{ m/s}$

C $10.5 \times 10^3 \text{ m/s}$

D $7.5 \times 10^3 \text{ m/s}$

Correct Ans : **B**

Q11 Which of the following does not show polarization?
:

- A** Transverse wave in gas
- B** Longitudinal in gas
- C** Longitudinal in solids
- D** Transverse wave in liquids

Correct Ans : **B**

Q12 The end correction for the vibrations of air column in a tube of circular cross-section will be
: more if the tube is,

- A** reduced in length
- B** increased in length
- C** made thinner
- D** indexed

Correct Ans : **D**

Q13 A given mass of a gas is at pressure P and absolute temperature T . The isothermal bulk
: modulus of the gas is

- A** P
- B** $\frac{2}{3} P$
- C** $\frac{3}{2} P$
- D** $2P$

Correct Ans : **A**

Q14 A spherical black body of radius 12cm radiates 450W power at 500K. If the radius is one half
: and the temperature doubled, the power radiated in watt will be

- A** 225
- B** 450
- C** 900
- D** 1800

Correct Ans : **D**

Q15 The expression for the efficiency of a carnot's engine is
:

- A** $1 - (T_1/T_2)$
- B** $1 - T$
- C** $(T_2/T_1) - 1$
- D** $1 - (T_2/T_1)$

Correct Ans : **D**

Q16 Which of the following is adiabatic gas equation?
:

- A** $PV = \text{Const}$
- B** $PV^\gamma = \text{Const}$
- C** $PV^{\gamma-1} = \text{Const}$
- D** $P \propto 1/V$

Correct Ans : **B**

Q17 _____ is defined as the angle of incidence in the denser medium for which the
: corresponding angle of refraction in the rarer medium is 90°

- A** critical angle
- B** shearing angle
- C** polarising angle
- D** dip angle

Correct Ans : **A**

Q18 The velocity of light in vacuum is _____
:

- A** $\sqrt{\mu_0 \epsilon_0}$
- B** $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$
- C** $\mu_0 \epsilon_0$
- D** $\frac{1}{\mu_0 \epsilon_0}$

Correct Ans : **B**

Q19 The line joining the pole of the mirrors and its centre of curvature is called _____
:

- A** Principal focus
- B** Principal axis
- C** Radius of curvature
- D** Optic axis

Correct Ans : **D**

Q20 Light of wavelength $5500 \text{ \AA}$ from narrow slit is incident on a double slit. The overall separation
: of 5 fringes on a screen 200 cm away is 1 cm. Calculate slit separation.

- A** 0.055 cm

B 0.055 m

C 0.55 cm

D 0.55 m

Correct Ans : **A**

Q21 The core used in a transformer is laminated in order to :

A increase magnetic field

B increase residual magnetism

C decrease the eddy currents in the core

D increase the eddy currents in the core

Correct Ans : **C**

Q22 In a superconductor, critical magnetic field :

A increases if temperature decreases

B does not depend on temperature

C increases if temperature increases

D remains constant

Correct Ans : **A**

Q23 A wire is cut into 4 pieces, which are put together side by side to obtain one conductor. If the original resistance of the wire was R , the resistance of the bundle will be:

A $R/4$

B $R/8$

C $R/16$

D $R/32$

Correct Ans : **C**

Q24 Magnetic lines of force _____ :

A can not intersect at all

B intersect within the magnet

C intersect only at south and north poles

D intersect at neutral point only

Correct Ans : **A**

Q25 In ruby laser, some of aluminium ions are (Al^{3+}) replaced by :

A Copper ions (Cu^{3+})

B Chromium ions (Cr^{3+})

C Calcium ions (Ca^{3+})

D None

Correct Ans : **B**

Q26 Special theory of relativity treats problem involving
:

A Inertial frame of reference

B Non- inertial frame of reference

C Non- accelerated frame of reference

D Accelerated frame of reference

Correct Ans : **A**

Q27 The time interval between two event in a reference frame which is in motion is
:

A Maximum

B Minimum

C No interval

D None

Correct Ans : **A**

Q28 According to theory of relative mass of an object is
:

A Depends on particles

B Speed of light

C Volume of object

D Area of object

Correct Ans : **B**

Q29 The nucleus which is an isotope of C_{17} and also an isobar of Ar_{18} has mass number A and
: atomic number Z given by _____

A $A = 35, Z = 18$

B $A = 37, Z = 17$

C $A = 39, Z = 17$

D $A = 37, Z = 19$

Correct Ans : **C**

Q30 Which source is associated with line emission spectrum?
:

A electric fire

B red traffic light

C neon street lite

D sun

Correct Ans : **B**

Q31 Plutonium decays with half time 24000 yr. If plutonium is stored after 72000 yr, the fraction of it that remains _____

- A** 1/2
- B** 1/9
- C** 1/12
- D** 1/8

Correct Ans : **D**

Q32 If a 46 gm golf ball has velocity 36 m/s and an electron with velocity 10^7 m/s. Which of these two show wave character?

