



**NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION (UPDATED)**

**CLASS - 6**  
**Question Paper Code : UN484**

**KEY**

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

**SOLUTIONS**

**MATHEMATICS**

01. (C) The pitcher  $\frac{3}{4}$  is full ie 75% full  
 $\therefore$  Each cup recived juice =  $\frac{75\%}{5} = 15\%$

02. (B)  $LHS = \frac{1}{3} \times \frac{2}{4} \times \frac{3}{5} \times \frac{4}{6} \times \dots \times \frac{18}{20} \times \frac{19}{21} \times \frac{20}{22}$   
 $= \frac{2}{21 \times 22} = \frac{1}{231}$

06. (D) Given A : B =  $\frac{7}{5} : \frac{7}{4}$

$= 7 \times 4 : 7 \times 5 = 4 : 5$

Given B : C =  $\frac{5}{3} : \frac{5}{4} = 5 \times 4 : 5 \times 3 = 4 : 3$

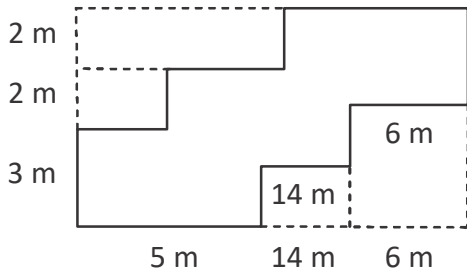
$\therefore A : B : C = 4 \times 4 : 5 \times 4 : 5 \times 3$   
 $= 16 : 20 : 15$

04. (D) Divisor = 5 times remainder =  $46 \times 5 = 230$

Quotient =  $\frac{\text{Divisor}}{10} = 23$

$\therefore$  Dividend = Divisor  $\times$  Quotient + Remainder  
 $= 230 \times 23 + 46 = 5336$

05. (B)



Length =  $(5 + 14 + 6)$  m = 25m & Breadth =  $(3 + 2 + 2)$ m = 7m

∴ Perimeter

$$= 2(l + b) = 2(25 + 7)m = 64 \text{ m}$$

06. (A)

There are 50 even numbers

For every two consecutive numbers result is  $-2$

$$\therefore \text{Total sum} = -2 \times 25 = -50$$

07. (D)

Original area =  $13 \text{ cm} \times 10 \text{ cm} = 130 \text{ cm}^2$

New area =  $(13 + 2) \text{ cm} \times (10 + 2) \text{ cm} = 180 \text{ cm}^2$

∴ Increased area

$$= 180 \text{ cm}^2 - 130 \text{ cm}^2 = 50 \text{ cm}^2$$

08. (C)

HCF of 630 and 765 = 45

$$\begin{array}{r} 630) 765 \text{ (1)} \\ \underline{630} \\ 135) 630 \text{ (4)} \\ \underline{540} \\ 90) 135 \text{ (1)} \\ \underline{90} \\ 45) 90 \text{ (2)} \\ \underline{90} \\ \textcircled{0} \end{array}$$

09. (B)

Required numbers

$$= 370 - 10 = 360 \text{ \& } 514 - 10 = 504$$

HCF of 360 & 504 = 72

$$\begin{array}{r} 360) 504 \text{ (1)} \\ \underline{360} \\ 144) 360 \text{ (2)} \\ \underline{288} \\ 72) 144 \text{ (2)} \\ \underline{144} \\ \textcircled{0} \end{array}$$

∴ 72 is the required greatest number

10. (C)  $\frac{-1}{2} = -0.5, \frac{-3}{4} = -0.75,$

$$\frac{-5}{6} = -0.83, \frac{-7}{8} = -0.875$$

$$\therefore -0.875 < -0.83 < -0.75 < -0.5$$

$$\text{ie } \frac{-7}{8} < \frac{-5}{6} < \frac{-3}{4} < \frac{-1}{2}$$

11. (B)

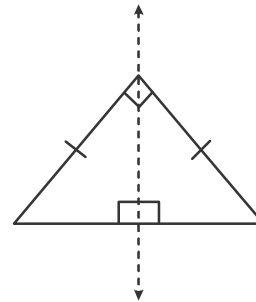
$$\frac{15.42 \times 15.42 - (-0.82) \times (-0.82)}{59.276}$$

$$= \frac{237.7764 - 0.6724}{59.276}$$

$$= \frac{237.104}{59.276} = 4$$

12. (B)

An isosceles right angle triangle has one line of symmetry.



