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Matriculation Standard

Vacancies: **11409+**
Month of Exam.: **April 2023**

SSC

Recruitment of **2023**

MULTI TASKING STAFF
(NON-TECHNICAL)
and **HAVALDAR**
(CBIC & CBN)

SESSION I & II

SESSION - I

- Numerical and Mathematical Ability
- Reasoning - General Intelligence

SESSION - II

- General Awareness
- English Language

Current Events

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Exam. Original
Question Papers
2022
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Answers.

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10-ஆம் வகுப்பு தரம்

Vacancies: **11409+1114**
Month of Exam.: **April 2023**

SSC

Recruitment of **2023**

பன்முக அலுவலர்
மற்றும் **ஹவில்தார்** தேர்வு
MULTI TASKING STAFF (NON-TECHNICAL)
HAVALDAR (CBIC & CBN)

SESSION I & II

SESSION - I

- கணிதவியல் (Numerical Ability)
- பொது நுண்ணறிவு மற்றும் காரணமறிதல்
(General Intelligence and Reasoning)

SESSION - II

- பொது அறிவு
- English Language

சம்பந்திய செய்திகள்

V.V.K. சுப்புராசு

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**Matriculation
Standard**

SSC

Recruitment of

MULTI TASKING STAFF

(NON-TECHNICAL)

and HAVALDAR

(CBIC & CBN)

SESSION I & II

By

V.V.K. Subburaj

**SSC MTS
(Non-Technical)
Exam Original
Question Papers**

**2022
2021
2019
2017
2016**

**with
Explanatory
Answers**



SURA COLLEGE OF COMPETITION

B 805

CHENNAI

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SSC Multi Tasking Staff (Non-Technical) & Havaladar (CBIC & CBN)

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SESSION - I

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• General Awareness	1 - 112
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◆◆ Current Events



Government of India - Staff Selection Commission

Multi-Tasking (Non-Technical) Staff, and Havaladar (CBIC & CBN) Examination

- Age** : The age limits for the posts as per the Recruitment Rules of various User Departments are:
18-25 years for MTS and Havaladar in CBN (Department of Revenue).
18-27 years for Havaladar in CBIC (Department of Revenue) and few posts of MTS.
- Educational Qualification** : The candidates must have passed Matriculation Examination or equivalent from a recognized Board.
- Reservation** : Reservation is applicable for SC, ST, OBC, Ex-S, PH as per Govt. Instructions.

SCHEME OF EXAMINATION

Computer Based Examination:

Part	Subject	Number of Questions/ Maximum Marks	Time Duration (For all four Parts)
Session-I			45 Minutes (60 Minutes for candidates eligible for scribes as per para 8)
I	Numerical and Mathematical Ability	20/60	
II	Reasoning Ability and Problem Solving	20/60	
Session-II			45 Minutes (60 Minutes for candidates eligible for scribes as per para 8)
I	General Awareness	25/75	
II	English Language and Comprehension	25/75	

Computer Based Examination will consist of Objective Type, Multiple choice questions. The questions will be set in English, Hindi, and in 13 regional languages (as per details in Annexure-XV) for Session-I and the General Awareness Section of Session-II.

There will be no negative marking in Session-I. In Session-II, there will be negative marking of one mark for each wrong answer. Candidates are, therefore, advised to keep this in mind while answering the questions.



SSC Multi-Tasking Staff (Non-Technical) and Havaladar Exam.

