UNIFIED COUNCIL

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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION (UPDATED)

CLASS - 6
Question Paper Code : UN460

KEY

1. B	2. A	3. D	4. C	5. B	6. C	7. D	8. A	9. C	10. A
11. D	12. C	13. A	14. D	15. D	16. A	17. D	18. C	19. D	20. D
21. D	22. A	23. A	24. D	25. B	26. B	27. C	28. A	29. B	30. C
31. C	32. D	33. C	34. A	35. D	36. B	37. D	38. B	39. D	40. C
41. D	42. D	43. D	44. C	45. A	46. D	47. D	48. B	49. A	50. B
51. A	52. C	53. D	54. D	55. C	56. D	57. D	58. D	59. C	60. B

SOLUTIONS

MATHEMATICS

1: (B) Let the complimentary angle be y

Given $(50° - x) + x = 90°$

$y = 90° - 50° + x = 40° + x$

2: (A) LCM of 20, 25, 35 & 40 = 1400

Required number = LCM − 4

$[\because 20 - 14 = 4$

$25 - 21 = 4$

$35 - 31 = 4$

$40 - 36 = 4]$

$= 1400 - 4 = 1396$

3: (D) Each boy share $= \dfrac{20}{8} = \dfrac{5}{2} = 2\dfrac{1}{2}$

4: (C) $7\dfrac{1}{2}$ % of 3 metres $= \dfrac{7.5}{100} \times 300$ cm = 22.5 cm

5: (B) $-4(3 - y) - 7(y + 4) = -12 + 4y - 7y - 28$

$= -3y - 40$

6: (C) Given ratio $= 7 : 8 = 7x : 8x$

Given $8x - 7x = 1.6$ kg

$x = 1.6$ kg

copper weight $= 7x = 1.6$ kg $\times 7 = 11.2$ kg

7:	(D)	Two rays meeting common end point is Vertex.	18:	(C)	Total eggs = 35 × 12 + 115 = 420 + 115 = 535

7: (D) Two rays meeting common end point is Vertex.

8: (A) Area of room = 5 m 75 cm × 3 m 40 cm

= 5.75 m × 3.4 m

Area of carpet required = 19.55 m²

9: (C) Given 60 men can complete in 6 days

🖥 6 × 60 men can complete the same work in 1 day

🖥 360 men can complete the same work in 1 day

⇒ 40 × 9 men can complete the same work in 1 day

🖥 40 men can complete the same work in 9 days

10: (A) Required number = −75 + 90 = 15

11: (D) Perimeter of the garden = 76 × 1.75 m = 133 metres

12: (C) Required value = $\dfrac{₹\,1}{20} = \dfrac{₹\,0.5}{10}$ = ₹ 0.05

13: (A) $16\dfrac{2}{3}\% = \dfrac{\left(\dfrac{50}{3}\right)}{100} = \dfrac{50}{3} \times \dfrac{1}{100} = \dfrac{1}{6}$

