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# NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION

***CLASS - 5***

***Question Paper Code : 1O119***

## KEY

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

## SOLUTIONS

### MATHEMATICS

01. (D) A perfect number is equal to the sum of its factors excluding itself.

Factors of 496: 1 + 2 + 4 + 8 + 16 + 31 + 62 + 124 + 248 = 496

02. (B) The sequence starts 2, 4, and each next number = sum of all previous numbers:

2, 4, 6, 12, 24, 48, 96, 192, 384, 768...

1537 cannot appear because the sum at that step is 1536.

03. (C) $\frac{1}{4}$ of 198.7 = 49.675

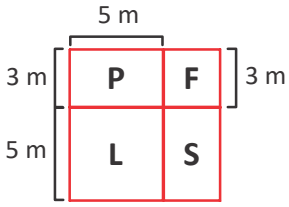
04. (B) Parrots : bears = 2 : 5

Parrots : crocodiles = 7 : 2, and crocodiles = 12

From the second ratio, 2 parts = 12 $\rightarrow$ 1 part = 6 $\rightarrow$ 7 parts (parrots) = 42.

Now using first ratio, 2 parts (parrots) = 42 $\rightarrow$ 5 parts (bears) = 105.

05. (B)




Perimeter of lawn = 20 m

∴ Side of lawn = 5 m

Perimeter of flower bed = 12 m

∴ Side of flower bed = 3 m

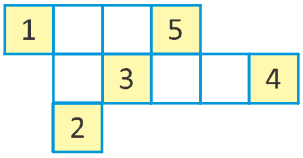
Perimeter of pool = 2(3m + 5m)

= 2(8m) = 16 m

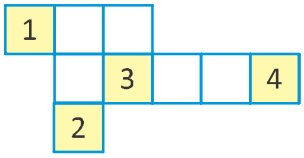
06. (C) Tuesday = Monday + 4 → Tuesday = 22°C → Monday = 22 – 4 = 18°C

Wednesday = Monday – 6 → Wednesday = 18 – 6 = 12°C

07. (C) Let us assume side of square = 1 unit




Perimeter = 18 units




Perimeter = 18 units

08. (B) 3 small = 2 medium

→ 3 × 400 = 2 × medium

→ 1200 = 2 × medium

→ 1 medium = 600 pages

3 medium = 2 large

→ 3 × 600 = 2 × large

→ 1800 = 2 × large

→ 1 large = 900 pages

So, a large cartridge can print 900 pages.

09. (B) 1 minute = 60 seconds

2 minutes = 60 × 2 seconds = 120 seconds

The time will be 16:32 hours

10. (B) prime factors are 3, 5, 23.

Sum = 3 + 5 + 23 = 31

11. (D) To convert grams to kilograms:

1 kg = 1000 g

So: 5300g ÷ 1000 = 5.3kg

12. (D) The last digit of the product is the same as the last digit of the number × Q. Only 5 × 5 = 25 ends with 5. So Q = 5.

Number looks like P P 5 and product looks like R 5 5 5.

Try numbers:

775 × 5 = 3875 matches pattern

Sum of digits P + Q + R = 7 + 5 + 3 = 15

13. (B) 38 days = 5 weeks + 3 days → 5 Tuesdays in 5 weeks.

Extra 3 days include 1 Tuesday → total Tuesdays = 5 + 1 = 6

14. (D) Total poured = 150 × 3 + 50 × 3 = 600 m$\ell$

Bottle holds 1000 m$\ell$ → Remaining = 1000 – 600 = 400 m$\ell$

15. (B) DE and CB are parallel.

16. (C) GCD of 24, 30, 66 = 6 → each section = 6 m

Total sections = 120 ÷ 6 = 20 → posts needed = 20 + 1 = 21

Already 4 posts → more posts = 21 – 4 = 17

17. (D) Total vehicles = 42.

Maximum vehicles if all trips were lorries = 6 × 5 = 30 → too few.

So some trips must be cars.

