General Knowledge Sample Paper - 2

SECTION-III : GENERAL TEST

1. Which of the following are consumer semi-durable goods?
   (a) Cars and television sets
   (b) Milk and Milk products
   (c) Foodgrains and other food products
   (d) Electrical appliances like fans and electric irons.
2. Other things being equal, a decrease in quantity demanded of a commodity can be caused by
   (a) a rise in the price of the commodity
   (b) a rise in the income of the consumer
   (c) a fall in the price of a commodity
   (d) a fall in the income of the consumer
3. In which year were the States recognized on a linguistic basis?
   (a) 1951 (b) 1947
   (c) 1950 (d) 1956
4. Who has got the power to create All India Services?
   (a) Supreme Court
   (b) The Parliament
   (c) Council of Ministers
   (d) Prime Minister
5. Ravikirti, a jain, who composed the Aihole Prashasti, was patronized by
   (a) Pulakeshin
   (b) Harsha
   (c) Pulakeshin ll
   (d) Kharavela
6. The "Mein Kampf" was written by
   (a) Hitler (b) Mussolini
   (c) Bismarck (d) Mazzini
7. In the provisional Parliament of India, how many members were there?
   (a) 296 (b) 313
   (c) 318 (d) 316
8. Who admits a new State to the Union of India?
   (a) President
   (b) Supreme Court
   (c) Prime Minister
   (d) Parliament
9. India is the largest producer and exporter of
   (a) Cotton (b) Copper
   (c) Tea (d) Mica
10. From which part of Opium plant we get morphine?
    (a) Leaves (b) Stem
    (c) Bark (d) Fruit coat
11. Glucose is a type of
    (a) Pentose sugar
    (b) Hexose sugar
    (c) Tetrose sugar
    (d) Diose sugar
12. Which of the following is the largest Biosphere Reserves of India?
    (a) Nilgiri
    (b) Nandadevi
    (c) Sundarbans
    (d) Gulf of Mannar
13. ISRO's Master Control Facility is in
    (a) Andhra Pradesh
    (b) Odisha
    (c) Gujarat
    (d) Karnataka
14. An object covers distance which is directly proportional to the square of the time. Its accelaration is
    (a) increasing
    (b) decreasing
    (c) zero
    (d) constant
15. If the horizontal range of a projectile is four times its maximum height, the angle of projection is
    (a) 30° (b) 45°
    (c) $\sin^{-1}\left(\frac{1}{4}\right)$ (d) $\tan^{-1}\left(\frac{1}{4}\right)$
16. Which of the following metals has least melting point?
    (a) Gold (b) Silver
    (c) Mercury (d) Copper
17. Rainbow is formed due to
    (a) refraction and dispersion
    (b) scattering and refraction
    (c) diffraction and refraction
    (d) refraction and reflection
18. About how much of the world's land area is tropical rainforest?
    (a) 2 percent
    (b) 7 percent
    (c) 10 percent
    (d) 15 percent
19. "Life Divine" is a book written by
    (a) M. K. Gandhi
    (b) Rabindranath Tagore
    (c) S. Radhakrishnan
    (d) Shri Aurobindo
20. The boiling point of water decre - ases at higher altitudes due to
    (a) low temperature
    (b) low atmospheric pressure
    (c) high temperature
    (d) high atmospheric pressure
21. The chemical name of "Hypo" commonly used in photography is
    (a) Sodium thiosulphate
    (b) Silver nitrate
    (c) Sodium nitrate
    (d) Silver iodide
22. With what bio-region is the term "Steppe" associated?
    (a) Grasslands
    (b) Tropical forests
    (c) Savanna
    (d) Coniferous forests
23. Grammy Award is given in the field of
    (a) Acting
    (b) Music
    (c) Singing
    (d) Boxing
24. The first woman to get the Bharat Ratna Award is
    (a) Mother Teresa
    (b) Indira Gandhi
    (c) Lata Mangeshkar
    (d) Sarojini Naidu
25. The President of World Bank is
    (a) Jim Yong Kim
    (b) Christine Lagarde
    (c) Prema Cariappa
    (d) Vijay L. Kelkar

Directions (Q . 26-29): Select the related word/letters/number from the given alternatives.