Marks : 100

Solved Original Question Paper – 2022

Duration : 90 minutes

Held on : 6.07.2022

PART I : GENERAL ENGLISH

- Select the option that corrects the misspelt words in the given sentence :
I can't pitcure him fighting
A) I can't picture him fighting or picking on anyone.
B) I can't pitcure him fiting or piking on anyone.
C) I can't pitcure him fighting or pekking on anyone.
D) I can't pictre him fighting or pickning on anyone.
Ans : (A)
- Select the most appropriate option to fill in the blank.
The boys were tired, but not too tired to examine the little hut _____.
A) weirdly B) weakly
C) thoroughly D) sluggishly Ans : (C)
- Select the most appropriate option to fill in the blank.
It is better to be prompt and organised than to be
A) provident B) meaningless
C) efficient D) reckless Ans : (D)
- Select the option that will improve the underlined part of the sentence. In case no improvement is needed, select 'No improvement required'.
Why doesn't you try calling your family again?
A) you don't tries
B) doesn't you tried
C) don't you try
D) No improvement required Ans : (C)
- Parts of the following sentence have been given as options. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.
The telecom growth story is a important component of the broader story of India.
A) No error
B) The telecom growth story is
C) the broader story of India
D) a important component of Ans : (D)
- Select the most appropriate ANTONYM of the underlined word.
Their reverence reaches its zenith here at the birthplace of the country's founder.
A) crest B) Nadir
C) horizon D) pinnacle Ans : (B)
- Select the option that will improve the underlined part of the given sentence. In case no improvement is needed, select 'No improvement required'.
His mouth left open as he realise the truth.
A) fell open as he perceived
B) felt opened as he perceive
C) was felt opened as he realise
D) No improvement required Ans : (A)
- The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' as your answer.
Solar storms can / impact Earth-dwellers / in significantly ways.
A) Solar storms can B) impact Earth-dwellers
C) No error D) in significantly ways Ans : (D)
- Select the option that will improve the underlined part of the given sentence. In case no improvement is needed, select 'No improvement required'.
I noticed some strawberries grown in which of the gardens.
A) growing in which of
B) grows upon one of
C) No improvement required
D) growing in one of Ans : (D)
- Select the most appropriate synonym of the given word.
Random
A) Definite B) Continuous
C) Systematic D) Chance Ans : (D)
- Select the option that can be used as a one-word substitute for the given group of words.
Deliberately and maliciously set something (buildings usually) on fire
A) Agrarian B) Arson
C) Ambush D) Apex Ans : (B)
- Select the option that will improve the underlined part of the sentence. In case no improvement is needed, select 'No improvement required'.
He stood up from their chair to signal the end of the meeting.
A) up from his
B) upon of his
C) No improvement required
D) below in their Ans : (A)

Conclusions:

I. No blue is green.

II. No red is green.

Select the correct answer :

A) Only conclusion I follows

B) Both conclusions I and II follow

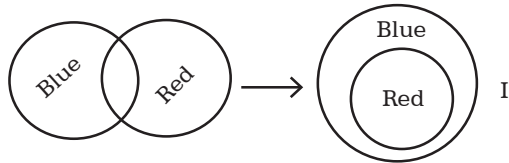
C) Only conclusion II follows

D) Neither conclusion I nor II follows

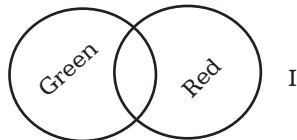
Explanation

Some blue are red → conversion into

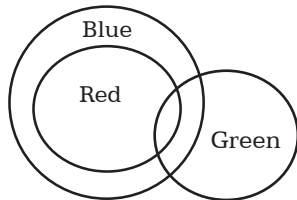
All red are blue



Some green are red

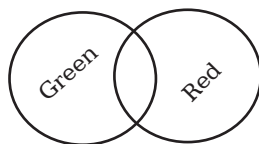


Combining I and II we get,



Some blue are green. Hence the conclusion I does not follow.

From Statement II



Thus some green are red. Hence the conclusion II does not follow.

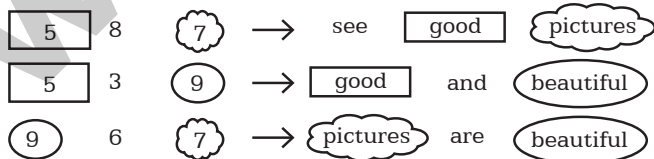
43. In a certain code language, '587' is written as 'see good pictures', '539' is written as 'good and beautiful', and '967' is written as 'pictures are beautiful'. What is the code for the word 'see' in that language?