14: (D) If the arms of angle are extended then the angle does not change

15: (D) A circle has infinite lines of symmetry

16: (A) Given the ratio of boys and girls = 2 : 3 = $2x : 3x$

Given $3x$ = 180

$x = \dfrac{180}{3} = 60$

🖥 No. of boys = $3x$ = 2 × 60 = 120

Total students = 180 + 120 = 300

17: (D)

```
   19) 1000 (52
        95
        ___
        50
        38
        ___
        12
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🖥 12 to be subtracted from 1000 so that it is exactly divisible by 19

18: (C) Total eggs = 35 × 12 + 115 = 420 + 115 = 535

19: (D) 2n − 1 means 1 is subtracted from the product of 2 and n

20: (D) Option A perimeter = 2(12 + 2) = 2 × 14 units = 28 units

Option B area = 8 × 3 units = 24 units

Option B perimeter = 2(8 + 3) units = 22 units

Option C area = 5 × 4 units = 20 units

Option D perimeter = 2(6 + 4) units = 2 × 10 units = 20 units

Option D area = 6 × 4 sq. units = 24 sq. units

21: (D) x^3 term is missing

🖥 x^3 coefficient = zero

22: (A) $\dfrac{0.34 - 0.034}{0.0034 \div 34} = \dfrac{0.306}{0.0001} = 3060$

23: (A) Required value = 9 × 900000 = 8100000

24: (D) 11 + 2 = 13 and 11 × 2 = 22

9 + 4 = 13 and 9 × 4 = 36

8 + 5 = 13 and 8 × 5 = 40

6 + 7 = 13 and 6 × 7 = 42

25: (B) Given ratio = 9 : 10 = $9x : 10x$

Given $9x + 4 : 10x + 2 = 1 : 1$

🖥 $10x + 2 = 9x + 4$

$10x − 9x = 4 − 2$

$x = 2$

🖥 Anticident of original ratio

= $9x$ = 9 × 2 = 18

PHYSICS	**CHEMISTRY**

PHYSICS

26. (B) Rubber, glass, wood and pure water are good electrical insulators. Graphite, silver, copper and iron are good electrical conductors.

27. (C) Let 'h' be the height of Harish.

The height of Ram = (h + 50) cm

Height of Ram + height of Harish = 2.8 m = 280 cm

$\therefore$ (h + 50) + h = 280 cm

$\Rightarrow$ 2h + 50 = 280 $\Rightarrow$ 2h = 280 – 50 = 230

$\Rightarrow$ 2h = 230 $\Rightarrow$ h = 115 cm

The height of Harish = 115 cm

The height of Ram = 115 + 50 = 165 cm

28. (A) When an iron ball is placed in the path of a source of light, its dark shadow is cast on the screen, because the iron ball is an opaque object which blocks the passage of light.

29. (B) A torch light is powered by dry cells which convert chemical energy to electrical energy. This in turn, is converted into light energy by the torch light.

30. (C) The block shown is in curvilinear motion as it moves on a curved path.

31. (C) The small patches of sunlight that we see on passing under a tree covered with large number of leaves are the circular images of the sun.

32. (D) If a battery is dead, the bulb does not get the supply of energy. So, the bulb does not glow. If the filament is broken in the bulb, it does not glow. But if a switch is closed, then the bulb glows as current flows through the circuit.

33. (C) The total distance travelled by a boy in kilometres is 10 + 15 + 20 = 45 km.

34. (A) The shadow of an object formed by the Sun during morning and evening hours are longer compared to noon where the position of the Sun is directly above the object.

35: (D) Number and arrangement of batteries and bulbs will effect the brightness of a bulb or bulbs in an electric circuit.

CHEMISTRY

36. (B) Oil does not mix with water. It floats on water.

37. (D) Sugar being soluble in water will form a sugar solution. During filtration, the sand will be separated by the filter paper as residue while sugar solution will pass through. During distillation pure water can be collected leaving the sugar crystals separate.

A filter paper is used for separating solid particles from a liquid. Distillation is used to obtain a pure form of liquid from a solution.

38. (B) Three quarters of the Earth's surface is covered with water. However, only three percent of the water is fresh water. Due to global warming, the amount of stored fresh water in the icebergs is decreasing gradually as they melt away. One way to obtain fresh water is through distillation, a process that involves evaporation and condensation.

39. (D) The desired structure should be strong enough to carry a man, it should not be very flexible and should have the ability to float.

40. (C) Sieving the residue is unnecessary as the residue obtained after filtration would only contain sand and it need not be separated further.

41. (D) The revolution of the earth is a periodic change.

42. (D) Ceramic has a high melting point. It is brittle and does not corrode.

43. (D) To obtain fresh water from sea water, boil the sea water at extremely high temperature. This allows the water to evaporate into water vapour. Allow the water vapour to cool and condense. Boil again and repeat the process a few times, finally leaving only the salt as residue. Filter the condensed water vapour to remove all other impurities to get fresh water.

44. (C) Sand and sulphur both are insoluble in water.

Among the given mixtures, sand is a common insoluble component but copper sulphate, potash alum and sugar are all soluble in water. So, they cannot be separated by using water as the solvent.

45. (A) Kerosene and water are immiscible liquids.

BIOLOGY

46. (D) The plant may not be able to survive in ice-cold water.

Increasing the distance from the lamp would reduce the light intensity falling on the plant.

Reducing the electricity flowing through the lamp would decrease the light intensity falling on the plant.

Photosynthesis requires carbon dioxide.

47. (D) The leaves make food which is transported to other plant parts for use.

Excess sugar is stored as starch in the storage parts.

48. (B) Plants can make their own food, so they are food producers. All other organisms depend on plants directly or indirectly for food.

When plants make food, they replenish oxygen in the suurroundings.

All living things (including plants) respire and produce carbon dioxide all the time.

49. (A) Both the arctic hare and the polar bear have thick fur with a thick layer of fat beneath their skin to survive the cold climate. Ability to camouflage helps in protection from predators and for hunting.

The arctic hare is able to change its coat colour according to the season. The hare has brown or grey coat during summer and white coat during winter. The polar bear, on the other hand, has a coat of transparent fur all year round.

50. (B) Vitamin D is synthesized in the presence of sunlight.

51. (A) Based on the food they eat animals are classified as plant eaters (Herbivores). Animal eaters (Carnivores). Plant and animal eaters (Omnivores).

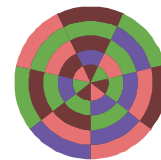52. (C) X: Maxilla; Y : Mandible; Z : Cranium

53. (D) All are heterotrophs.

54. (D) Organic matter such as leftover food and bones can be decomposed by bacteria or fungi into simple substances that can be absorbed and used by plants for healthy growth.

55. (C) The given characteristics are of cotton fibres. Cotton clothes suit to summer season.
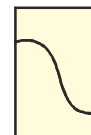
CRITICAL THINKING

56: (D) (iv) only

(iv)

57: (D) Trace the steps given in the question on the map, paying careful attention to the specific directions, north, south, east, and west.You have arrived in front of the grocery store, choice D.

58: (D)

59: (C) From (ii) and (iii) we get the code for sad, sad is coded as 'S'.

From (i) and (iii) we get the code for clear, clear is coded as 'M'.

Therefore 'Or' is coded as 'O'

60: (B) The seating arrangement is as follows

'T' is seated 2nd right from F