NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

Paper Code: UN436 (UPDATED)

<u>Solutions for Class : 9</u>

MATHEMATICS

1. **(D)** Given $(5+2\sqrt{6})^{x^2-3}+(5-2\sqrt{6})^{x^2-3}=10$

   In $\left(a+\sqrt{b}\right)^{x^2-k}+\left(a-\sqrt{b}\right)^{x^2-k}=2a$

   If $a^2-b=1$ then $x^2-k=\pm 1$

   $\therefore x^2-3=\pm 1$

$x^2-3=1$	$x^2-3=1$
$x^2=4$	$x^2=2$
$x=\pm 2$	$x=\pm\sqrt{2}$

   $\therefore x=2,-2,\sqrt{2},-\sqrt{2}$

2. **(B)** Drop in the height of sand in a cylindrical box = 3 inches

   Volume of the sand = 1 cu.foot

   = 1728 cu.inches

   $\Rightarrow \pi r^2 h = 1728$

   [Since 1 foot = 12 inches.]

   $\Rightarrow \pi r^2(3)=1728$

   $\Rightarrow r^2=\dfrac{576}{\pi} \Rightarrow r=\dfrac{24}{\sqrt{\pi}}$ inches

   Diameter of cylinder = 2r

   $=2\times\dfrac{24}{\sqrt{\pi}}=\dfrac{48}{\sqrt{\pi}}$ inches

3. **(C)** $f(1) = 1 + 1 + 1^2 + 1^3 + ... + 1^{2017}$

   =2018

4. **(C)** $x=\dfrac{1}{y}=7+4\sqrt{3},\ y=\dfrac{1}{x}=7-4\sqrt{3}$

   $\dfrac{1}{x^2}+\dfrac{1}{y^2}=x^2+y^2$

   [Since, x and y are reciprocals of one another.]

   $=\left[7+4\sqrt{3}\right]^2+\left[7-4\sqrt{3}\right]^2$

   = 2 [49 + 48] = 194

5. **(A)** $\sqrt{12\sqrt{5}+2\sqrt{55}}=\sqrt{\sqrt{5}[12+2\sqrt{11}]}$

   $\sqrt[4]{5}\sqrt{12+2\sqrt{11}}$

   $\sqrt[4]{5}\ [\sqrt{11}+1]$

6. **(C)** In $\triangle ABC$, AD is the median

   $\therefore$ ar $(\triangle ABD)=\dfrac{1}{2}$ ar $(\triangle ABC)$

   Again, in $\triangle ABD$, BL is the median

   $\therefore$ ar $(\triangle ABL)=\dfrac{1}{2}$ ar $(\triangle ABD)$

   $=\dfrac{1}{4}$ ar $(\triangle ABC)$

   $\therefore$ $x=\dfrac{1}{4}$

7. **(B)** $[(a+b) + (b+c) + (c+a)][(a+b)^2 + (b+c)^2 + (c+a)^2 - (a+b)(b+c) - (b+c)(c+a) - (c+a)(a+b)]$

   $=2(a+b+c)[a^2+2ab+b^2+b^2+2bc+c^2+c^2+2ca+a^2-ab-ac-b^2-bc-bc-ab-c^2-ca-ca-bc-a^2-ab]$

   $= 2(a+b+c)(a^2+b^2+c^2-ab-bc-ca)$

   $= 2[a^3+b^3+c^3-3abc]$

   $\dfrac{(a+b)^3+(b+c)^3+(c+a)^3-3(a+b)(b+c)(c+a)}{a^3+b^3+c^3-3abc}$

   $=\dfrac{2(a^3+b^3+c^3-3abc)}{(a^3+b^3+c^3-3abc)}=2$

8. **(A)** $5^{2017} + 13^{2017}$ is exactly divisible by $5 + 13 = 18$.