- A** Electron
- B** Golf ball
- C** Both electron and golf ball
- D** Both do not show wave character

Correct Ans : **A**

Q33 What is the net charge if a certain semiconductor losses 4 valence electrons?

- A** +4
- B** -4
- C** +8
- D** -8

Correct Ans : **A**

Q34 If the feedback fraction of an amplifier is 0.01, then voltage gain with negative feedback is approximately _____

- A** 500
- B** 100
- C** 1000
- D** 5000

Correct Ans : **B**

Q35 Electromagnetic waves transport _____

- A** Wavelength
- B** Charge
- C** Frequency
- D** Energy

Correct Ans : **D**

SRMJEEE 2017

Q36 The pyknometric density of sodium chloride crystal is $2.165 \times 10^3 \text{ kg m}^{-3}$ while its X-ray density is $2.178 \times 10^3 \text{ kg m}^{-3}$. The fraction of the unoccupied sites in sodium chloride crystal is

- A** 5.96
- B** 5.96×10^{-1}
- C** 5.96×10^{-2}
- D** 5.96×10^{-3}

Correct Ans : **D**

Q37 The sharp melting point of a crystalline solid is due to

- A** Regular arrangement of constituent particles observed over a short distance in the crystal lattice
- B** Regular arrangement of constituent particles observed over a long distance in the crystal lattice
- C** Same arrangement of constituent particles in different directions
- D** Different arrangement of constituent particles in different directions

Correct Ans : **B**

Q38 The de Broglie wavelengths of electron waves in two orbits is 3:5. The ratio of kinetic energy of electrons will be

- A** 3:5
- B** 5:3
- C** 25:9
- D** 9:25

Correct Ans : **C**

Q39 Which of the following is atypical element?

- A** Li
- B** Na
- C** F
- D** N

Correct Ans : **C**

Q40 Which one of the following sets of elements has the strongest tendency to form negative ions in gaseous state?

- A** Na, Mg, Al
- B** Ca, V, Cr
- C** N, O, F
- D** Ga, In, Tl

Correct Ans : **C**

Q41 The correct order of second ionization potential of carbon, nitrogen, oxygen and fluorine is :

- A** $C > N > O > F$
- B** $O > N > F > C$
- C** $O > F > N > C$
- D** $F > O > N > C$

Correct Ans : **C**

Q42 A neutral atom (Atomic number > 1) consists of :

- A** Only protons
- B** Neutrons + protons
- C** Neutrons + electrons
- D** Neutrons + proton + electrons

Correct Ans : **D**

Q43 The total number of electrons that can be accommodated in the fourth principal energy level is _____

- A** 2
- B** 8
- C** 18
- D** 32

Correct Ans : **D**

Q44 0.0025 has _____ significant figure :

- A** 1
- B** 2
- C** 3
- D** 4

Correct Ans : **B**

Q45 The values of four quantum numbers of valence electron of an element are $n = 4$, $l = 0$, $m = 0$: and $s = +1/2$. The element is :

- A** Na
- B** K
- C** Ti
- D** Sc

Correct Ans : **B**

Q46 The molecular formula of dithionic acid is :

A $\text{H}_2\text{S}_2\text{O}_4$

B $\text{H}_2\text{S}_2\text{O}_6$

C $\text{H}_2\text{S}_2\text{O}_5$

D $\text{H}_2\text{S}_2\text{O}_7$

Correct Ans : **B**

Q47 Which of the following species has the maximum bond order?

:

A O_2

B O_2^-

C O_2^{2-}

D O_2^+

Correct Ans : **D**

Q48 The least metallic of the S block element is

:

A Be

B Li

C Mg

D Na

Correct Ans : **A**

Q49 The relationship between equilibrium constant K and free energy change of the process is given by

A $\Delta G = -RT \log K$

B $\Delta G^\circ = RT \log 1/K$

C $\Delta G^\circ = 2RT \log K$

D $\Delta G^\circ = 2.303 RT \log K^{-1}$

Correct Ans : **D**

Q50 Which of the following salt will have same value of Vant Hoff's factor, 'i' as that of $\text{K}_4[\text{Fe}(\text{CN})_6]$?

:

A $\text{Al}_2(\text{SO}_4)_3$

B NaCl

C $\text{Al}(\text{NO}_3)_3$

D Na_2SO_4

Correct Ans : **A**

Q51 Identify the correct statement regarding a spontaneous process

:

A For a spontaneous process in an isolated system, the change in entropy is positive

B Endothermic processes are never spontaneous

- C** Exothermic processes are always spontaneous
D Lowering of energy in the reaction process is the only criterion for spontaneity

Correct Ans : **A**

Q52 Osmotic pressure is a colligative property because it
:

- A** Depends on the number of solution particles and not on its nature
B Depends on the identify of the solute and not on its number
C Depends both nature and number of solute particles
D Is independent of nature and number of solute particles