26. Iraq : Dinar :: Korea: ?
    (a) Pound (b) Yen
    (c) Dollar (d) Won
27. AOE : ? : : GMA : IUO
    (a) MXI (b) MWS
    (c) MWI (d) MXJ
28. DeF : Ihg : : wxY : ?
    (a) bAZ (b) Baz
    (c) BaZ (d) baz
29. 81 : 121 : : 49 : ?
    (a) 81 (b) 62
    (c) 52 (d) 100

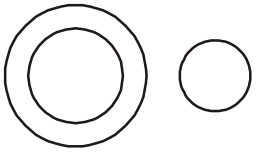
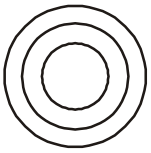
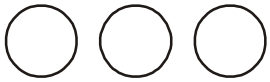
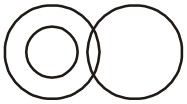
Directions (Q. 30-32): Select the odd word/letters/number/number pair from the given alternatives.

30. (a) BEH (b) DGJ
    (c) HKN (d) MNO
31. (a) 5210 (b) 8432
    (c) 8648 (d) 7240
32. (a) 81 (b) 125
    (c) 64 (d) 198

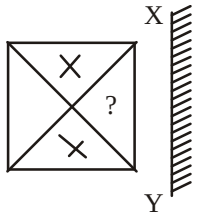
Directions (Q. 33-35): A series is given with one term missing. Choose the correct alternative from the given ones that will complete the series.

33. ijk, mno, lmn, pqr, opq,?
    (a) stv (b) suv
    (c) stu (d) stt
34. AZ, BY, CX,?
    (a) CW (b) DW
    (c) DX (d) DY
35. 23, 32, 42, 53, 65, ?
    (a) 78 (b) 88
    (c) 58 (d) 98
36. In the following question, two statements are given each followed by two conclusions I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusions, if any follows from the given statements.
    Statements:
    (I) Life is a journey with few known people, few partially known and mostly strangers.
    (II) In a journey, the importance of destination is as equal as the pathway of reaching that destination.
    Conclusions:
    (I) Importance of people in life is considerable, as they are our journey mates.
    (II) Life teaches us many lessons to face various known and unknown difficulties.
    (a) Only conclusion II follows
    (b) Conclusion I and II both follow
    (c) Neither I nor II follow
    (d) Only conclusion I follows
37. B is older than C but not as old as D. E is not as old as B. Who is the oldest of all?
    (a) B (b) E
    (c) C (d) D
38. Arrange the given words in the sequence in which they occur in the dictionary.
    i. Stable ii. Stranger
    iii. Stability iv. Struggle
    (a) iii, ii, i, iv (b) iii, i, ii, iv
    (c) iii, iv, i, ii (d) iv, i, ii, iii
39. In a certain code language "TITANIC" is written as "7371835" and "SEMATIC" is written as "6241735". How will "MAINTAIN" be written in that code language?
    (a) 41387138 (b) 43187138
    (c) 41837138 (d) 41783138
40. In the following qustions, select the missing number from the given series.

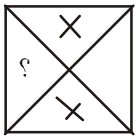
6	5	4
7	6	5
5	7	6
37	23	?

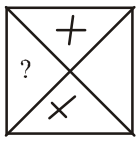
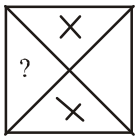
    (a) 10 (b) 12
    (c) 13 (d) 14
41. After interchanging + & × and 12 &18, which of the following equations will hold true?
    (a) (9 + 1) × 18 = 60
    (b) (18 + 6) × 12 = 90
    (c) (12 + 18) × 12 = 72
    (d) (12 + 6) × 18 = 36
42. In the following question, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?
    ab_bc_bb_ _abb_c
    (a) babcb (b) bbaaa
    (c) aabbc (d) abcbc
43. I am facing north. I turn left and walk 30 m. Then I turn right and walk 20 m, then I turn left and walk 10 m and then turning right and walk 50 m. Then I turn left and walk 50 m. In which direction am I from the starting point?
    (a) North
    (b) South
    (c) North-west
    (d) North-east
44. Raju introduces Yash by saying, "He is the husband of the granddaughter of my grandmother's husband". How is Yash related to Raju?
    (a) Nephew
    (b) Father
    (c) Brother
    (d) Brother-in-law
45. Identify the diagram that best represents the relationship among the given classes.
    Kitchen, Utensils, Glass
    (a) 
    (b) 
    (c) 
    (d) 
46. If a mirror is placed on the line XY, then which of the answer figure is the right image of the given figure?