A) 8

B) 7

C) 6

D) 5

Explanation**Ans : (A)**

see ⇒ 8

44. Select the option that can replace the question mark (?) in the following series.

B, D, G, L, S, ?

A) E

B) F

C) D

D) C

Explanation**Ans : (C)**B $\xrightarrow{+2}$ D $\xrightarrow{+3}$ G $\xrightarrow{+5}$ L $\xrightarrow{+7}$ S $\xrightarrow{+11}$ D

2, 3, 5, 7, 11 are prime numbers.

45. Seven boys J, M, N, K, P, L and O sit in a row facing the South (but not necessarily in the same order). K sits fifth to the left of J. K does not sit at any of ends. L sits exactly in the middle of the row. L sits third to the right of M. Only two boys sit between O and P. O is not the immediate neighbour of L.

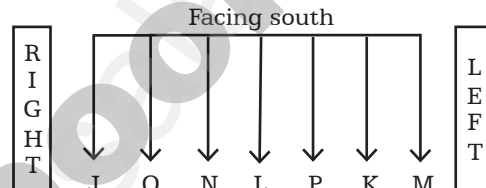
Three of the following are similar by a certain logic and form a group. Which of the following does NOT belong to that group?

A) NJ

B) PN

C) LO

D) KM

Explanation**Ans : (D)**

Except KM, in all other groups there are one person between them.

46. After interchanging the two numbers 3 and 6, what will be the value of the given expression?

$$12 \times 3 \div 6 + 8 - 2$$

A) 15

B) 25

C) 30

D) 20

Explanation**Ans : (C)****Given expression**

$$12 \times 3 \div 6 + 8 - 2$$

After interchanging the numbers

$$12 \times 6 \div 3 + 8 - 2$$

$$\Rightarrow 12 \times 2 + 8 - 2$$

$$\Rightarrow 24 + 8 - 2$$

$$\Rightarrow 32 - 2 = \boxed{30}$$

47. Select the option that is related to the fifth number in the same way as the second number is related to the first number and the fourth number is related to the third number.

$$23 : 72 :: 38 : 117 :: 46 : ?$$

A) 138

B) 156

C) 141

D) 122

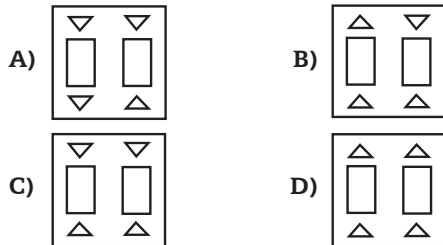
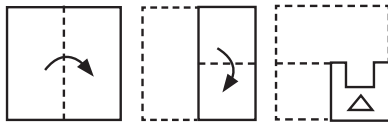
Explanation**Ans : (C)**

$$23 \times 3 = 69 ; 69 + 3 = 72$$

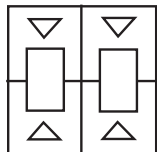
$$38 \times 3 = 114 ; 114 + 3 = 117$$

$$46 \times 3 = 138 ; 138 + 3 = \boxed{141}$$

48. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded ?



Explanation



49. The weight of seven boys B1, B2, B3, B4, B5, B6 and B7 are compared. The weight of B5 is less than

only one boy and more than that of B6. The weight of B4 is neither more nor less than B6 but more than B1, B7, B3.

Who weighs the most?