Correct Ans : **A**

Q53 According to Henry's law, the volume of a gas dissolved in a solvent at a given temperature is
:

- A** dependent of pressure
B independent of concentration
C dependent of concentration
D independent of pressure

Correct Ans : **D**

Q54 The correct order of increasing basicity of the given conjugate bases ($R = CH_3$) is
:

- A** $RCOO^- < HC\equiv C^- < R^- < NH_2^-$
B $R^- < HC\equiv C^- < RCOO^- < NH_2^-$
C $RCOO^- < NH_2^- < HC\equiv C^- < R^-$
D $RCOO^- < HC\equiv C^- < NH_2^- < R^-$

Correct Ans : **D**

Q55 Phenolphthalein can be used to determine p^H over the range of
:

- A** 0-2
B 2-4
C 4-6
D 8-10

Correct Ans : **D**

Q56 When sodium acetate is added to acetic acid, the degree of ionisation of acetic acid
:

- A** increases
B decreases
C does not change
D becomes zero

Correct Ans : **B**

Q57 The rays from the radioactive element which gets deflected to the positive pole under strong electric field are called

- A** alpha rays
- B** beta rays
- C** gamma rays
- D** delta rays

Correct Ans : **B**

Q58 Which of the following relation between average life period (t) and the disintegration constant (λ) and the disintegration constant (λ) of the radio element is correct

- A** $t = 1/\lambda$
- B** $t = \lambda$
- C** $t = -\lambda$
- D** $t\lambda = 0$

Correct Ans : **A**

Q59 In paper chromatography, the stationary and mobile phases are

- A** both liquids
- B** solid and liquid respectively
- C** liquid and solid respectively
- D** both solids

Correct Ans : **A**

Q60 Process in which solid is directly converted to vapors state is called

- A** Filtration
- B** Distillation
- C** Solvation
- D** Sublimation

Correct Ans : **D**

Q61 If a bond breaks in such a way that both electrons remain with one fragment, the mechanism is called

- A** Heterolytic
- B** Homolytic
- C** Electrocyclic
- D** Pericyclic

Correct Ans : **A**

Q62 The isocyanates obtained in the reaction of Hoffman, Curtius, Lossen and Schimdt. Hydrolysed : to give

- A** Amides
- B** Amines
- C** Acids
- D** Cyanides

Correct Ans : **B**

Q63 Olefin means :

- A** ethene
- B** unsaturated
- C** oil forming
- D** having tripple bond

Correct Ans : **C**

Q64 Select the substance which has only one : Pi (π) bond in its molecule.

- A** Acetylene
- B** Acrolein
- C** Propene
- D** 2-Butenoic acid

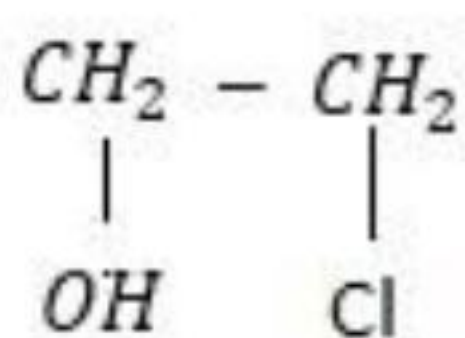
Correct Ans : **C**

Q65 Which of the following reagents can convert acetone to acetic acid? :

- A** AgNO_3 ; NH_4OH
- B** LiAlH_4
- C** Conc. HCl
- D** I_2 , NaOH ; dilute HCl

Correct Ans : **D**

Q66 :



on boiling with NaOH gives

- A** Ethanal
- B** Ethanol
- C** Glycol
- D** 2 - propanone

Correct Ans : **C**

Q67 Gabriel's phthalimide reaction is used for the synthesis of
:

- A** aromatic 1° amines
- B** aliphatic 1° amines
- C** aromatic 2° amines
- D** aliphatic 2° amines

Correct Ans : **B**

Q68 $\text{RMgX} + \text{CN Cl} \rightarrow \text{X}$. X is
:

- A** NCO
- B** NC
- C** CN
- D** Cl^-

Correct Ans : **C**

Q69 Butadiene and styrene undergoes joint polymerization to form
:

- A** SBR rubber
- B** Neoprene
- C** Thiokol
- D** Hypalon

Correct Ans : **A**

Q70 What are the structural units of proteins?
:

- A** Amylopectin
- B** Equal portion of sugar and amino acids
- C** Amino acids
- D** Glucose

Correct Ans : **C**

Q71 In a town of 1000 families it was found that 40% families buy India Today, 20% families buy 'Frontline' and 10% families buy the week. 5% buy India today and frontline, 3% buy Frontline and the Week and 4% buy the Week and India Today. If 2% families buy all the 3 magazines, the number of families which buy Frontline only is

- A** 330
- B** 140
- C** 300
- D** 200

Correct Ans : **B**

Q72 If $\tan(A + B) = m$ and $\tan(A - B) = n$ then value of $\tan 2A$ is :