9. **(C)** $\angle PQR = \angle QRT = 65°$
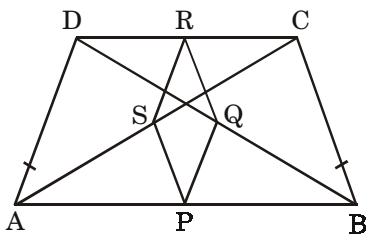
[PQ || RT Alternate $\angle$S]

$x = 65° - 25° = 40°$

Since QPS is a triangle, right angled at P we have

$y = 180° - [90° + 40°]$

$= 180° - 130° = 50°$

10. **(A)** In DBCD, Q and R are the mid-points of BD and CD respectively.

$\therefore$ QR || BC and $QR = \dfrac{1}{2} BC$

Similarly, PS || BC and $PS = \dfrac{1}{2} BC$

$\therefore$ PS || QR and PS = QR

$\left[\text{each equal to } \dfrac{1}{2} BC\right]$

Similarly PQ || SR and PQ = SR

[Each equal to 1/2 AD]

$\therefore$ PS = AR = SR = PQ   [Θ AD = BC]

Hence, PQRS is a rhombus.

11. **(B)** As shown in the figure, OP = 2.7 cm and OA = 4.3 cm. Draw a perpendicular OQ to the chord AB. Clearly, AQ = QB. Since P divides AB in the ratio 7 : 10, let AP be 7x and PB be 10x.
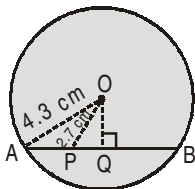
Also, $PQ = AQ - AP = \dfrac{AB}{2} - AP$

$= \dfrac{17X}{2} - 7X = 1.5x$

By Pythagoras' theorem, we have, $AQ^2 + OQ^2 = AO^2$.

Also, $OP^2 = PQ^2 + OQ^2$.

$\Rightarrow AQ^2 - PQ^2 = AO^2 - OP^2$

$\Rightarrow (8.5x)^2 - (1.5x)^2 = (4.3)^2 - (2.7)^2$

$\Rightarrow (10x)(7x) = 7(1.6)$

$\Rightarrow x^2 = 0.16$ or $x = 0.4$ cm.

$\therefore$ AB = 17x = 17 $\times$ 0.4 = 6.8 cm

12. **(C)** $\angle B + \angle A = 128°$ and $\angle B - \angle A = 22°$

$\angle B = 75°, \angle A = 53°, \angle C = 52°$

$\therefore \angle B$ is the biggest angle

$\Rightarrow$ CA is the biggest side.

13. **(A)** AB = AC (Given)

BD = DC (Given)

AD = AD (Common side)

Hence, the triangles are congruent by S.S.S. criterion.

14. **(A)** 'P' lies on x =– 5 line and y = 1 line

$\therefore$ P (–5, 1)

15. **(D)** $\dfrac{1-\sqrt{2}}{1-2} + \dfrac{\sqrt{2}-\sqrt{3}}{2-3} + \dfrac{\sqrt{3}-\sqrt{4}}{3-4} + ... + \dfrac{\sqrt{15}-\sqrt{16}}{15-16}$

$= \dfrac{1-\sqrt{2}+\sqrt{2}-\sqrt{3}+\sqrt{3}-\sqrt{4}-....-\sqrt{15}+\sqrt{15}-\sqrt{16}}{-1}$

$= \dfrac{1-\sqrt{16}}{-1}$

$= \dfrac{1-4}{-1} = \dfrac{-3}{-1} = 3$

16. **(B)** $a + p + (-2) = 0$

$\Rightarrow a^3 + p^3 + (-2)^3 = 3(a)(p)(-2)$

$\Rightarrow a^3 + p^3 - 8 + 6ap = 0$

17. **(A)** Given $\angle A + \angle C = 140°$

and $\angle A : \angle C = 1 : 3$

$\Rightarrow \angle A = 140° \times \dfrac{1}{4} = 35°$

and $\angle C = 140° \times \dfrac{3}{4} = 35° \times 3 = 105°$

In the quadrilateral

$\angle A + \angle B + \angle C + \angle D = 360°$

$\Rightarrow \angle B + \angle D = 360° - (\angle A + \angle C)$

$= 360° − 140°$

∴ $\angle B + \angle D = 220°$

Given that $\angle B : \angle D = 5 : 6$,

$\angle B = 220° \times \dfrac{5}{11} = 20° \times 5 = 100°$

and $\angle D = 220° \times \dfrac{6}{11} = 20 \times 6 = 120°$

∴   The required angles are $\angle A = 35°$,
$\angle B = 100°$, $\angle C = 105°$ and $\angle D = 120°$.