Question Figure :



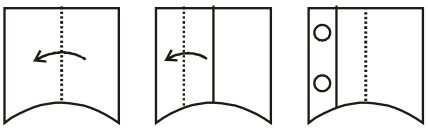
Answer Figures:

(a)  (b) 

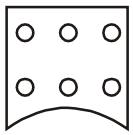
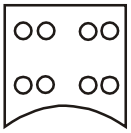
(c)  (d) 

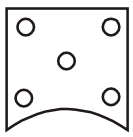
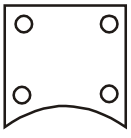
47. A piece of paper is folded and punched as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question Figures :

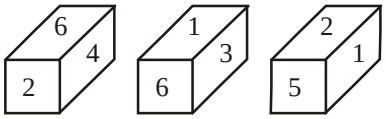


Answer Figures:

(a)  (b) 

(c)  (d) 

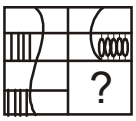
48. Three positions of a cube are shown below. What will come opposite to face containing '1'?



(a) 2 (b) 3
(c) 4 (d) 6

49. Which answer figure will complete the pattern in the question figure?

Question Figure:



Answer Figures:

(a)  (b) 

(c)  (d) 

50. A word is represented by only one set of number as given any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as shown in the given two matrices. The column and rows of Matrix-I are numbered from 0 to 4 and that of Matrix-II are numbered from 5 to 9. A letter by its column, for example, 'M' can be represented by 10, 03 etc. and 'H' can be represented by 55, 78 etc. Similarly, you have to identify the set for the word 'MATHS'.

Matrix-I

	0	1	2	3	4
0	T	S	N	M	E
1	M	T	S	N	E
2	S	E	M	T	N
3	N	M	E	S	T
4	E	N	T	S	M

Matrix-II

	5	6	7	8	9
5	H	G	I	P	A
6	G	H	A	I	P
7	A	I	G	H	I
8	I	P	H	A	G
9	P	A	P	G	H

(a) 03, 59, 11, 78, 43
(b) 10, 67, 22, 55, 01
(c) 22, 75, 00, 66, 21
(d) 44, 88, 23, 98, 20

51. Coefficient of x^2 in $4x^3 - 2x^2 + 2x - 3$ is:
(a) 6 (b) –2
(c) 3 (d) –3

52. If a merchant offers a discount of 40% on the list price, then he makes a loss of 10%. What % profit or % loss will he make if he sells at a discount of 20% on the list price?
(a) 4% loss
(b) 14% profit
(c) 5.5% loss
(d) 20% profit

53. The mean of marks secured by 60 students in division A of class X is 66, 45 students of division B is 62 and that of 75 students of division C is 60. Find the mean of marks of the students of three divisions of class X.
(a) 61.8 (b) 62.5
(c) 61.1 (d) 63.9

54. On dividing 221 a^2b^2 by 13 b^2, we get :
(a) $17a^2$ (b) $17b^2$
(c) $13a^2b^2$ (d) 13

55. A missile travels at 1116 km/h. How many metres does it travel in one second?
(a) 360 metres (b) 368 metres
(c) 310 metres (d) 348 metres

56. If the radius of a circle is increased by 31% its area increases by :
(a) 62 percent
(b) 31 percent
(c) 35.805 percent
(d) 71.61 percent

57. A bank offers 20% compound interest per half year. A customer deposits ₹ 6,000 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is—
(a) ₹ 7680 (b) ₹ 3840
(c) ₹ 1920 (d) ₹ 960

58. The third proportional of two numbers 4 and 28 is :
(a) 52 (b) 56
(c) 84 (d) 196

59. Mummy can bake 75 cakes in 15 hours, Mummy and Sister together can bake 120 cakes in 20 hours. How many cakes sister can bake in 30 hours?
(a) 45 (b) 30
(c) 60 (d) 10

60. A rice trader buys 20 quintals of rice for ₹ 8,580. However, 22% rice is lost in

transportation. At what rate should he sell to earn 20% profit?
(a) ₹ 278.8 per quintal
(b) ₹ 514.8 per quintal
(c) ₹ 660 per quintal
(d) ₹ 654.2 per quintal

61. What is the equation of the line which has 3/1 and –4/7 as x and y intercept respectively?
(a) $8x - 21y = -12$
(b) $8x + 21y = 14$
(c) $8x - 21y = 12$
(d) $8x + 21y = -14$

62. A tetrahedron has 4 vertices. How many edges does it have?
(a) 8 (b) 12
(c) 6 (d) 10

63. The circumference of a circle is equal to the perimeter of an equilateral triangle. If the radius of the circle is 14cm what is the length of the side of the equilateral triangle?
(a) 88 cm (b) 88/3 cm
(c) $88/\sqrt{3}$ cm (d) $88\sqrt{3}$ cm

64. If the curved surface area of a right circular cone is 10010 sq cm and its radius is 35 cm, find its volume?
(a) 6930 cubic cm
(b) 13860 cubic cm
(c) 3465 cubic cm
(d) 27720 cubic cm