- A** $\frac{m+n}{1-mn}$
B $\frac{m+n}{1+mn}$
C $\frac{mn}{1-mn}$
D $\frac{mn}{1+mn}$

Correct Ans : **A**

Q73

:

$$f(x) = \frac{\log_2(x+3)}{x^2 + 3x + 2}$$

The domain of definition of

is

- A** $R - [0, -2]$
B $(-2, \infty)$
C $R - \{-1, -2, -3\}$
D $(-3, \infty) - (-1, -2)$

Correct Ans : **D**

Q74

:

If A and B are two sets such that $n(A \cup B) = 36$, $n(A \cap B) = 16$ and $n(A - B) = 15$, then $n(B)$ is equal to

- A** 21
B 31
C 20
D 52

Correct Ans : **A**

Q75 If every pair from among the

:

equations $x^2 + px + qr = 0$, $x^2 + qx + rp = 0$ and $x^2 + rx + pq = 0$ has a common root then the product of three common roots is

- A** pqr
B $2pqr$
C $p^2 q^2 r^2$
D $\sqrt{pqr}$

Correct Ans : **A**

Q76 If z and ω are non-zero complex numbers such that

$$|z\omega| = 1 \text{ and } \arg(z) - \arg(\omega) = \frac{\pi}{2}, \text{ then } \bar{z}\omega \text{ is equal to}$$

- A** 1
- B** -1
- C** i
- D** -i

Correct Ans : **D**

Q77

If $\left[\frac{\frac{\sqrt{3}}{2} + \left(\frac{1}{2}\right)i}{\frac{\sqrt{3}}{2} - \left(\frac{1}{2}\right)i} \right]^{120} = p + iq$, then

- A** $p = \cos 20^\circ, q = \sin 20^\circ$
- B** $p = -\cos 20^\circ, q = -\sin 20^\circ$
- C** $p = \cos 20^\circ, q = -\sin 20^\circ$
- D** $p = 1, q = 0$

Correct Ans : **D**

Q78

If $A = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$ and $n \in \mathbb{N}$ then A^n is equal to

- A** $2^n A$
- B** $2^{n-1} A$
- C** nA
- D** none of these

Correct Ans : **B**

Q79

If a, b, c are sides of a triangle and $\begin{vmatrix} a^2 & b^2 & c^2 \\ (a+1)^2 & (b+1)^2 & (c+1)^2 \\ (a-1)^2 & (b-1)^2 & (c-1)^2 \end{vmatrix} = 0$ then ΔABC is

- A** equilateral
- B** right angled isosceles
- C** isosceles
- D** right angled

Correct Ans : **C**

Q80 Which of the following is not elementary transformation?

:

- A** $R_i \leftrightarrow R_j$
B $R_i \rightarrow 2R_i + R_j$
C $C_i \rightarrow C_j + C_i$
D $R_i \rightarrow R_i + C_j$

Correct Ans : **D**

Q81

:

If $\Delta = \begin{vmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ 3 & 9 & 13 \end{vmatrix}$ and $\Delta' = \begin{vmatrix} 7 & 20 & 29 \\ 2 & 5 & 7 \\ 3 & 9 & 13 \end{vmatrix}$ then

- A** $\Delta' = 3\Delta$
B $\Delta' = \frac{3}{\Delta}$
C $\Delta' = \Delta$
D $\Delta' = 2\Delta$

Correct Ans : **C**

Q82 How many different signals can be given by using any number of flags from six flags of different colors?