13. (B)

$$7x = 53 - 4$$

$$7x = 49$$

$$x = \frac{49}{7} = 7$$

14. (D)

Required difference =  $(2 - 1) + (4 - 3) + \dots + (4042 - 4041) + 4044$

$$= 2021 + 4044$$

$$= 6065$$

15. (C)

Given  $\overline{AD} + \overline{DE} = \overline{AE}$

$$\therefore \overline{DE} = \overline{AE} - \overline{AD}$$

16. (C)

If  $x = \frac{1}{2}$  then option 'A' LHS

$$= \frac{1}{6} - \frac{2 \times \frac{1}{2}}{5} = \frac{5-6}{30} = \frac{-1}{30}$$

Option 'A' RHS

$$= \frac{2 \times \frac{1}{2}}{3} + \frac{11}{30} = \frac{10+11}{30} = \frac{21}{30}$$

∴ LHS of option 'A' ≠ RHS of option 'A'

Let  $x = \frac{1}{2}$  then LHS of option 'B'

$$= \frac{1}{6} + \frac{1}{5} = \frac{11}{30}$$

$$\text{RHS of option 'B'} = \frac{1}{3} - \frac{11}{30} = \frac{1}{30}$$

∴ LHS of option 'A' ≠ RHS of option 'B'

Let  $x = \frac{1}{2}$  the LHS of option 'C'

$$= \frac{1}{6} - \frac{1}{5} = \frac{5-6}{30} = \frac{-1}{30}$$

$$\text{RHS of option 'C'} = \frac{1}{3} - \frac{11}{30} = \frac{10-11}{30} = \frac{-1}{30}$$

∴ LHS of option 'A' = RHS of option 'B'

17. (C) Given, The marks ratio of Mr Ram & Mr Krish = 8 : 9 = 8x : 9x

∴ Marks of Mr Ram = 8x

Marks of Mr Krish = 9x

Given 8x : (9x - 30) = 4 : 3

∴ Product of means = Product of extremes

$$4(9x - 30) = 3 \times 8x$$

$$36x - 120 = 24x$$

$$36x - 24x = 120$$

$$12x = 120$$

$$x = 10$$

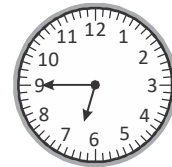
∴ Marks of Mr Ram = 8x = 80

18. (A) Given  $x = 4\frac{3}{6} = 4\frac{1}{2} = \frac{9}{2}$

$$y = 5\frac{2}{6} = 5\frac{1}{3} = \frac{16}{3}$$

$$y - x = \frac{16}{3} - \frac{9}{2} = \frac{32-27}{6} = \frac{5}{6}$$

19. (A) Required angle is a cute angle



20. (D) LHS =  $\frac{15}{2} - \frac{9}{4} \times \frac{8}{45} + \frac{38}{7} \times \frac{21}{19} - \frac{31}{4}$

$$= \frac{15}{2} - \frac{2}{5} + 6 - \frac{31}{4}$$

$$= \frac{150 - 8 + 120 - 155}{20}$$

$$= \frac{107}{20} = 5\frac{7}{20}$$

21. (B) Perimeter of a rectangle = 2(l + b)

$$= 2\left[\frac{a}{2} + \frac{b}{3} + \frac{a}{3} - \frac{b}{2}\right] \text{cm}$$

$$= 2\left[\left(\frac{a}{2} + \frac{a}{3}\right) + \left(\frac{b}{3} - \frac{b}{2}\right)\right] \text{cm}$$

$$= 2\left[\left(\frac{3a+2a}{6}\right) + \left(\frac{2b-3b}{6}\right)\right] \text{cm}$$

$$= 2\left[\frac{5a}{6} - \frac{b}{6}\right]$$

$$= \frac{5a}{3} - \frac{b}{3}$$

$$= \left(\frac{5a-b}{3}\right) \text{cm}$$

22. (B) (1 + 2 + 3 + .....+50) + 51 + 52 + (53 + .....+100)

$$= 1275 + 103 + 3672$$

$$= 5050$$

23. (D) XCV + LXXXIX + LXXV + MCMLXIII

$$= 95 + 89 + 75 + 1963$$

$$= 2222$$

$$= \text{MMCCXXII}$$

**PHYSICS**

24. (A)  $\overline{AB} = 14 \text{ cm} - 3 \text{ cm} = 11 \text{ cm}$   
 $\overline{CD} = 13 \text{ cm} - 6 \text{ cm} = 7 \text{ cm}$   
 $\therefore \overline{AB} + \overline{CD} = 11 \text{ cm} + 7 \text{ cm} = 18 \text{ cm}$

25. (C) Option (A) :  $\frac{7}{3} - \frac{29}{4} - \frac{17}{6} + \frac{43}{12}$   
 $= \frac{28 - 87 - 34 + 43}{12}$   
 $= -\frac{50}{12} = -\frac{26}{6} = -4\frac{1}{6}$

Option (B) :  $\frac{5}{2} - \frac{13}{4} - \frac{13}{8} + \frac{55}{16}$   
 $= \frac{40 - 52 - 26 + 55}{16}$   
 $= \frac{17}{16} = 1\frac{1}{16}$

Option (C) :  $\frac{10}{3} + \frac{17}{4} + \frac{37}{6} - \frac{145}{12}$   
 $= \frac{40 + 51 + 74 - 145}{12}$   
 $= \frac{20}{12} = \frac{5}{3} = 1\frac{2}{3}$

Option (D) :  $\frac{36}{5} - \frac{79}{15} - \frac{23}{20}$   
 $= \frac{432 - 316 - 69}{60}$   
 $= \frac{47}{60}$

Option (C) is the greatest

26. (D) The higher the number of bulbs in an electric circuit, the lower their brightness will be or there is a decrease in brightness of bulbs with same number of batteries.