18. **(A)** The ratio of the sides of triangle is a : b : c = 5 : 12 : 13

⇒ a = 5x, b = 12x, c = 13x (Suppose)

Perimeter = 5x + 12x + 13x = 60

⇒ 30x = 60 ⇒ x = 2 m

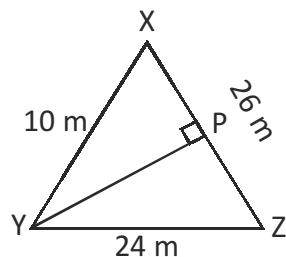a = 10 m, b = 24 m, c = 26 m

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

But s = 30 m

Area = 120 m²

The longest side is 26 m.

Area of $\triangle XYZ = \dfrac{1}{2} \times XZ \times YP$

⇒ $120 = \dfrac{1}{2} \times 26 \times YP$

⇒ $\dfrac{120}{13} = YP$

⇒ $YP = 9\dfrac{3}{13} m$

The length of the altitude corresponding to longest side is $9\dfrac{3}{13}$m.

19. **(D)** 4r = 24 = r = 6

3t = 6

t = 2

r + t = 6 + 2 = 8

20. **(C)** $\angle A = 50$, $\angle B = 60°$

Hence, $\angle C = 180° − 110° = 70°$

∴   The sides in ascending order are BC, AC and AB i.e,. BC < CA < AB.

21. **(B)** $\angle RQP = 30° + 225° = 55°$

$\angle RQP = + x = 180°$

55° + x = 180°

x = 180° − 55° = 125°

22. **(D)**
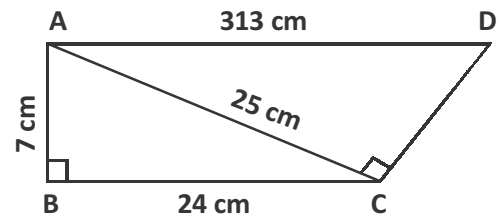
In $\triangle ABC$, $\angle B = 90°$

AC² = AB² + BC²

AB = 7 cm

In $\triangle ACD$, $\angle ACD = 90°$

AD² = AC² + CD²

313² − 25² = CD²

97,969 − 625 = CD²

CD = $\sqrt{97344}$

CD = 312 cm

Area of quad ABCD = Area of ABC + Area of ACD

$= \dfrac{1}{2} \times AB \times BC + \dfrac{1}{2} \times AC \times CD$

$= \dfrac{1}{2} \times 7$ cm $\times 24$ cm $+ \dfrac{1}{2} \times 25$ cm $\times 312$ cm

= 84 cm² + 3900 cm²

= 3984 cm²

23. **(C)** Hence, the figure formed by joining given points represents a right angled triangle.

24. **(C)** Since diagonals of a parallelogram bisect each other, ABCD must be a parallelogram.

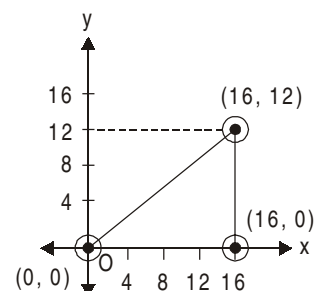**25.** **(D)** Let x kg of tea at ₹ 50 per kg be mixed with 35 kg of tea costing at ₹ 60

According to the problem,

$\Rightarrow$ 50x + 35 × 60 = 57(35 + x)

$-7x = -105 \Rightarrow x = \dfrac{-105}{-7} = 15$ kg.