65. $\sin(A + B) - \sin(A - B)$ is equal to
(a) 2sinAcosB
(b) 2cosAcosB
(c) 2cosAsinB
(d) 2sinAsinB

66. The simple interest on a sum of money for 10 years is ₹ 3130. If the principal becomes 5 times after 5 years, what will be the total interest (in ₹) obtained after 10 years?
(a) 6260 (b) 7825
(c) 9390 (d) 15650

67. Aman and Kapil start from Delhi and Gwalior respectively towards each other at the same time. They meet at Mathura and then take 196 minutes and 225 minutes respectively to reach Gwalior and Delhi. If speed of Aman is 30 km/hr, what is the speed (in km/hr) of Kapil?
(a) 28 (b) 30
(c) $\frac{225}{7}$ (d) $\frac{392}{15}$

68. The number of trees in a town is 17640. If the number of trees increases annually at the rate of 5%, how many trees were there 2 years ago?
(a) 14000
(b) 15000
(c) 16000
(d) 19450

69. Average age of team having 12 players is 23 years. If the age of the coach is also included, then the average age increases by 2 years. What is the age (in years) of the coach?
(a) 41
(b) 47
(c) 49
(d) 51

70. The length, breadth and height of a cuboid are in the ratio 19 : 11 : 13. If length is 30 cm more than height, then what is the volume in (cm^3) of this cuboid?
(a) 81510
(b) 89665
(c) 195300
(d) 339625

71. An article is listed at ₹ 2375. A man purchases it at two successive discounts of 50% and 25% and spends ₹ 165 on repairing of article. If he sells the article at a profit of 62.5%, what is the selling price (in ₹) of the article?
(a) 1467.6
(b) 1492.6
(c) 1715.39
(d) 1467.6

72. Nirmit can do $\frac{2}{3}$rd of a job in 18 days. Kashish is twice as efficient as Nirmit. In how many days will Kashish complete the job?
(a) $\frac{29}{4}$ (b) $\frac{27}{2}$
(c) $\frac{31}{2}$ (d) $\frac{13}{2}$

Directions (Q. 73-75) : The table given below shows the percentage of literate people in 6 cities. This table also shows the ratio of males to females among literate poeple.

City	% of literate People	Males : Females
1	80	4 : 5
2	85	7 : 4
3	78	3 : 2
4	63	1 : 1
5	92	9 : 7
6	58	2 : 3

% of literate people of any city = (Literate people of the city/Total population of the city) × 100

73. If the total population of city 4 is 600000, then how many literate people are there in city 4?
(a) 480000 (b) 378000
(c) 468000 (d) 348000

74. Total population of city 6 is 200000 and the total population of city-2 is 220000. What is the respective ratio of literate males of city 2 and literate females of city 6?
(a) 348 : 595 (b) 255 : 199
(c) 595 : 348 (d) 199 : 255

75. If there are 259210 literate females in city 5, what is the total population of city 5?
(a) 644000 (b) 354200
(c) 690000 (d) 483000

SECTION-III : GENERAL TEST

1. (c) Goods which are neither indestructible nor lasting are defined as Semi Durable Goods. They fall in the category between Durable Goods and Non Durable Goods. Some common Semi Durable Goods are clothing or preserved foods; vehicles and electronic home appliances are classified as Durable Goods.

2. (a) In economics, the law states that, all else being equal, as the price of a product increases, quantity demanded falls; likewise, as the price of a product decreases, quantity demanded increases. So basically the quantity demanded and the price of a commodity is inversely related, other things remaining constant.

3. (d) Indian states were reorganized on 1 November 1956 under the States Reorganization Act, 1956. Andhra State was merged with the Telugu speaking area of Hyderabad state (also known as Telangana) to create Andhra Pradesh in 1956. Similarly Kerala in the south and three states (Uttar Pradesh, Bihar and Madhya Pradesh) came into being in the Hindi speaking area. West Bengal, Rajasthan, and Punjab were enlarged by addition of territories.

4. (b) Article 312 provides that an All India Service can be created only if the Council of States (Rajya Sabha) declares, by resolution supported by not less than a two-thirds majority, that it is necessary in the national interest to create one or more such All India Services. When once such a resolution is passed, the Parliament is competent to constitute such an All India Service.

5. (c) Ravikirti was the court poet of Chalukya King, Pulakesin II who reigned from 610 to 642 A.D. He authored the Aihole inscription at Meguti Temple which describes the defeat of Harshavardhana by Pulakesin II and the shifting of the capital from Aihole to Badami.

6. (a) Mein Kampf is an autobiographical manifesto by Nazi leader Adolf Hitler, in which he outlines his political ideology and future plans for Germany. Volume 1 of Mein Kampf was published in 1925 and Volume 2 in 1926. The book was edited by Rudolf Hess.