Try 3 trips with cars : 3 × 10 = 30 cars

Remaining 2 trips with lorries: 2 × 6 = 12 lorries

Total = 30 + 12 = 42

18. (A) The given figure becomes a cuboid if it has 4 × 3 × 2 = 24 cubes

The no. of cubes in the given figure = 11

The no. of cubes that must be added to make it a cuboid = 24 – 11 = 13

Hence, its volume

= 13 × 2 × 2 × 2 $cm^3$ = 104 $cm^3$

19. (C) 25% of number = 45 → whole number = 45 × 4 = 180

50% of number = 180 ÷ 2 = 90

20. (B) Weight of 3 apples + 2 oranges = 255 g

Weight of 2 apples + 3 oranges = 285 g

Hence, weight of 5 apples + 5 oranges = (255 + 285) g = 540 g

$\therefore$ Weight of 1 apple + 1 orange = 540 g ÷ 5 = 108 g

21. (B) Given wire + string + ribbon = 41.6 cm

wire + 7.4 cm + wire + 4 wire = 41.6 cm

6 wire = 41.6 – 7.4 cm = 34.2 cm

$$\text{wire} = \frac{34.2\ \text{cm}}{6} = 5.7\ \text{cm}$$

String = 7.4 cm + wire = 7.4 cm + 5.7 cm = 13.1 cm

Ribbon = 4 × wire = 4 × 5.7 cm

= 22.8 cm

Difference between ribbon and string

= 22.8 cm – 13.1 cm = 9.7 cm

22. (A) 1 km

(Rita = 3 km, Friend = 2 km → difference = 1 km)

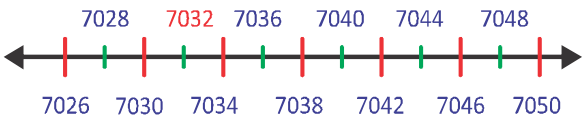
23. (A) $\frac{14}{15} \div 6 = \frac{14}{15} \times \frac{1}{6}$

$= \frac{7}{15 \times 3} = \frac{7}{45}$

24. (D) 21 tenths = 2.1

The difference of the given numbers = 2.1 – 1.98 = 0.12 = 12 hundredths

25. (C)




## GENERAL SCIENCE

26. (C) The animals are similar as they all have shell as an outer covering which protects their soft bodies.

27. (B) Sugarcane (stem) is used to produce sugar.

28. (C) In the given sequence X represents the process of manuring.

29. (B) The plant shown in the picture is coconut tree. Its seeds are dispersed by water.

30. (C) The part of the earth that contains water is called hydrosphere.

31. (D) The conversion of solid into liquid is called melting, and the conversion of liquid into solid is called freezing.

32. (C) Conglomerates consists of pebbles and stones.

33. (A) Inclined plane uses a slanted surface that connects a lower level to a higher level.

34. (D) Deficiency of iodine leads to Goitre.

35. (A) Thick leathery pads of camel help it walk on the hot sand.

36. (B) Wedge

37. (C) Elbow

38. (C) Pricking the blister can cause infection.

39. (C) Brain

40. (A) Plants uses and converts solar energy into chemical energy of food during the process called photosynthesis.

41. (A) In case of a heart stroke take liquid at regular interval.

42. (D) Seed can be dispersed by all of the given agents. (Wind, Water and Animals)

43. (A) Flagpole is a fixed pulley. Ramp is an inclined plane and crane is a movable pulley.

44. (A) Without frictional force we will not be able to walk on floor, that is why we often slip on extremely smooth surfaces which offer very less friction.

45. (B) Venus, which can be seen with the unaided eye from Earth, is the brightest planet in our Solar System. Venus was given the nickname evening star and morning star because of its bright, consistent presence.

46. (B) Water current in stream make rocks smooth.

47. (C) Roughage is the fibres present in the plant food, like vegetables, fruits and grains. Raughage adds bulk to the undigested food and helps the body to get digested.

48. (A) Flowing water possesses kinetic energy, which is transferred to the wheel, causing motion.

49. (A) Warmth and moisture allow mold spores (like Penicillium) present in the air to germinate and grow on the bread's surface.

50. (A) Onion, potato and ginger are modified stems while radish is modified root.

51. (C) Satellites are man made objects that revolve around the earth.

52. (A) Oxygen gas is used up in the burning of things and in the process of respiration.

53. (B) The process of settling down of insoluble matter in water is called sedimentation.

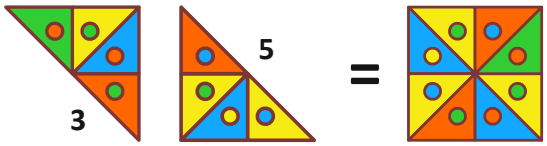
54. (B) Gneiss is formed by the metamorphosis of granite.

55. (B) The lower arm consists of radius and ulna.

## CRITICAL THINKING

56. (C) Ayan's > Arun > Revanth > Shushanth score from top to bottom

57. (B)




58. (B) Each cow has 4 legs, so 30 cows have $30 \times 4 = 120$ legs.

Each chicken has 2 legs, so to make 120 legs, there must be $120 \div 2 = 60$ chickens.

Total animals = 30 + 60 = 90

59. (D) There are 32 cubes in the image.

60. (C)