15 kg of tea of ₹ 50 per kg should be mixed.

PHYSICS

26. **(C)** $g = GM / R^2$ or $M = g R^2 / G$. Cavendish determined the value of G.

27. **(B)** The time period of a periodic wave i.e., the time difference between two consecutive crests is 0.02 s. The time difference between a crest and the next trough will be half the time period, i.e. 0.01 s.

28. **(A)** Let the velocity of train P be v. Then the velocity of train Q is 3v.

The relative velocity of train P w.r.t, Q

= $v_Q - v_P$

= v − (−3v) = 4v

The distance to be covered = 125 + 100 = 225 m

Velocity = $\dfrac{\text{Distance}}{\text{Time}}$

$4v = \dfrac{225}{4}, v = \dfrac{225}{16} = 14.1 \,\text{m} / \text{s}$

Velocity of train P = 14.1 m/s

Velocity of train Q = 3 ×14.1 = 42.3 m/s.

29. **(B)** Mass is a measure of inertia of a body. Body Q has more inertia than body P.

30. **(C)** Displacement can be both +VE and −VE.

31. **(B)** The speed of the chirp is

v = λ f = (8.75 × 10^{-3} m) (40× 10^3 Hz) = 350 m/s

If the distance from the bat to the tree is d, then the wave travels a total distance of d + d = 2d (round -trip distance). If T is the time for this round-trip, then 2d = vT

$d = \dfrac{vT}{2} = \dfrac{(350 \,\text{m} / \text{s}) \times (0.4 \,\text{s})}{2} = 70$ m

32. **(A)** When a car accelerates on a level road, its speed increases and hence the kinetic energy increases.

The rate of rubbing of the tyres with the ground as well as the air resistance increases (stronger wind blowing against the car). As a result, more heat is produced.

The acceleration of the car comes from a higher consumption of car's petrol. Car petrol has the chemical energy that is used to convert it into kinetic energy. Hence, chemical potential energy decreases.

33. **(C)** $V_{avg} = \dfrac{2 \times \square \times \square}{\square + \square} = \dfrac{2 \times 40 \times 60}{(40 + 60)} = 48$ km h^{-1}

34. **(B)** $P = \dfrac{mgh}{t} = \dfrac{100 \times 10 \times 20}{10} = 2\,\text{kW or } 2 \times 10^3 \text{W}$

35. **(A)** A dam for water reservoir is built thicker at the bottom than at the top because pressure of water is very large at the bottom due to its large depth. Thick bottom and larger area of ground produces less pressure and prevents the dam from sinking into the ground.

36. **(A)** According to the law of conservation of linear momentum, $m_1 u_1 + m_2 u_2 = m_1 v_1 + m_2 v_2$

$\Rightarrow 0 = m_1 v_1 + m_2 v_2$, 0 = 0.2 × 12 + 0.1× v$_2$

$\Rightarrow v_2 = \dfrac{-0.2 \times 12}{0.1} = -24$ m s^{-1}

The negative sign indicates that it is moving in the opposite direction (west) with a velocity of −24 m s^{-1}.

37. **(A)** When sound wave from a source propagates in different media, the frequency of sound does not change. Hence, the frequency of a source of sound of 20 kHz remains the same when produced in water or in air.

38. **(B)** Using Newton's formula, $F = G\dfrac{m_1 m_2}{r^2}$

$\therefore$ G = 6.67 × 10^{-11} N m^2 kg^{-2}, m$_1$ = 50 kg, m$_2$ = 10 kg, r = 5 m

$\therefore$ F = $6.67 \times 10^{-11} \times \dfrac{50 \times 10}{5 \times 5} = 13.34 \times 10^{-10}$ N

39. **(D)** While opening a tap with two fingers, the forces applied are equal in magnitude, parallel to each other and opposite in direction.

40. **(C)** A fan, a blender and a washing machine use the given energy conversion except the electric kettle. An electric kettle heats the contents in it as the element heats up to produce heat energy due to the passage of electricity.

