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NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION (UPDATED)

CLASS - 5
Question Paper Code : **UN499**

KEY

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

SOLUTIONS

MATHEMATICS

01. (B) Total increase in temperature

= 25°C × 3 = 75°C. Final temperature = Starting temperature + total increase

= 100°C + 75°C = 175°C.

02. (C) 15 km/h × 2 = 30 km/h

03. (A) $S.I = \dfrac{PTR}{100}$

$= \dfrac{2500 \times 3 \times 5}{100}$

= 25 × 3 × 5

= Rs. 375

04. (C) Profit = 10% of ₹120 = ₹12. Selling Price = Cost Price + Profit = ₹120 + ₹12 = ₹132

05. (D) $\dfrac{60}{T} = \dfrac{25}{100}$

Now, cross-multiply to solve for T:

60 × 100 = 25 × T

6000 = 25 T

Finally, divide both sides by 25 to solve for T:

T = $\dfrac{6000}{25}$ = 240

So, there are 240 marbles in total in the collection.

06. (B) For 16 roses, there are 20 tulips (since 4:5). For 20 tulips, the equivalent ratio represents 10 sets of the 2:3 ratio. Hence, there are 10 x 3 = 30 daisies.

07. (D) Option (A) : 8993871 > 8103837

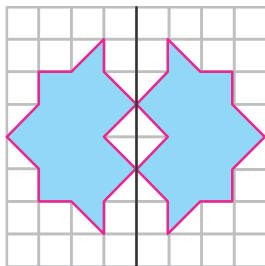Option (B) : 8293871 > 8103837

Option (C) : 8593871 > 8103837

Option (D) : 8093871 < 8103837

08. (D) If the side length is doubled, the volume will increase by 2 × 2 × 2 times because volume is proportional to the cube of the side length. So, the volume will be 8 times larger.

09. (D)

10. (D) 1 liter 560 ml

11. (C)

12. (B) The measure of obtuse angles are between 90° to 180° .

∴ From all options, (A), (C) and (D) are obtuse and (B) is acute.

∴ Answer is option (B).

13. (B) Mehul is nearer to play ground

14. (C) L.C.M of 12, 30 and 40 is 120

15. (D) 50 minutes : 5 hours

= 50 min : 300 min = 1 : 6

16. (C) $1.5 \times 2.5 = \dfrac{15 \times 25}{10 \times 10} = \dfrac{375}{100} = 3.75$

So, decimal number to be subtracted

= (3.75 − 2) = 1.75

17. (C) 8:45 + 0:25 = 8:70 min = 9:10

18. (B) ∠1 and ∠3 are obtuse and

∠2 and ∠4 are acute

19. (B) Mass of 2 packets of sugar and 2 packets of flour = 3.75 × 2 = 7.5 kg

Mass of 3 packets of sugar

= 9 − 7.5 = 1.5 kg

Mass of 1 packet of sugar

= 1.5 ÷ 3 = 500 g

20. (A) Mr Lohith : 6 mth, 12mth, 18 mth, 24 mth,.....

Mr Tarun : 4 mth, 8 mth, 12 mth, 16 mth, 20 mth, 24 mth, ...

Mr Rohan : 8 mth, 16 mth, 24 mth,......

They will be together in Singapore once every 24 months.

They were last together 3 mth back.

24 − 3 = 21 mth

They will be together again in Singapore 21 months or 1 yr 9 mth from now.

21. (B) Factors of 40 are 1, 2, 4, 5, 8, 10, 20, 40

Their product is 1 × 2 × 4 × 5 × 8 × 10 × 20 × 40 = 256 × 10000 = 2560000

22. (C) Since, $\dfrac{14}{8} = \dfrac{7}{4} = 1\dfrac{3}{4}$

23. (A)

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    4   4   1   3
  - 3   3   4   6
  ─────────────────
    1   0   6   7
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24. (D) 6 squares out of 32 are coloured

∴ The required percentage

= $\dfrac{6}{32}$ × 100% = 18.75%

25. (A) $\dfrac{15}{24} = \dfrac{1 \times 5}{2 \times 4}$

GENERAL SCIENCE

26. (B) The correct matching is :
P-(iv), Q-(iii), R-(ii), S-(i)

Fish – Fins

Frog – Webbed feet

Turtle – Paddle like limbs

Octopus – Arms

27. (C) The fruit shown in the picture is guava and it is rich in vitamin C.

