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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

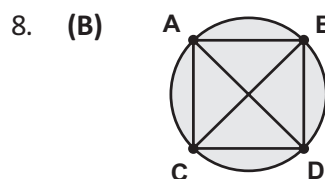
Paper Code: UN423

Solutions for Class : 4

Mathematics

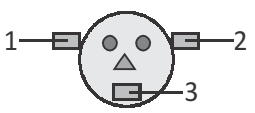
1. (D) Numbers on a telephone keypad are 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.
We, know that, any number multiplied by 0 is 0 itself.
 $\therefore$ Product of all the numbers on a telephone keypad
 $= 1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 0 = 0$
2. (C) We have,
Option (A), 280 paise = ₹ 2.80
[₹ 1 = 100 paise]
Option (B), = ₹ 4.85
Option (C), 5×25 paise = ₹ 1.25
Option (D), Twenty 10 paise coins $20 \times 0.10 = ₹ 2$
So, option (C) has least value.
3. (A) $25 + 14 = 39$
 $\underline{X} \underline{X} V + \underline{X} I V = \underline{X} \underline{X} \underline{X} I \underline{X}$
 $\therefore$ 7 symbols are needed.
4. (A) Consider the following examples.
(a) $2323 \div 23 = 101$ (b) $6868 \div 68 = 101$
(c) $7979 \div 79 = 101$
5. (C) $(19 - 18) + (17 - 16) + (15 - 14) + (13 - 12)$
 $= 1 + 1 + 1 + 1 = 4$
6. (D) 1 min 20 sec = (60 + 20) sec
= 80 sec
$$\text{Fraction} = \frac{45}{80} = \frac{9}{16}$$

7. (D) Radius = $\frac{\text{Diameter}}{2} \therefore r = \frac{d}{2}$
Diameter is doubled $\therefore D = 2d$
 $\Rightarrow$ Radius (R) = $\frac{2 \text{ Diameter}}{2}$
 $= \frac{2d}{2} = d = 2r$
 $\therefore$ Radius is doubled.



The line segments formed are AB, BD, CD, AC, AD and CB, which are 6 in number.

9. (D) Missing fraction = $1 - \frac{1}{6} - \frac{3}{12}$
 $= \frac{12 - 2 - 3}{12}$
 $= \frac{7}{12}$
10. (D) Every number is a factor and multiple of itself.
11. (A) Largest number formed by using the digits 5, 4, 2, 6, 0 = 65420
To make the largest number from the given digits, greatest digit will be put at the highest place and so on.
Smallest 5-digit number formed by using the digits 5, 4, 2, 6, 0 = 20456
To make the smallest number from the given digits, smallest digit will be put at the highest place and so on.
 $\therefore$ Required difference = $65420 - 20456$
 $= 44964$

12. (C) Area of A = 4 square units
Area of B = 8 square units
Area of C = 2 square units
Area of D = 5 square units
13. (B) $C - X = 100 - 10 = 90 = XC$ is correct.
 $XI - IX = (10 + 1) - (10 - 1) = 11 - 9 = 2 \neq XX$ is wrong.
 $DC - C = 500 + 100 - 100 = 500 =$
D is correct.
 $LXI - LIX = (50 + 10 + 1) - [50 + (10 - 1)]$
 $= 61 - 59 = 2 = II$ is correct.
14. (B) The pages which contain the digit '0' are
10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 101,
102, 103, 104, 105, 106, 107, 108, 109, 110,
120, 130, 140, 150, 160.
So, there are 25 pages which contain the
digit '0' in a book of 160 pages.
15. (D) In option (A), one-quarter = $\frac{1}{4}$ part is
shaded.
In option (B) $2/8 = \frac{1}{4}$ part is shaded.
In option (C), $2/8 = \frac{1}{4}$ part is shaded.
In option (D), $\frac{4}{12} = \frac{1}{3}$ part is shaded.
16. (C) Since, in border X, 16 small rope piece of
1 cm needed to make the border. In same
way, 10 small rope piece of 1 cm needed
to make the border. Hence, length of the
border
 $Y = 10 \times 1 \text{ cm} = 10 \text{ cm}$
17. (C) Total number of glasses = $2 \times 15 = 30$
18. (B) The first three common multiples of
3 and 9 are 9, 18 and 27.
Their product is $9 \times 18 \times 27 = 4374$
The difference in the place values of 4 in
4374 is $4000 - 4 = 3996$.
19. (A) 
20. (D) 12 : 00 noon is 12 : 00 p.m. not 12 : 00 am
21. (C) Among the given options, only 453364
when rounded off to nearest 100 gives
453400, since $64 > 50$
So, actual population of Bolivia is 453364.

22. (C) The smallest number which is a common
multiple of 6 and 8 9 is 24.
 $\therefore$ Required result = $7 \times 5 + 24 = 35 + 24 = 59$
23. (B) Time in India - 12:53 pm
Time difference = 15 hours
 $\therefore$ Time in USA
= Time in India + Time difference
= 12 : 53 pm + 15 hours
= 12 : 53 pm + 12 hours + 3 hours
= 12 : 53 am + 3 hours = 3 : 53 am

24. (D)

T	Th	H	T	O
1	0	0	0	0

$\therefore$ A five digit number begins with ten
thousand.