27. (D) Student P measured the most accurate length because he used a 5 m long measuring tape which is longer than the table. So, he can measure the length of the table in one go accurately. While in the other cases the chance of making an error is higher due to multiple measurements. In case of Student M, only that lengths can be measured which are exact multiples of half a metre.

28. (D) A pupil can see the candle flame only if the light from the candle flame travels to the pupil's eye in a straight line through the tiny holes of three cardboards.

Light travels in straight lines. So, only the holes that are in line with the candle flame allow the light from the flame to reach the pupil's eye.

29. (C) Electrical insulators are clay, paper, plastic, wood, rubber, etc.

Electrical conductors are metals like copper, gold, nickel, carbon (graphite) steel, tungsten, silver etc.

30. (B) Length of each foot step = 30 cm  
Length of classroom =  $30 \times 20 = 600 \text{ cm}$   
Breadth of classroom =  $30 \times 15 = 450 \text{ cm}$

31. (C) Sun is a natural source of light and it changes its position at different points of time of a day. So, the size and shape of the shadow of the tree change.

32. (B) Air is a bad conductor of electricity. Hence, there is no substantial loss of energy during the flow of electricity in the overhead electric wires along the road.

33. (D) Statements (A) and (B) are true about the importance of standard units in our daily life.

34. (B) When the light source is close to the object, the shadow formed is bigger in size. When the light source is moved away from the object, the shadow becomes smaller in size. Thus, graph in option (B) is correct.

35. (D) As  $L_1$  and  $L_5$  lamps do not light up,  $M_2$  is an insulator.  
As  $L_2$ ,  $L_3$  and  $L_4$  lamps light up,  $M_1$  and  $M_3$  are conductors of electricity.

### CHEMISTRY

36. (C) Iron, paper and rubber do not break into pieces when dropped.

Rubber can be stretched to a certain extent without breaking. Paper cannot be stretched.

Glass and ceramic break into pieces when dropped. Ceramics are made from clay. The main component of glass is sand.

37. (C) Statements (i), (ii) and (iii) are correct about natural changes. Ripening of fruits on plants/trees is a natural change.

38. (B) When sea water was heated in a dish, it gained heat and evaporated water, salt crystals were left behind in the dish.

39. (A) Among the four materials in terms of hardness, metal is the hardest, followed by glass, plastic and lastly cardboard. Material A is a metal with least scratches.

40. (C) Water passes while mud is retained on filter paper.

41. (D) Souring of milk occurs when milk is not boiled to the desired temperature or not stored in a fridge. Heavy rains cause floods that leads to damage of life, crops, animals and property. Rest of them are desirable and periodic changes.

42. (B) Stone, hard cardboard and wooden ruler do not allow light to pass through them as they are opaque objects.

43. (C) Statements Q, S, P and R represent the correct sequence of changes that occur in water cycle.

44. (D) As P remains in the china dish, so it is salt (the solid component) and thus, Q is water. Salt from sea water is separated by evaporation.

45. (C) Magnifying glass and glass tumbler are transparent.

### BIOLOGY

46. (A) Breathing roots bear minute pores called pneumatophores through which exchange of gases takes place. Such roots absorb atmospheric air for respiration. These are found in plants which grow in marshy places. Epiphytes roots cling to the plant for support.

47. (A) The sources of food mentioned here are of Vitamin A. Vitamin A keeps our skin and eyes healthy.

48. (C) Malaria can be prevented by either rearing fish in ponds or spraying oil on the surface of the water to stop mosquito breeding.

49. (C) Hinge joint: Knee joint : Pivot joint : Neck joint

50. (D) The given root system is fibrous root system. Ex.: Wheat, Banana etc.,

51. (C) Amar is likely to suffer from scurvy if his diet does not contain citrus fruits that are rich sources of vitamin C. Citrus fruits like lemon, orange, lime, tomatoes, amla, guava, etc. are rich sources of vitamin C. Scurvy is characterised by bleeding gums and loose teeth.

52. (B) Plants of desert areas have leaves reduced to spines to prevent loss of water due to transpiration. They have fleshy and photosynthesis stems to store water. Their stems have thick waxy layer that helps to retain water.

53. (B) Linen, Hemp and Jute fibres are obtained from the stem of plants.

54. (C) According to the given statements, X could be fat. The presence of fat is indicated by the stain on the paper.

55. (D) The missing parts in preparation of ghee from cow are : P is Milk, Q is Cream and R is Butter.

**CRITICAL THINKING**

56. (Delete)

57. (C) Mon - Piono → 3:30 to 4:30  
Tues - Karate → 4:00 to 6:00

Wed - Arts → 4:00 to 6:00

Thurs

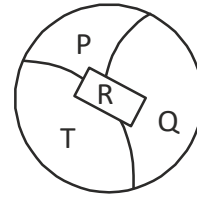
Friday - Ninety minute club program

Hence, the most convenient after noon  
Mihit to do library research is Thursday.

58. (B) All punched holes are equidistant from the center

59. (D) Inform to nearby police station, and Go to bank for a duplicate ATM

60. (A)



=====*The End*=====