28. (A) Cuticle is present on the body coverings of grasshopper, cockroach and ant. Skin of frog is smooth and without scales.

29. (A) In the given classification table, X, Y and Z are hinge joint, gliding joint and pivot joint respectively.

30. (C) Penguin and ostrich are birds and so they have feathers as outer coverings of body whereas bat is a mammal and possesses hair.

31. (B) Ozone is present in stratosphere layer of atmosphere.

32. (C) Ploughing, overgrazing and rainwater cause soil erosion while embankments prevent soil erosion.

33. (D) All the given materials are present in granite.

34. (B) Nitrogen constitutes 78% of atmospheric air, oxygen constitutes 21% of atmospheric air and other gases constitute remaining 1% of the atmospheric air in which carbon dioxide contributes 0.03%.

35. (A) The figure shown is of constellation Ursa Major.

36. (C) Planet 'X' is Mars.

37. (B) The machine probably must be pumping carbon dioxide gas to change lemon juice to lemon soda.

38. (B) 'X' is gas as it does not have a fixed volume and it occupies the total space of the container.

39. (C) Tide is the condition when water level of oceans and seas rises up to a certain level and then after a while recedes down. Tides occur due to gravitational pull of the Moon.

40. (B) Sea water evaporates and rises into the sky as water vapour (liquid $\rightarrow$ gas). The water vapour in the clouds condenses to form water droplets and drop on the earth as rain (gas $\rightarrow$ liquid).

41. (B) Crocodiles crawl on the ground. Sharks breathe through gills as they are fishes whereas whales and dolphins are mammals and breathe through lungs. They have blow holes for taking in and giving out air.

42. (C) The weight of the ship is the same as that of the water it displaces.

43. (D) X could be silver vessel as it is both lustrous and hard while Y could be glass as it is both hard and transparent.

44. (B) Oxygen, nitrogen and hydrogen are all gases.

45. (C) The Earth is tilted on its axis due to which some places get direct vertical rays of the Sun and are hotter like equator while some places have slanting sun rays and are cooler.

46. (B) The given figure is that of a bryophyllum leaf. It reproduces from leaf buds that are developed on the margin of it.

47. (B) Coal is a fossil fuel. It is a natural source of energy that once exhausted will take millions of years to regenerate, so it is considered to be non-renewable source of energy.

48. (B) 'X' is a goat. It is a herbivore.

49. (A) In the given figure, P, Q and R are cerebrum, cerebellum and medulla respectively.

Cerebrum is the centre of intelligence and medulla controls all our involuntary actions.
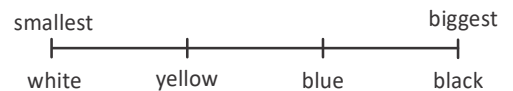
50.	(C)	The sunlight is too bright for us to see the light reflected from the moon.
51.	(C)	Penguin and dolphin both possess backbone and flippers. They both breathe through lungs. Penguin is a birty that lays eggs. Dolphin is a mammal that gives birth to young ones.
52.	(C)	Carbondioxide is an example of gaseous state and so can be placed under z.
53.	(B)	Rock X could be slate which is a metamorphic rock formed from shale. It breaks into flat and thin layers. Its colour varies from grey to black and it is used to make slates and blackboards.
54.	(D)	Arm and thigh muscles are attached to bones and work in pairs and create movement by contracting and relaxing.
55.	(B)	On heating, solubility of a solute increases. Therefore, sugar in beaker L will dissolve faster.

CRITICAL THINKING

56. (B) ● = 15

△ = 3 × 15 g − 15 g

△ = 45 g − 15 g

△ = 30 g = 0.03 kg

■ = 30 g + 30 g + 15 g − 30 g

60 g + 15 g − 30 g

75 g − 30 g

40 g = 0.045 kg

57. (B) Report them to the examiner immediately

58. (C) Figure R

59. (A) Starts from the last clue.

smallest ─────────────── biggest
yellow   blue   black

Continue with the second clue.

smallest ─────────────── biggest
white   yellow   blue   black

Continue with the first and third clues.

smallest ─────────────── biggest
white   yellow   blue   black   red

The red box is the biggest while the white box is the smallest.

60. (B) 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 66

All the seats will be taken up at the 11th bus stop.