25. (D)

	Kg	g
15	⁴	¹⁰ 000
-	7	300
	7 kg	700 g

$\therefore$ Quantity of ghee left in the can is 7 kg
700 g.

26. (D) There are 52 weeks in a year
27. (A) $596280 = 500000 + 90000 + 6000 + 200 + 80$
28. (C) Total number of legs
 $= 60 \times 4 + 30 \times 4 + 10 \times 2$
 $= 240 + 120 + 20$
 $= 380$
29. (B) Figure (A) has 2 faces
Figure (B) has 6 faces
Figure (C) has 1 face
Figure (D) has 4 faces
 $\therefore$ Only figure (B) consists of exactly 6
faces
30. (C) The given rectangle is

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32

The area of the rectangle = 32 square cm.
Therefore, the answer is 32 square cm.

General Science

46. (C) During the process of photosynthesis, CO_2 is taken in and oxygen is given out by green leaves of plants.
47. (A) Amphibians and reptiles are egg laying animals.
48. (C) Teeth numbered 1 and 2 are incisors.
49. (D) In the given box P-seed, Q-fruit, R-root, S-stem. Ginger is a modified stem that stores extra food. 'S' includes modified stems.
50. (C) Grasshopper sits mostly on green plants. Hence, green colour is suitable to hide from its enemies in a forest.
51. (C) Kidneys filter out the waste materials from the blood.
52. (B) Fish is an aquatic animal that lives only in water.
53. (C) Heterotrophs are the living things that depend on plants directly or indirectly for their food. In the given table Q-herbivores, R - carnivores and S-omnivores.
54. (B) Roots absorb water from the soil.
55. (B) In the given figure, the plant is responding to sunlight
56. (C) Intermolecular space changes between the molecules when a substance is cooled.
57. (C) The dark-coloured spots form on the moist bread are spore cases. Spores which reproduce the mould are contained in the cases.
58. (A) The given figure shows interdependence between plants and animals. 'P' represents carbon dioxide. Carbon dioxide released by humans and animals is used by green plants for carrying out photosynthesis.
59. (D) Moon is a natural satellite of the earth.
60. (B) A solid like ice on melting changes to the liquid state.
61. (B) Roots absorb water from soil. The stem conducts water to all parts of the plants and leaves through vessels. This water is used by the leaves to synthesis food during photosynthesis.
62. (C) The boiling of milk kills germs.
63. (C) During photosynthesis light energy is converted into chemical energy.
64. (C) The given classification is based on the food they eat.
65. (A) In solid substances like ice the force between the molecules is the highest.
66. (C) Hair in our nostrils keep away or stop the dust entering into our respiratory system.
67. (D) Sugar cube dissolved in hot water.
68. (B) The word planet means wanderer.
69. (C) In the given figure, teeth labelled 'R' represent premolars. Premolars help in cracking and breaking hard foods.
70. (C) In the given solar system 'R' represents the planet Jupiter.
71. (C) In a cell, chemical energy is stored.
72. (D) The swollen leaf base or petiole of Eichhornia is thick and glossy and it help to rise above the surface of water.
73. (C) The correct path of the food inside our body is Mouth $\rightarrow$ stomach $\rightarrow$ intestine $\rightarrow$ blood.
74. (C) Exchange of gases takes place in a leaf.
75. (B) Peas are rich in proteins.
76. (A) Claypot is made from clay which is a non-living material. Pepper, paper and cane chair are obtained from living objects, i.e., plants.
77. (D) It is easy to shift cloth tents from one place to another to conduct circuses at various places.
78. (C) Some animals like zebras, tigers and leopards have stripes or spots on their body which help them merge or mix with their surroundings.
79. (D) The animals in the group 'S' are omnivores. As rat is an omnivore, it should be placed in group 'S'.
80. (B) Tadpole is the larval stage of frog. It resembles a fish. It undergoes metamorphosis and develops into an adult frog.
81. (A) Tall and straight trees with needle like leaves without flowers are usually found in hilly areas.

82. (C) The given properties belong to a solid object, the pebble.
83. (C) The water droplets found in the plastic bag are formed due to the transpiration of leaves.
84. (B) X is stomach and Y is small intestine.
85. (A) Part labelled as 'P' on the tongue has a sensation of bitter taste.
86. (A) Mangroves grow in marshy areas. Coconut in coastal areas, cactus in desert areas and mango in temperature regions or hot and damp places.
87. (C) Cockroach shows three stages of life cycle. Adult female cockroach lays eggs. The eggs hatch into nymph and develop into adults.
88. (C) Oxygen is necessary for survival of living organisms. It combines with food and gives us energy.
89. (B) Rabbit is a primary consumer or herbivore.
90. (C) Duckweed is a floating aquatic plant that do not need soil to grow.
91. (A)
92. (C)
93. (B)
94. (C)
95. (C)
96. (D)
97. (B)
98. (A)
99. (D)
100. (A)

