



UNIFIED COUNCIL

An ISO 9001:2015 Certified Organisation



NATIONAL LEVEL SCIENCE TALENT SEARCH EXAMINATION (UPDATED)

CLASS - 6

Question Paper Code : UN446

KEY

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

SOLUTIONS

MATHEMATICS

1. (D) M is prime & M + 1 is also prime
 $\Rightarrow M = 2$
 $\therefore M(M-1) + 2 = 2(2-1) + 2 = 2 + 2 = 4$
Which is least composite number
2. (D) None
3. (B) Perimeter = $2(300.5 + 200.5)$
 $= 2 \times 501$ metres
 $= 1002$ metres
cost of fencing = $1002 \times 10 = ₹ 10020$
4. (C) $2@5 = 2 \times 4 + 5 = 13$
 $13@1 = 13 \times 4 + 1 = 53$

- 53@3 = $53 \times 4 + 3 = 212 + 3 = 215$
5. (C) $1 + 2 - 3 - 4 = -4$
 $5 + 6 - 7 - 8 = -4$
 $\therefore \frac{2016}{4} = 504$
 $\therefore 504 \times -4 = -2016$
 $\therefore 1+2-3-4+5+6-7-8+9+10 \dots + -$
 $2016 + 2017 + 2018 = -2016 + 2017$
 $+ 2018 = 2019$
6. (C) $(5x^2 + 2x - 2) - (3x^2 - 5x + 1)$
 $= 5x^2 + 2x - 2 - 3x^2 + 5x - 1$
 $= 2x^2 + 7x - 3$

7. (B) If positive numerators are same then smallest denominator fraction becomes largest
8. (D) Infinite circles can be drawn through the given two points
9. (D) LCM of ab^2 , bc^2 , ca^2 is $a^2b^2c^2$
10. (C) $a^2 = 4a \Rightarrow a = 4$
11. (D) 50 minutes : 5 hours = 50 min : 300 min = 1 : 6
12. (C) $\frac{13^2 + 2(13)(12) + 12^2}{13+12} = 13 + 12 = 25$
13. (D) Let the distance covered by dog and hare for each leap be x & y
Given $2x = 5y$
 $x = \frac{5y}{2}$
Speed ratio = $6x : 4y$
 $= 6 \times \frac{5y}{2} : 4y = 15 : 4$
14. (D) Perimeter of square = 4×12 m
side of equilateral triangle = $\frac{48}{3}$ m
 $= 16$ m
15. (C) Remaining same i.e. angle does not change
16. (C) LHS = $xy - xz + yz - xy + zx - yz = 0$
17. (D) $280 \times \frac{7}{14} - 280 \times \frac{2}{14} = 140 - 40 = 100$
18. (C) Greater than
19. (A) A scalene triangle has zero lines of symmetry
20. (B) HCF of 8 m 25 cm, 6 m 75 cm & 4 m 50 cm is 75 cm
21. (B) $4^3 + 3^3 + 2^3 + 1^3 = 64 + 27 + 8 + 1 = 100 = 10^2$
22. (B) Non collinear points
23. (A) HCF of $137 - 2$, $182 - 2$, $422 - 2$ is 15
24. (C) $3x + 16 = 40$
25. (D) 297144 is divisible by 3, 6 & 9

PHYSICS

26. (D) Torches, transistors, toys and television remotes work with the help of batteries.
27. (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.
28. (A) Dimensions of a plastic box = $20 \text{ cm} \times 30 \text{ cm} \times 40 \text{ cm} = 24000 \text{ cm}^3$
Volume of a container used to fill the plastic box with water = 240 cm^3
 $= \frac{20 \times 30 \times 40}{240} = \frac{24000 \text{ cm}^3}{240 \text{ cm}^3} = (100 \text{ times})$
The given container can be used to fill plastic box with water 100 times.
29. (C) A bulb utilises electrical energy from a battery in a circuit. A battery has two terminals. A switch in a circuit is used to make and break a circuit. The conducting wires are made up of metals like copper.
30. (A) X and Y are plane mirrors. Mirrors are used because they reflect light well to allow images of objects to be seen clearly, over a wall.
31. (B) The brightness of the bulbs increases when there are more batteries or there are fewer bulbs used in a circuit. Bulb in circuit R, which has 2 batteries and 1 bulb glows the brightest,
Bulb in circuit P will have $\frac{1}{2}$ the brightness of R.
Bulbs in circuit Q will have $\frac{2}{3}$ the brightness of P.
Bulbs in circuit S will have $\frac{1}{2}$ the brightness of P.
32. (A) Statements (B), (C) and (D) are not correct. An oily paper is translucent.
33. (A) To buy new shoes for a boy, his correct shoe size i.e., the length of his feet should be measured.