- A** 1236
B 516
C 720
D 1956

Correct Ans : **D**

Q83

If $\forall n \in \mathbb{N}$,

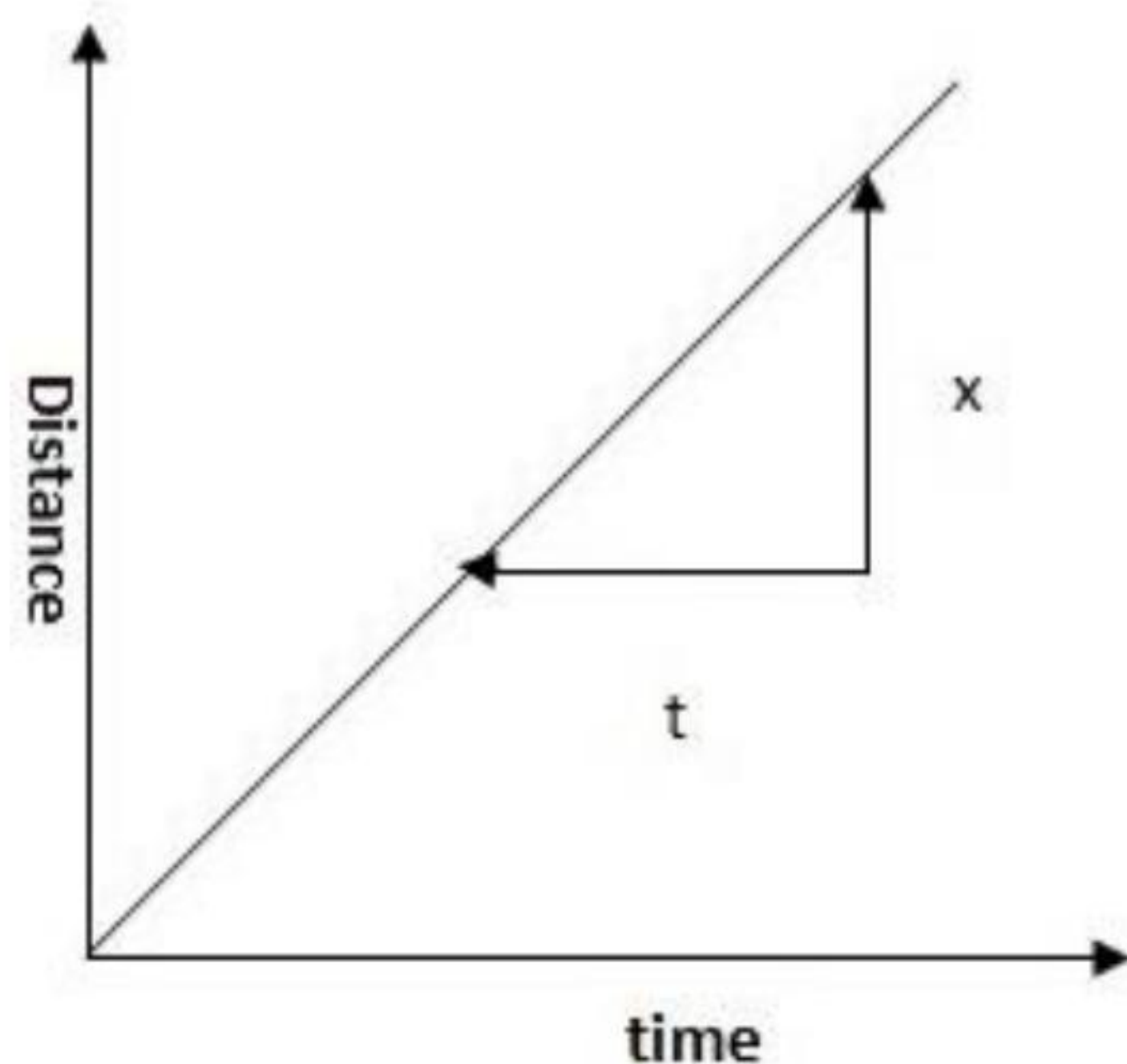
:

Let $p(n) = 1 + 3 + 5 + \dots + (2^n - 1) = 3 + n^2$ then which of the following is true?

- A** $p(1)$ is true
B $p(k)$ is true $\Rightarrow p(k + 1)$ is true
C $p(k)$ is true, $p(k + 1)$ is not true
D $p(k)$ is not true $\Rightarrow p(k + 1)$ is true

Correct Ans : **B**

Q84 The following graph gives the functional relationship between distance and time of a moving car : in m/sec. The speed of the car is



- A** x/t m/s
- B** t/x m/s
- C** dx/dt m/s
- D** dt/dx m/s

Correct Ans : **A**

Q85

:

$$\lim_{x \rightarrow \infty} \left(\operatorname{cosec} x - \frac{1}{x} \right) =$$

- A** 0
- B** 1
- C** 3
- D** 5

Correct Ans : **A**

Q86

:

The set of points, where

$$f(x) = \frac{x}{1 + |x|}$$

is differentiable, is:

- A** $(-\infty, -1) \cup (-1, \infty)$
- B** $(-\infty, \infty)$
- C** $(0, \infty)$
- D** $(-\infty, 0) \cup (0, \infty)$

Correct Ans : **B**

Q87 The angle of intersection of the curves $y=x^3$ and $6y=7-x^2$ at $(1,1)$ is :

- A** $\frac{\pi}{4}$

B $\frac{\pi}{3}$

C $\frac{\pi}{2}$

D $\frac{\pi}{6}$

Correct Ans : **C**

Q88

:

If $[x]$ is the greatest integer function then $\int_{-2}^2 [x]^3 dx = \underline{\hspace{2cm}}$

A 0

B -8

C -1

D -4

Correct Ans : **C**

Q89

:

Let $f(2a - x) = -f(x)$. then $\int_0^{2a} f(x) dx =$

A $f(x)$

B 0

C $\int_0^a f(x) dx$

D $f(2a - x)$

Correct Ans : **B**

Q90 The are bounded by $y = x - 1$ and $y = 3 - x$ is

:

A 2

B 3

C 4

D 1

Correct Ans : **C**

Q91 The P.I of $(D^2 + 4) y = \sin h 2x$ is

:

A $y = 1/8 \sin h 2x$

B $y = 1/4 \sin h 2x$

C $y = -1/8 \sin h 2x$

D $y = -1/4 \sinh 2x$

Correct Ans : **A**

Q92 A focal chord of the parabola $y^2 = 8x$ is inclined to x-axis at an angle $\tan^{-1} 3$. Then its length is : equal to:

A $80/3$

B $80/9$

C $40/3$

D $40/9$

Correct Ans : **B**

Q93 The length of the intercept made by the circle $x^2 + y^2 - 12x + 14y + 11 = 0$ on x-axis is :

A 6

B 10

C 8

D 4

Correct Ans : **B**

Q94

:

The equation of the normal to the ellipse $\frac{x^2}{10} + \frac{y^2}{5} = 1$ at $(\sqrt{8}, 1)$ is

A $10x + 5y = 1$

B $y = \sqrt{2}(x + 1)$

C $x = \sqrt{2}(y + 1)$

D $y = \sqrt{8}(x + 1)$

Correct Ans : **C**

Q95 Equation of the parabola whose vertex and focus lie on the axis of x at distances a and a_1 from the origin respectively is

A $y^2 = 4(a_1 - a)x$

B $y^2 = 4(a_1 - a)(x - a)$

C $y^2 = 4(a_1 - a)(x - a_1)$

D $y^2 = 4(a - a_1)x$

Correct Ans : **B**

Q96 If $x = -2 + 3 \cos \theta$; $y = 1 + 3 \sin \theta$ then the locus of the point (x,y) is a circle with :

A centre at (-2,1) and radius = 3

B centre at (2,1) and radius = 3

C centre at (2,-1) and radius = 9

D centre at $(-2,1)$ and radius = 9

Correct Ans : **A**

Q97 If one of the lines $ax^2+2hxy+by^2=0$ bisects the angle between positive directions of the axes : then a,h,b satisfy the relation

A $a+b=-2h$

B $(a-b)^2=4h^2$

C $a+b=2|h|$

D $(a-b)=2|h|$

Correct Ans : **A**

Q98 : A unit vector coplanar with $\vec{i} + \vec{j} + 2\vec{k}$ and $\vec{i} + 2\vec{j} + \vec{k}$ and perpendicular to $\vec{i} + \vec{j} + \vec{k}$ is

A $-\vec{j} + \vec{k}$

B $\frac{1}{\sqrt{2}}(-\vec{j} + \vec{k})$

C $\frac{1}{3}(-\vec{j} + \vec{k})$

D $\frac{1}{\sqrt{3}}(-\vec{j} + \vec{k})$

Correct Ans : **B**

Q99 : If angle between $\vec{i} - 2\vec{j} + 3\vec{k}$ and $2\vec{i} + \vec{j} + 3\vec{k}$ is θ then $\sin \theta$ equals

A $\frac{5}{\sqrt{7}}$

B $\frac{5}{21}$

C $\frac{5}{2\sqrt{7}}$

D $\frac{5}{\sqrt{14}}$

Correct Ans : **C**

Q100 If $P(A) = 1/3$, $P(B) = 3/4$ and $P(A \cup B) = 11/12$, then $P(A/B)$ is :

A $1/9$

B $1/4$

C $2/9$

D $5/9$

Correct Ans : **C**

Q101 The geometric mean $3, 3^2, \dots, 3^n$ is :

A $3^{n/2}$

B $3^{(n+1)/2}$

C $3^{n(n+1)/2}$

D 3^n

Correct Ans : **B**

Q102 what is the product of three Geometric mean between 4 and $1/4$? :

A 0

B 1

C 2

D -1

Correct Ans : **B**

Q103 If the three successive coefficients in the binomial expansion of $(1+x)^n$ are 28, 56 and 70 respectively then n equals :

A 4

B 6

C 8

D 10

Correct Ans : **C**

Q104 If the sum of first n positive integer is $1/(5)$ times the sum of their squares, then n equals :

A 5

B 6

C 7

D 8

Correct Ans : **C**

Q105 The middle term in the expansion of $(x + 1/x)^{2n}$ is $1.3.5 \dots (2n-1)/2n!$:

A $1.3.5 \dots (2n-1)(2n)/n!$

B $1.3.5 \dots (2n-1)/n!.2^n$

C $2n!/n!.2^n$

D none of the above

Correct Ans : **B**

Q106 Excess CO₂ suppress cell growth and productivity by?
:

- A** inhibiting respiration
- B** changing osmolarity of medium
- C** increasing bacterial contamination
- D** altering pH of the medium

Correct Ans : **A**

Q107 The size of the chromosome is measured during
:

- A** Interphase
- B** Prophase
- C** Metaphase
- D** Anaphase

Correct Ans : **C**

Q108 In gene cloning which of the following are used as vehicles for carrying foreign DNA fragment
:

- A** Host cell
- B** Restriction enzymes
- C** Adaptor
- D** Vector

Correct Ans : **D**

Q109 The total number of cells in a culture is counted using the trypan blue exclusion assay and is found to be 2.7×10^6 cells/ml. The culture is diluted 1:27 and then 100 μ l seeded per well into a 96 well plate. What is the final cell density per well?