7. (b) When the Constitution took effect on January 26,1950, the Constituent Assembly became the Provisional Parliament of India. It was "provisional" until the first elections under the new Constitution took place in 1952. It had 296 members in 1950 which increased to 313 in the following year with the inclusion of the princely states' representatives.

8. (d) Article 2 states that the parliament may, by law, admit new states into Union of India or establish new states on terms and conditions its deems fit. Article 3 empowers the parliament to form a new state by separation of a part of territory of an established state or to unite two or more states or parts of states or by uniting any territory to a part of any state.

9. (d) India is not only the largest producer but also the largest exporter of mica in the world. Andhra Pradesh is the largest producer of mica (Geography oflndiaby Majid Hussain). It is the second largest producer and exporter of tea after China in the world.

10. (d) Morphine is the predominant alkaloid found in the varieties of opium poppy plant. It is obtained in form of liquid from the fruit capsule of the poppy. The latex which oozes from the incisions is collected, and dried to produce "raw opium" (about 8-14% morphine by dryweight).

11. (b) Three common sugars (glucose, galactose and fructose) share the same molecular formula: $C_6H_{12}O_6$. Because of their six carbon atoms, each is a hexose. They are "single" sugars or monosaccharides.

12. (d) The Gulf of Mannar located in Tamil Nadu is one of South Asia's largest biosphere reserves. It extends from Rameswaram Island in the North to Kanyakumari in the South of Tamil Nadu and Sri Lanka. It is spread over an area of 10,500 km^2. The area of other biosphere reserves (in km^2) is as follows: Sundarbans: 9630; Nilgiri: 5520; Nandadevi: 5860.

13. (d) The Master Control Facility (MCF) is located in the city of Hassan in Karnataka. Established in 1982, this facility is responsible for monitoring and controlling geostationary and geosynchronous satellites launched by ISRO.

14. (d) When an object covers distance which is directly proportional to the square of the time, its acceleration is constant. This is seen in the cases of falling objects. This connection between time and distance was first observed by Galileo.

15. (b) Equation of projectile :

$$y = x\tan\theta : \frac{gx^2}{2u^2\cos^2\theta}$$

$$\frac{u^2\sin^2\theta}{g} = 4\times\frac{u^2\sin^2\theta}{2g}$$

$$2\sin\theta\cos\theta = 2\sin^2\theta$$

$$\tan\theta = 1$$

$$\theta = 45°$$

16. (c) The melting point of the given metals (in Celsius) are: Gold: 1063; Silver: 961;Copper: 1083; Mercury: 38.86. Mercury is the only elemental metal known to melt at a generally cold temperature.

17. (d) A rainbow is an optical phenomenon that is caused by both reflection and refraction of light in water droplets resulting in a spectrum of light appearing in the sky. It is caused by light being refracted (bent) when entering a droplet of water, then reflected inside on the back of the droplet and refracted again when leaving it.

18. (b) Tropical rainforests cover only about 7% of the Earth's surface. They are located in a band around the equator, mostly in t he area between the Tropic of Cancer (23.5° N latitude) and the Tropic of Capricorn (23.5° S latitude). They are home to approximately 5 0% of all living things on earth.

19. (d) 'Life Divine' is a metaphysical treatise authored by Sri Aurobindo. It is called the most profound book ever written on the nature of spirit, creation, life, and human evolution.

20. (b) At higher altitudes, the air pressure is decreased, which forces water's boiling point to lower. The air pressure decreases with altitude because of the decrease in the density of air. The lowered boiling point of water requires an increase incooking times or temperature.

21. (a) An emulsion of sodium thiosulfate is called hypo by photographers. It is used to stop development of exposed film. Thiosulfate converts undeveloped silver bromide grains in the film into water-soluble silver thiosulfate complexes that can be removed when the film is washed.

22. (a) The Steppe is a dry, cold, grassland that is found in all of the continents except Australia and Antarctica. It is mostly found in the USA, Mongolia, Siberia, Tibet and China, is usually found between the desert and the forest.

23. (b) The Grammy Award is an accolade by the National Academy of Recording Arts and Sciences (NARAS) of the United States to recognize outstanding achievement in the music industry. The first Grammy Awards ceremony was held on May 4, 1959.

24. (b) Indira Gandhi became the first woman to receive the Bharat Ratna in 1971. She served as the Prime Minister of India from 1966 to 1977 and then again from 1980 until her assassination in 1984. Instituted in 1954, the Bharat Ratna is the highest civilian award of India.