- A) B5 B) B2
C) B6 D) B1

Explanation

Ans : (B)

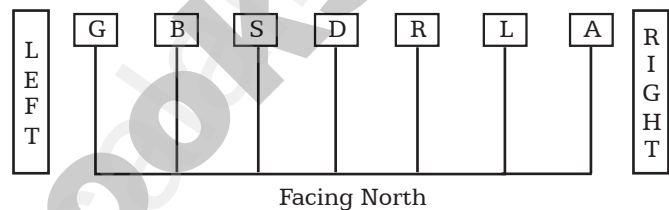
$$B2 > B5 > B4 = B6 > B1, B7, B3$$

50. Seven sisters, Anita, Babita, Sunita, Dixita, Rita, Lalita and Geeta are standing in a row facing north. Lalita is standing to the immediate right of Rita who stands fourth to the right of Geeta. Only Sunita stands exactly between Babita and Dixita. Dixita stands at the middle position. Who stands at the rightmost position?

- A) Lalita B) Anita
C) Geeta D) Sunita

Explanation

Ans : (B)



PART III : NUMERICAL APTITUDE

51. If $A = \frac{1}{2} + \frac{1}{3} \times \frac{1}{4} \div \frac{1}{5} - \frac{1}{6}$ and $B = \frac{1}{2} \div \frac{1}{3} \times \frac{1}{4} + \frac{1}{5}$,

then what is the value of $A - B$?

- A) $\frac{17}{20}$ B) $\frac{9}{20}$
C) $\frac{7}{40}$ D) $\frac{1}{5}$

Explanation

Ans : (C)

$$A = \frac{1}{2} + \frac{1}{3} \times \frac{1}{4} \div \frac{1}{5} - \frac{1}{6}$$

$$\Rightarrow \frac{1}{2} + \frac{1}{3} \times \frac{1}{4} \times \frac{5}{1} - \frac{1}{6}$$

$$\Rightarrow \frac{1}{2} + \frac{5}{12} - \frac{1}{6}$$

$$\Rightarrow \frac{6+5-2}{12} = \frac{9}{12} = \frac{3}{4}$$

$$B = \frac{1}{2} \div \frac{1}{3} \times \frac{1}{4} + \frac{1}{5}$$

$$\Rightarrow \frac{1}{2} \times \frac{3}{1} \times \frac{1}{4} + \frac{1}{5}$$

$$\Rightarrow \frac{3}{8} + \frac{1}{5} = \frac{15+8}{40} = \frac{23}{40}$$

$$A - B = \frac{3}{4} - \frac{23}{40}$$

$$\Rightarrow \frac{30-23}{40} = \frac{7}{40}$$

52. The perimeter of a square is equal to the perimeter of a rectangle, and the latter has a width of 12 cm. The area of the square is 400 cm². Find the area of the rectangle.

- A) 412 cm² B) 394 cm²
C) 324 cm² D) 336 cm²

Explanation

Ans : (D)

Perimeter of square = $4 \times a$

Area of the square = a^2

Perimeter of rectangle = $2(l+b)$

Area of the rectangle = $l \times b$

$a^2 = 400 \text{ cm}^2$

$$\therefore a = \sqrt{400} = 20$$

Perimeter of square = $4 \times 20 = 80 \text{ cm}$

According to the question,

Perimeter of square = Perimeter of rectangle

$$2(l+b) = 80 \text{ cm}$$

SURA'S ♦ SSC Multi-Tasking Staff (Non-Technical) and Havaladar Exam - Solved Original Question Paper - 2022

93. Which countries hosted the matches played in the 2021 ICC Men's T20 World Cup?

- A) Egypt and Ethiopia
B) India and Bangladesh
C) United Arab Emirates and Oman
D) Bangladesh and Sri Lanka

Explanation

Ans : (C)

The 2021 ICC Men's T20 world cup was the seventh ICC men's T20 World Cup Tournament, with the matches played in the United Arab Emirates and Oman from 17th October to 14th November 2021. The final match was played between New Zealand and Australia. Australia won the match by 8 wickets.

94. Which of the following rivers of India drains into the Bay of Bengal?

- A) Tapi
B) Godavari
C) Narmada
D) Mahi

Explanation

Ans : (B)

The Indian rivers that flow into the Bay of Bengal include Krishna, Godavari, Kaveri, Ganga and Brahmaputra.