41. **(D)** As the density of air at a point through which a sound wave is passing is maximum, the pressure at that point is also maximum.

42. **(C)** $u = 12$ m s^{-1}; $v = 0$; $a = -0.5$ m s^{-2}

   $v = u + at$

   $0 = 12 - 0.5 \times t$, $0.5t = 12$, $t = \dfrac{12}{0.5} = 24$ s

43. **(A)** Distance travelled by the wooden block before it meets the bullet = s_1

   Distance travelled by the bullet before it meets the wooden block = s_2

   Height of the tower

   $= s_1 + s_2 = 100$ m , $t_1 = t_2 = t$

   For the wooden block:

   $s_1 = \dfrac{1}{2}gt^2 = \dfrac{1}{2} \times 9.8 \times t^2 = 4.9\,t^2$

   For the bullet:

   $s_2 = ut - \dfrac{1}{2}gt^2 = 100t - \dfrac{1}{2} \times 9.8 \times t^2$

   As, $s_1 + s_2 = 100$ m. $\Rightarrow t = 1$ s

44. **(A)** $W = F\,S\cos\theta$

   $\cos\theta = \dfrac{W}{F \times S} = \dfrac{1}{10 \times 0.2} = \dfrac{1}{2}$

   $\cos\theta = \dfrac{1}{2} \Rightarrow \theta = 60°$

   The angle between the force and displacement is 60°.

45. **(A)** A force called centripetal force is needed to make an object move in a circular orbit or path. All the planets moving around the sun, the centripetal force is provided by the gravitational force of the sun.

46. **(C)** Mass of the bullet = $m = 5$ g = 5×10^{-3} kg

Initial velocity of the bullet = $u = 120$ m s^{-1}

Final velocity of the bullet = $v = 0$ m s^{-1}

Time taken by the bullet to come to rest = $t = 0.01$ s

Force exerted on the bullet = F= ?

We know, that $F = ma$

$\Rightarrow F = m\left(\dfrac{v - u}{t}\right)$ .....(1)

$\left[\because a = \dfrac{v - u}{t}\right]$

Substituting the above values in (1), we get,

$F = 5 \times 10^{-3}\left(\dfrac{0 - 120}{0.01}\right)$

$= (5 \times 10^{-3}) \times (-12000) = -5 \times 12$

$= -60$ N

As 'F' is negative, it indicates that the retarding force is 60 N.

Therefore, the force exerted on the bullet by the target to stop it is 60 N.

47. **(C)** Material (R) has the highest density.

Material	Volume	Mass	Density(mass/volume)
P	200 cm^3	540 g	2.7 g cm^{-3}
Q	5 cm^3	39 g	7.8 g cm^{-3}
R	8 cm^3	92 g	11.5 g cm^{-3}
S	100 cm^3	10 g	0.1 g cm^{-3}

48. **(C)** $\Rightarrow v = \dfrac{\text{distance}}{\text{time}} = \dfrac{78.4\,m}{0.23\,s} = 341\, m\,s^{-1}$

49. **(C)** If $P = mv$ is the momentum of the rifle after firing, in order to have less recoil speed, the mass of the gun should be more.

50. **(A)** Force F = 800 N

   Angle $\theta = 30°$

   Cos 30° $= \dfrac{\sqrt{3}}{2} = 0.8660$

   Work done (W) = 80,000 J

   Displacement (S) = ?