25. (a) Jim Yong Kim, a Korean-American physician and anthropologist, has been the 12th President of the World Bank since July 1, 2012. He was President of Dartmouth College from 2009 to 2012.

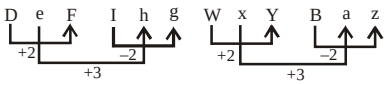
26. (d) As, Iraq's currency is Dinar. Similarly,Korea's currencyis won.

27. (c) As, 

Similarly, 

Finally the missing term is MWI.

28. (b) As, Similarly,



Finally the missing term is Baz.

29. (a) As, 81 → 121

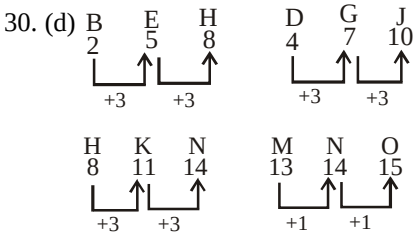
$9 + 2 = 11 \Rightarrow (11)^2 = 121$

Similarly,

49 → 81

$7 + 2 = 9 \Rightarrow (9)^2 = 81$

Finally the missing number is 81.

30. (d) 

Finally the odd word pair is MNO.

31. (d)5210 = 5 × 2 = 10

8432 = 8 × 4 = 32

8648 = 8 × 6 = 48

7240 = 7 × 2 = 14

Finally the odd number is 7240.

32. (d) $81 = (9)^2$

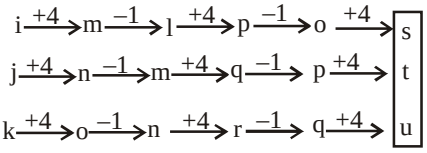
$125 = (5)^3$

$64 = (4)^3$

$198 = (14)^2 + 2$

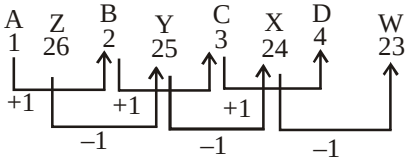
Finally the odd number is 198.

33. (c)



Finally the missing term is stu.

34. (b)



Finally the missing term is DW.

35. (a)The sequence of the series is :

23 + 9 = 32

32 + 10 = 42

42 + 11 = 53

53 + 12 = 65

65 + 13 = 78

Finally the missing term is 78.

36. (d) According to statements, only conclusion I follows.

37. (d) According to question, the sequence is :

D > B > C > E

Finally D is oldest of all.

38. (b) According to dictionary. The arrangement of the words is given below—

(iii) Stability

(i) Stable

(ii) Stranger

(iv) Struggle

Finally (iii), (i), (ii), (iv) is right sequence.

39. (a) As, And

Similarly

$\therefore$ 

40. (d) As, 6 × 7 – 5 = 37

and

5 × 6 – 7 = 23

similarly

4 × 5 – 6 = 14

Finally the missing number is 14.

41. (b) + ⟶ ×

× ⟶ +

18 ⟶ 12

12 ⟶ 18

$\Rightarrow (18 + 6) \times 12 = 90$

$\Rightarrow (12 \times 6) + 18 = 90$

$\Rightarrow (72 + 18) = 90$

$\Rightarrow 90 = 90$

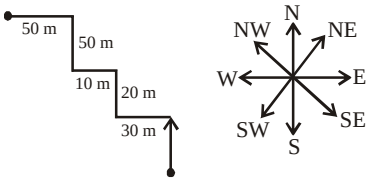
42. (a) ab[b]bc[a]bb[b][c]abb[b]c

The series becomes <u>abbbc</u> <u>abbbc</u> <u>abbbc</u>

Finally the set of letters is babcb.

43. (c)

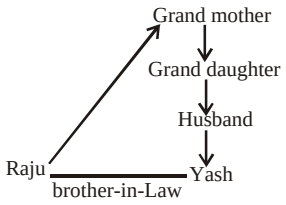
End point



Starting point

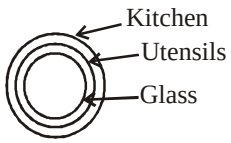
Finally 9 am in North-west direction from the starting point.

44. (d)

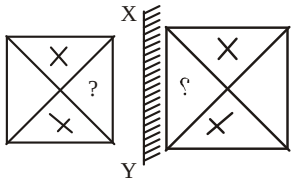


Finally Yash is Brother-in-law of Raju.

45. (b) Kitchen, Utensils, glass are complements of each other because, utensils and glass are in kitchen. So the best representeation among them is given below—



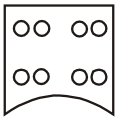
46. (b)



The right mirror image of the given image is

.