- A** 1×10^5
- B** 2.7×10^4
- C** 2.7×10^5
- D** 1×10^4

Correct Ans : **D**

Q110 Family tree can be constructed by
:

- A** Cloning
- B** Karyotyping
- C** DNA sequencing
- D** Pedigree analysis

Correct Ans : **D**

Q111 The plant having milky latex is
:

- A** *Phyllanthus emblica*
- B** *Ricinus communis*
- C** *Jatropha curcas*
- D** *Euphorbia tirucalli*.

Correct Ans : **D**

Q112 Among the following which is tree?
:

- A** *Phyllanthus amarus*
- B** *Ricinus communis*
- C** *Phyllanthus emblica*
- D** *Euphorbia antiquorum*

Correct Ans : **C**

Q113 Which among the following members is not economically important as a food?
:

- A** *Solanum tuberosum*
- B** *Solanum melongena*
- C** *Lycopersicon esculentum*
- D** *Solanum trilobatum*

Correct Ans : **D**

Q114 Pick the incorrect statement with respect to xylem parenchyma
:

- A** The cell wall is thin and made up of cellulose
- B** The cells store food reserves
- C** The cells assist in conduction of water
- D** The cells are dead at maturity

Correct Ans : **D**

Q115 Choose the best option that gives the correct match for the terms given in the columns.
:

Annular	1	Spring
Scalariform	2	Ring
Spiral	3	Uniform
Pitted	4	Ladder

- A** 4 - 3 - 2 - 1
- B** 2 - 4 - 1 - 3
- C** 2 - 3 - 4 - 1
- D** 3 - 4 - 1 - 2

Correct Ans : **B**

Q116 The simple type of plant body in which a single cell performs all the vital functions of life is : referred to as _____

- A** Unicellular
- B** Monocellular
- C** Acellular
- D** Noncellular

Correct Ans : **A**

Q117 During the formation of periderm, a few layers of meristematic tissue are formed in the : cortex. This is called _____.

- A** Periderm
- B** Phellem
- C** Phellogen
- D** Phelloderm

Correct Ans : **C**

Q118 Plant cell wall is made up of : _____

- A** Cellulose, hemicelluloses and Pectin
- B** Cellulose and Pectin
- C** Cellulose, hemicelluloses and chitin
- D** Cellulose only

Correct Ans : **A**

Q119 Which of the following pairs of plant parts are both Diploid : _____

- A** Nucleus and antipodals
- B** Antipodal cells and megaspore mother cells
- C** Synergids and tapetum
- D** Tapetum and sporogenous cells

Correct Ans : **D**

Q120 If mutation changes codon in such a way that there is no effect on functioning and overall : structure of protein. This type of mutation is termed as _____

- A** Silent
- B** Mis sense
- C** Transition
- D** Frame shift

Correct Ans : **A**

Q121 In tetrad analysis, second-division segregation result from
:

- A** single crossover between linked genes
- B** double crossover between linked genes
- C** single crossover between a gene and a centromere
- D** independent assortment of unlinked genes

Correct Ans : **C**

Q122 In man, which of the following genotypes and phenotypes may be the correct result of
: aneuploidy in sex chromosomes?

- A** 22 pairs + Y females
- B** 22 pairs + XX females
- C** 22 pairs + XXY males
- D** 22 pairs + XXXY females

Correct Ans : **C**

Q123 The "Golden rice", aimed at curing
:

- A** Vitamin b deficiency
- B** Vitamin a deficiency
- C** Vitamin k deficiency
- D** Zinc deficiency

Correct Ans : **B**

Q124 Which of the following enzymes cut the DNA molecule at specific nucleotide sequence
:

- A** Restriction endonuclease
- B** DNA ligase
- C** RNA polymerase
- D** Exonuclease

Correct Ans : **A**

Q125 Photorespiration is also known as -----pathway
:

- A** C₂
- B** C₃
- C** C₄
- D** Carbon reduction

Correct Ans : **A**

Q126 Growth can be measured by:
:

- A** Auxanometer
- B** Horizontal microscope
- C** Crescograph
- D** All of these

Correct Ans : **D**

Q127 Photorespiration involves
:

- A** Glycolate cycle
- B** Kreb's cycle
- C** Calvin cycle
- D** CAM cycle

Correct Ans : **A**

Q128 Which of the following helps in ascent of sap?
:

- A** Root pressure
- B** Transpiration
- C** Both a and b
- D** Only b

Correct Ans : **D**

Q129 Seed dormancy allows the plants to
:

- A** Overcome unfavourable climate conditions
- B** Develop healthy seeds
- C** Reduce viability
- D** Prevent deterioration of seeds

Correct Ans : **A**

Q130 The plant Drosera is a
:

- A** saprophytic
- B** insectivorous
- C** parasitic
- D** Endophytes

Correct Ans : **B**

Q131 One of the following is a source of rubber
:

- A** Hevea brasiliensis
- B** Tectona grandis

- C** Cedrus deodara
- D** Michelia champaca

Correct Ans : **A**

Q132 Isolation and patenting useful genes of other countries without their permission or : understanding is called

- A** Biopatenting
- B** Biopiracy
- C** Bioterrorism
- D** Biowar

Correct Ans : **B**

Q133 A nitrogen fixing blue green alga is :

- A** Ulothrix
- B** Spirogyra
- C** Anabaena
- D** Rhizobium

Correct Ans : **C**

Q134 In paddy fields biological nitrogen fixation is chiefly brought by :

- A** Mycorrhiza
- B** Green algae
- C** Cyanobacteria
- D** Rhizobium

Correct Ans : **C**

Q135 Bacillus thuringiensis (Bt) strains have been used from designing novel :

- A** bio - metallurgical technique
- B** bio - mineralization processes
- C** bio - insecticidal plants
- D** bio - fertilizers

Correct Ans : **C**

Q136 B lymphocytes are integral part of :

- A** Cell-mediated immunity
- B** Humoral immunity
- C** Innate immunity
- D** Non-specific immunity

Correct Ans : **B**

Q137 Action potential is generated because of
:

- A** K ions influx
- B** K ions efflux
- C** Na ions influx
- D** Na ion efflux

Correct Ans : **C**

Q138 Hypothyroidism in adults leads to
:

- A** Cretinism
- B** Acromegaly
- C** Grave's disease
- D** Myxoedema

Correct Ans : **D**

Q139 The auditory ossicle that is attached to the tympanic membrane of external ear is
:

- A** Auditory meatus
- B** Malleus
- C** Incus
- D** Stapes

Correct Ans : **B**

Q140 Milk protein casein is broken down into paracasein by
:

- A** Chymotrypsin
- B** Renin
- C** Chymosin
- D** Trypsin

Correct Ans : **C**

Q141 Epsilon cells of islet of langerhans in pancreas secrete
:

- A** Glucagon
- B** Insulin
- C** Ghrelin
- D** somatostatin

Correct Ans : **C**

Q142 Auto-immune disorder for cholinergic receptors is
:

- A** Rheumatic Heart Disease
- B** Multiple Sclerosis
- C** Rheumatoid Arthritis
- D** Myasthenia gravis

Correct Ans : **D**

Q143 Microbes that inhibit the growth of other microorganisms termed as
:

- A** Synergism
- B** Mutualism
- C** Parasitism
- D** Antagonism

Correct Ans : **D**

Q144 A microbial disease that spreads over a very large geographic area is called:
:

- A** A pandemic
- B** An outbreak
- C** An epidemic
- D** A chronic disease

Correct Ans : **A**

Q145 Mac-Conkey medium is an example of
:

- A** Transport medium
- B** Enrichment medium
- C** Differential medium
- D** Simple medium

Correct Ans : **C**

Q146 Teichoic acids are typically found in
:

- A** Outer membranes of gram positive bacteria
- B** Cell walls of gram positive bacteria
- C** Cell walls of gram negative bacteria
- D** Outer membranes of gram negative bacteria

Correct Ans : **B**

Q147 Which of the following does not protect body surfaces:
:

- A** Skin
- B** Mucus
- C** Gut microflora
- D** Salivary amylase

Correct Ans : **D**

Q148 The affinity of an antibody can be determined by measuring
:

- A** Its concentration
- B** The valency of antigen binding
- C** The amount of antibody bound at various antigen concentrations
- D** Its ability to neutralize bacterial toxins

Correct Ans : **C**

Q149 The one thing that is common to all fossil fuels is that they
:

- A** were originally formed in marine environment
- B** represent the remains of one living organisms
- C** have undergone the same set of geological processes during their formation
- D** contain carbon

Correct Ans : **D**

Q150 Steam reforming is currently the least expensive method of producing:
:

- A** Coal
- B** Biogas
- C** Hydrogen
- D** Natural gas

Correct Ans : **C**

Q151 Which of the following acts as a natural sun block?
:

- A** CFC
- B** ozone
- C** ammonia
- D** oxygen

Correct Ans : **B**

Q152 75 to 90 mm of mercury is an adult's normal
:

- A** Systolic pressure
- B** Diastolic pressure

- C** Peristaltic pressure
- D** Water pressure

Correct Ans : **B**

Q153 Which of these techniques is used for 'virtual endoscopy'?
:

- A** CT scan
- B** ECG
- C** MRI
- D** Ultrasonography

Correct Ans : **A**

Q154 What is meant by the term fitness according to Darwinism?
:

- A** Ability to survive and reproduce
- B** Healthy appearance
- C** Physical strength
- D** Aggressiveness

Correct Ans : **A**

Q155 Weismann cut off tails of mice generation after generation but tails neither disappeared nor
: shortened showing that

- A** Tail is an essential organ
- B** Darwinism was wrong
- C** Lamarckism was wrong
- D** Mutation theory was wrong

Correct Ans : **C**