   $W = F \times S \cos\theta$

   $\therefore S = \dfrac{W}{F\cos\theta} = \dfrac{80,000}{800 \times 0.8660} = 115.47$ m

   The displacement of a body is 115.47 m

CHEMISTRY

51. **(A)** % by mass of N in N_2H_4 = $(14.0 \times 2)/(14.0 \times 2 + 1.0 \times 4)$ = 87.5 %

% by mass of N in Mg_3N_2 = $(14.0 \times 2)/(24.3 \times 3 + 14.0 \times 2)$ = 27.8 %

% by mass of N in NH_4CNO = $(14.0 \times 2)/(14.0 \times 2 + 1.0 \times 4 + 12.0 + 16.0)$ = 46.7 %

% by mass of N in $(NH_2)_2CO$ = $(14.0 \times 2)/(14.0 \times 4 + 1.0 \times 4 + 12.0 + 16.0)$ = 46.7 %

52. **(C)** A gas can be liquified by increasing its pressure and decreasing the temperature. Increased pressure makes the gas molecules to come closer thereby reducing its volume. Decrease in temperature results in decrease of kinetic energy of gas molecules to enable them to move closer, attract each other to form a liquid.

53. **(D)** Atom Q is negatively charged because the number of electrons are more than the number of protons. Only atoms R and S have the same positive charge.

54. **(D)** Addition of milk into water results in the formation of a mixture.

Milk is a mixture of water, fat and milk solids. The milk solids are made up of proteins and carbohydrates. The major milk protein is casein which is dispersed throughout the milk. Lactose is the primary carbohydrate found in milk.

When sodium metal is added to water, it reacts with it to give sodium hydroxide (a compound) and hydrogen. Composition of marble pieces and ice pieces are same as the original materials as they are compounds. So, these are not considered as mixtures.

55. **(A)** According to the venn diagram, Z is water which can exist in the three states of matter.

Water exists as ice (solid), water (liquid) and water vapour, steam (gas).

56. **(A)** 12 g of carbon combines with 32 g of oxygen to form 44 g of CO_2.

57. **(C)** Brownian motion is caused due to collision of molecules between colloidal particles.

58. **(C)** $^{235}_{92}U$ and $^{238}_{92}U$ are isotopes having the same atomic number. Hence, the number of protons and electrons are 92 each.

In two atoms, the number of neutrons are $(238 - 92)$ and $(235 - 92)$ respectively. i.e., 146, 143.

59. **(D)** Nitrogen and oxygen mixture (a gaseous mixture) is difficult to separate as it has to be cooled to very low temperatures to convert them into liquids. Liquid nitrogen (present in liquid air) has the lowest boiling point of $-196\ ^{\circ}C$. So, on warming liquid nitrogen boils off first to form nitrogen gas, that is collected from the top part of the fractional distillation column. Liquid oxygen (present in liquid air) has a still higher boiling point of $-183\ ^{\circ}C$. So, liquid oxygen boils off last and collected as oxygen gas from the bottom of the fractional distillation column.

60. **(C)** Mass no. is 27 and neutrons are 14. Therefore, electrons/protons are 13 and electronic configuration is 2, 8, 3. The valence shall of this element is M.

61. **(A)** 24 g of carbon (12) has maximum number of atoms as it has 2 moles while others are only 1 mole.

62. **(A)** More the freedom of the particles to move around, i.e., weaker the intermolecular forces of attraction, higher is the kinetic energy. Thus, the increasing order of their kinetic energy is III < IV < II < I, i.e, sand, butter, water, air. The kinetic energy of substances/particles is minimum in solids, more in liquids and maximum in gases.

63. **(A)** Aluminium has 13 protons, 13 electrons and 14 neutrons. Other elements have equal number of electrons, protons and neutrons as given below.

Element	Number of protons	Number of electrons	Number of neutrons
$^{24}_{12}$Mg	12	12	24 − 12 = 12
$^{32}_{16}$S	16	16	32 − 16 = 16
$^{40}_{20}$Ca	20	20	40 − 20 = 20

64. **(C)** A saturated solution on heating dissolves some more solute, but on cooling again that extra solute dissolved crystallizes out. But as no more salt is added no change takes place.

65. **(D)** All the statements are true of matter.

66. **(B)** 40 g of calcium constitutes one gram atom.