47. (b) A piece of paper is folded and punched. when opened it will appear as given below—



48. (c) The numbers 2, 3, 5 and 6 lie on the faces adjacent to number 1. Therefore, 4 lies opposite 1.

49. (d) Answer figure (d) will complete the pattern of the question figure.

50. (a) M = (03), 10, 22, 31, 44

A = (59), 67, 75, 88, 96

T = 00, (11), 23, 34, 42

H = 55, 66, (78), 87, 99

S = 01, 12, 20, 33, (43)

For 'MATHS' the set of number is 03, 59, 11, 78, 43.

51. (b) $4x^3 - 2x^2 + 2x - 3$

Coefficient of x^2 $= -2$

52. (d) By tricky formulae:

$$\text{Profit \%} = \left[(\text{Profit} - P\%)\left(\frac{100-y}{100-x}\right) - 100\right]$$

$$\text{Profit\%} = \left[(100-10)\left(\frac{100-20}{100-40}\right) - 100\right]$$

$$= \left(90 \times \frac{80}{60} - 100\right)$$

$$= (120 - 100) = 20\%$$

Here + sign indicates that the merchant will get 20% profit.

53. (b) Mean Marks

$$= \frac{60\times66 + 45\times62 + 75\times60}{60+45+75}$$

$$= \frac{3960 + 2790 + 4500}{180}$$

$$= \frac{11250}{180} = 62.5$$

54. (a) $\frac{221a^2b^2}{13b^2} = 17a^2$

55. (c) Speed of missile = 1116 km/h

$$= \frac{1116\times1000}{3600} \text{ m/sec}$$

$$= 1116\times\frac{5}{18} = \frac{124\times5}{2}$$

$= 62 \times 5 = 310$ metres/sec.

Missile will travel 310 metres in 1 second.

56. (d) By tricky formulae:

Area increased of a circle

$$= \left[2a + \frac{a^2}{100}\right]\%$$

$$= \left[2\times31 + \frac{31\times31}{100}\right]\%$$

$= (62 + 9.61)\% = 71.61\%$

57. (b) Amount

$$= P\left(1 + \frac{20}{100}\right)^2 + \frac{P\times40\times1}{100\times2}$$

$$= 6000\times\frac{36}{25} + \frac{6000\times40}{100\times2}$$

$$= \frac{6000\times36\times4}{100} + \frac{240000}{200}$$

$= 60 \times 144 + 1200$

Amount = (8640 + 1200) = 9840

Compound Interest = (9840 – 6000) = ₹ 3840.

58. (d) Let numbers be x

$4 : 28 :: 28 : x$

$$\Rightarrow \frac{4}{28} = \frac{28}{x}$$

$$\Rightarrow x = \frac{28\times28}{4}$$

$$\Rightarrow x = 7 \times 28 = 196$$

59. (b) Mummy can cook cakes in

1 hour $= \frac{75}{15} = 5$ cakes

Mummy and sister can cook in 1 hour

$$= \frac{120}{2} = 6 \text{ cakes}$$

Sister can cook in 1 hour

$= (6 - 5) = 1$ cake

Sister can cook in 30 hours

$= 1 \times 30 = 30$ cakes

60. (c) Cost price of 20 quintal rice

= ₹ 8580

Left rice $= 20\times\frac{78}{100}$

$$= \frac{1560}{100} = 15.60 \text{ quintal}$$

The trader wants 20% profit,

$$SP = \left(\frac{120}{100}\times8580\right)$$

$= 858 \times 12 =$ ₹ 10296

Rate/quintal of rice $= \frac{10296}{15.60}$

$$= \frac{102960}{156} = ₹ 660 \text{ per quintal}$$

61. (c) Here a = 3/2 and $b = -\frac{4}{7}$

Equation of intercept

$$\frac{x}{a}+\frac{y}{b} = 1$$

$$\Rightarrow \quad \frac{x}{3/2}+\frac{y}{-4/7} = 1$$

$$\Rightarrow \quad \frac{2x}{3}-\frac{7y}{4} = 1$$

$$\Rightarrow \quad \frac{8x-21y}{12} = 1$$

$$8x - 21y = 12$$

62. (c) Formula F + V = E + 2

$$\Rightarrow (4 + 4) = E + 2$$

$$\Rightarrow (8 - 2) = E$$

$$\Rightarrow E = 6$$

There are 6 edges in it.