34. (B) The reason for filling the space between the terminals of the bulb with sealing wax is to prevent the contact between the two terminals.

35. (A) $500\,000\text{ mm} = 500\,000 \times 10^{-3} = 500\text{ m}$
 $5 \times 10^7\ \mu\text{m} = 5 \times 10^7 \times 10^{-6} = 50\text{ m}$
 $0.00005\text{ mm} = 0.00005 \times 10^6 = 50\text{ m}$
 $5 \times 10^{-2}\text{ km} = 5 \times 10^{-2} \times 10^3 = 50\text{ m}.$

CHEMISTRY

36. (D) Coconut oil becomes semi-liquid or semi-solid during the winter and rainy seasons at room temperature due to low temperature whereas it remains in the liquid state in summer due to high temperature

37. (C) Leather is not used for making a towel.

38. (B) Cardboard is opaque is a correct match. Water is transparent, blackboard is opaque and tissue paper is translucent.

39. (B) A mixture of salt and sand can be separated by filtration and not by distillation.

40. (D) The processes which add water vapour to the atmospheric air are evaporation and transpiration.

41. (A) A bow string comes back to its original position after the arrow is shot. It is a physical and reversible change.

42. (A) Decantation is the process of pouring out the liquid without disturbing the sediment. Ex: Muddy water sedimentation is the process in which heavier particles of an insoluble solid in a liquid settles down to form sediment. Ex : Muddy water. Evaporation is the process of separating soluble solids from liquids. Ex : Salt water. Cream from milk is separated by the process of filtration.

43. (D) Water exists in liquid state in all water bodies like rivers, lakes, ponds, reservoirs, seas, oceans etc.

44. (D) Ceramics have a high melting point, are brittle and do not corrode.

45. (B) Wood burns to form ash and CO_2 gas is released. It is a chemical change.

BIOLOGY

46. (A) Fish, cod liver, butter, egg and milk are rich in vitamin D.

47. (D) The blow hole of the dolphin helps it to take oxygen from the air.

48. (D) Living things are classified on the basis of nutrition. Plants make their own food they are called producers, organisms that depends on others for their food are called consumers and the organisms that feed on dead and decaying organic matter are decomposers.

49. (C) Fibres in food help in peristaltic movements. It also helps to defaecate undigested food.

50. (D) Plant are called producers as they produce their own food.

51. (D) Gas Z oxygen gas.

Plants carry out photosynthesis when there is sunlight. During photosynthesis, plants take in carbon dioxide and give out oxygen. [Plants help top replenish oxygen in the air when they carry out photosynthesis during the day.]

52. (C) Refuse in Group A cannot be recycled but refuse in Group B can be recycled.

Fruit skin, fish bones, leftover food and newspaper are biodegradable and organic.

Fruit skin, fish bones leftover food and newspaper come from living things.

53. (C) Water does not give us energy to carry out our daily activities.

54. (B) Cotton bolls are fruits of a cotton plant.

55. (C) Adptations help animals to survive inthe environment.

CRITICAL THINKING

56. **(D)**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

$$1 + 2 + 3 + \dots + 12 + 13 + 14$$

$$= (1 + 14) \times 7 = 105$$

105 handshakes are exchanged if there are 15 guests at the party.

57. **(B)** If Anand answered all questions correctly,

$$50 \times 3 = 150$$

he would have scored 150 marks.

$$150 - 125 = 25$$

There is a difference of 25 marks.

$$3 + 2 = 5$$

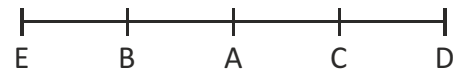
Anand lost 5 marks for each wrong answer.

$$25 \div 5 = 5$$

$$50 - 5 = 45$$

He answered 45 questions correctly.

58. **(B)**



Therefore, A is sitting in between B and C.

59. **(B)**

The year 2007 is an ordinary year. So, it has 1 odd day.

1st day of the year 2007 was Monday.

1st day of the year 2008 will be 1 day beyond Monday.

Hence, it will be Tuesday.

60. **(D)**

THE END