Gram atoms

$$= \frac{\text{Mass of the element in grams}}{\text{Atomic mass of the element}}$$

10 g of calcium in gram atoms = $\frac{10}{40}$

= 0.25 gram atoms

According to Avogadro's number, the number of atoms in 1 g of calcium = 6.023×10^{23}

The number of atoms in 0.25 gram atoms

= $0.25 \times 6.023 \times 10^{23}$ = 1.50×10^{23} atoms.

67. **(B)** Sulphuric acid dehydrates (removes water). Sugar got charred and formed a black mass of carbon. Hence, it is a chemical change.

68. **(B)** Size, odour and weight are physical properties of a substance. Chemical formula is not a physical property of a substance

69. **(B)** 1 mole of chlorine = Gram atomic mass of chlorine = 71 grams

$$\text{No. of molecules} = \frac{6.023 \times 10^{23} \times 35.5}{71}$$

= 3.011×10^{23}

No. of atoms = $2 \times 3.011 \times 10^{23}$

= 6.023×10^{23}

70. **(C)** No. of protons = no. of electrons = 82 and number of neutrons = Mass number − Atomic number = 208 − 82 = 126.

BIOLOGY

71. **(B)** Xylem and phloem are examples of complex tissues.

72. **(A)** Sperm is a haploid cell.

73. **(B)** Crop rotation and field fallow helps to improve soil fertility when a field lies fallow the soil regains nutrients that are lost by over planting.

74. **(D)** Green plants & animals give out carbon dioxide during respiration.

75. **(C)** The science and art of growing fruits, vegetables and flowers is called horticulture.

76. **(A)** Chloroplasts contain grana thylakoids and stroma.

77. **(D)** Photosynthesis is the process by which organisms convert light energy into chemical energy. Oxygen released during photosynthesis make cellular respiration and therefore life possible on earth.

78. **(D)** Influenza is a viral disease, Anthrax is a bacterial disease and dysentry is due to a protozoan entamoeba histotylica.

79. **(C)** The most amount of energy being transferred from plants to man is when man feeds on the plants directly. Since the amount of energy diminishes as it gets to the next organism in line, man will get the most amount of energy if he is the next in line in the food chain.

80. **(A)** Lightning helps our earth maintain its electrical balance as it helps tranfer negative charges back to the earth, the enormous energy of lightning breaks nitrogen molecules and enables their atoms to combine with oxygen in the air forming nitrous oxides. These dissolve in rain forming nitrates that are carried to earth.

81. **(C)** R is Red blood Cell. It is the cell found in circulatory system.

82. **(B)** X represents starch made by the leaves which is transported by the phloem tube in the stem from the leaves to all parts of the plant. Y represents water and mineral salts which are absorbed by the roots and transported to all parts of the plant via the xylem tube in the stem.

83. **(D)** Ozone layer absorbs the sun's ultraviolet radiation and then prevents reaching the earth. Ozone depletion is caused by the reaction of ozone with CFC's and then forms ozone holes.

84. **(B)** The given organism is earthworm. It belongs to the phylum annelida. Organisms in annelida have segments all over its bodies also called annuli.

85. **(A)** Sea urchin is an echinodorm.

Tapeworm- Platyhelminthes

Roundworm - Aschelminthes

Annelide - Earthworm

86. **(C)** Molluscans have a fold of skin as mantle.

87. **(B)** Chenopodium album is a weed plant.

88. **(D)** Bacteria and fungi are used to produce antiseptics, antibiotics and antibodies. Antiseptic creams, also known as antibiotic or first-aid creams. They contain either streptomycin or penicillin antibiotic capable of killing bacteria that causes infections. Weakened microorganism are used in the preparation of vaccines that developes antibodies.

89. **(C)** 'P' is Chloroplast

(P) organelle, (Q) cell, (R) tissue (S) organ, (T) organsystem and (V) organism

90. **(C)** Malpighian tubes absorbs solutes, water and excretes wastes.

GENERAL AWARENESS

91. **(D)**   92. **(A)**   93. **(D)**

94. **(A)**   95. **(B)**   96. **(D)**

97. **(C)**   98. **(D)**   99. **(D)**

100. **(C)**

The End