63. (b) According to question,

$$2\pi r = 3a$$

$$\Rightarrow \quad 2\times\frac{22}{7}\times 14 = 3a$$

$$\Rightarrow \quad \frac{88}{3} = a$$

$$\Rightarrow \quad \text{Side (a)} = \frac{88}{3}\text{ cm}$$

64. (b) πrl = C.S.A. of a cone

$$\Rightarrow \quad \frac{22}{7}\times 35\times l = 10010$$

$$\Rightarrow \quad l = \frac{10010}{110} = 91\text{cm}$$

$$h = \sqrt{l^2 - r^2} = \sqrt{91^2 - 35^2}$$

$$= \sqrt{(91+35)(91-35)}$$

$$= \sqrt{126\times 56}$$

$$= \sqrt{4\times 4\times 3\times 3\times 7\times 7}$$

$$\Rightarrow \quad h = 4\times 3\times 7 = 84\text{ cm}$$

$$\Rightarrow \quad V = \frac{1}{3}\pi r^2 h$$

$$= \frac{1}{3}\times\frac{22}{7}\times 35\times 35\times 84$$

$$= 13860\text{ cubic cm}$$

65. (c) sin (A + B) – sin (A – B)

= sin A.cos B + cos A sin B – sin A cos B + cos A. sin B

= 2 sin B.cos A

66. (c) S.I. for first 5 years

$$= ₹\left(\frac{3130}{10}\times 5\right) = ₹\ 1565$$

After 5 years, principal becomes five times of itself.

∴ S.I. for 10 years = ₹ (1565 + 5 × 1565)

= ₹ (1565 +7825) = ₹ 9390

67. (a) According to the question.

$$\frac{v_1}{v_2} = \sqrt{\frac{T_2}{T_1}}$$

$$\Rightarrow \quad \frac{30}{v_2} = \sqrt{\frac{225}{196}} = \frac{15}{14}$$

$$\Rightarrow \quad 15\ v_2 = 30\times 14$$

$$\Rightarrow \quad v_2 = \frac{30\times 14}{15} = 28\text{ kmph.}$$

67. (c) Number of trees 2 years ago

$$= \frac{P}{\left(1+\frac{R}{100}\right)^n}$$

$$= \frac{17640}{\left(1+\frac{5}{100}\right)^2} = \frac{17640}{\left(1+\frac{1}{20}\right)^2}$$

$$= \frac{17640}{\left(\frac{21}{20}\right)^2} = \frac{17640\times 20\times 20}{21\times 21}$$

$$= 16000$$

69. (c) Age of coach = 23 + total increase

= (23 + 2 × 13) years = 49 years

70. (d) Height of cuboid = x cm.

∴ Its length = (x + 30) cm.

According to the question.

$$\frac{x+30}{x} = \frac{19}{13}$$

$$\Rightarrow \quad 19x = 13x + 390$$

$$\Rightarrow \quad 6x = 390$$

$$\Rightarrow \quad x = \frac{390}{6} = 65\text{ cm.}$$

Length = (65 + 30) cm = 95 cm.

∴ Breadth = $(\frac{95}{19}\times 11)$ cm = 55 cm.

∴ Volume of cuboid = (95 × 55 × 65) cu. cm

= 339625 cu. cm.

71. (c) Single equivalent discount of two successive discount

$$= \left(x+y-\frac{xy}{100}\right)\%$$

$$= \left(50+25-\frac{50\times 25}{100}\right)\%$$

= (75 – 12.5)% = 62.5%

∴ C.P. of article = (100 − 62.5)% of 2375

$$= ₹\left(\frac{2375\times 37.5}{100}\right) = ₹\ 890.625$$

Actual cost = ₹ (890.625 + 165) = ₹ 1055.625

To gain 62.5% required S.P.

$$= ₹\left(\frac{1055.625\times 162.5}{100}\right)$$

= ₹ 1715.39

72. (b) Time taken by Nirmit in doing $\frac{2}{3}$rd work = 18 days

∴ Time taken by Nirmit in doing 1 work $= \frac{18\times 3}{2} = 27$ days

Kashish is twice as efficient as Nirmit.

∴ Time taken by Kashish $= \frac{27}{2}$

$$= 13\frac{1}{2}\text{ days}$$

73. (b) Literate people in city-4

$$= \frac{600000\times 63}{100} = 378000$$

74. (c) Literate males in city-2

$$= 220000\times\frac{85}{100}\times\frac{7}{11} = 119000$$

Literate females in city-6

$$= 200000\times\frac{58}{100}\times\frac{3}{5} = 69600$$

∴ Required ratio = 119000 : 69600 = 595 : 348

75. (a) Literate males in city-5

$= \frac{9}{7} \times 259210 = 333270$

$\therefore$ Literate population

$= 333270 + 259210 = 592480$

$\therefore$ Population of City-5

$= \frac{592480}{92} \times 100 = 644000$