The Indian rivers that flow into the Arabian sea include Tapi, Narmadha, Sindhu, Purna and Sabarmathi.

95. Who among the following Indian dancers was the first woman in Indian history to be nominated as a member of the Rajya Sabha?

- A) Rukmini Devi Arundale
B) Madhuri Dixit
C) Mallika Sarabhai
D) Saroj Khan

Explanation

Ans : (A)

★ Rukmani Devi Arundale was an Indian theosophist, dancer and choreographer of the Indian Classical dance form of Bharatanatyam and an activist for animal welfare. She was the first woman in Indian history to be nominated as a member of the Rajya Sabha, the upper house of the parliament of India in April 1952 and re-nominated in 1956.

★ In January 1936, Rukmani and her husband established an academy of dance and music called Kalakshetra at Adyar near Chennai.

96. The Jagananna Smart Township scheme was launched by which state government of India?

- A) Madhya Pradesh
B) Punjab
C) Odisha
D) Andhra Pradesh

Explanation

Ans : (D)

Jagananna Smart Township Scheme has been launched by the Government of Andhra Pradesh. The Chief Minister of the State Y.S. Jagan Mohan Reddy started this scheme. Through this scheme, residential plots will be allotted to middle-income group families at affordable prices.

97. As of April 2022, what is the capital of India's neighbouring country Bhutan?

- A) Thimphu
B) Dhaka
C) Beijing
D) Paro

Explanation

Ans : (A)

Bhutan is situated to the north of India. Bhutan shares a border with the Indian States of Arunachal Pradesh, Sikkim, Assam and West Bengal. It is the smallest neighboring country of India. The capital of Bhutan is Thimphu.

98. Which of the following glands/organs in human body secretes bile juice?

- A) Pancreas
B) Liver
C) Pituitary
D) Pineal

Explanation

Ans : (B)

Bile juice is secreted from the liver and stored in the gall bladder. It's main function is in digestion and emulsification of fats. Bile juice helps in the digestion of fats due to presence of Bile salts. They also help us to absorb fat soluble vitamins like A, D, E and K.

99. Bonalu is a Hindu festival celebrated to worship Goddess Mahakali in which of the following states?

- A) Telangana
B) Assam
C) Kerala
D) Madhya Pradesh

Explanation

Ans : (A)

Bonalu is a traditional folk festival celebrated every year in the Telugu month of Ashadham (June/July) in the twin cities of Hyderabad and Secunderabad and some other parts of Telangana State. Bonalu is a Hindu festival where Goddess Mahakali is worshipped.

100. The steep rocky coast rising almost vertically above sea water is called _____.

- A) sea caves
B) sea cliff
C) sea arches
D) ox-bow lake

Explanation

Ans : (B)

★ The steep rocky coast rising almost vertically above sea water is called sea cliff.

★ When a sea wave strikes the surface of rock facing the sea for a long period, it erodes its roughness making it very sharp and steep towards the side of the sea. These landforms are referred as sea cliffs.



MATHEMATICS

1. Highest Common Factor (H.C.F) And Least Common Multiple (L.C.M)
2. Square Root
3. Cube Root & Surds
4. Rationalization of Surds
5. Fractions and Decimal Numbers
6. Ratio and Proportion
7. Average
8. Time and Work
9. Direct Proportion
10. Inverse Proportion
11. Percentage
12. Profit and Loss, Calculation of Sales Tax
13. Discount
14. Simple Interest, Compound Interest
15. Algebra
16. Equations
17. Mensuration
 - ★ Volume and Surface Area of Cube and Cuboid
 - ★ Volume and Surface Area of Cylinder and Cone
 - ★ Volume and Surface Area of Sphere and Hemisphere
 - ★ Perimeter and Area
 - ★ Area of Shaded Portion
18. Speed, Distance and Time
19. Geometry
20. Applications of Pythagoras Theorem
21. Statistics
22. Number Series
23. Heights and Distance
24. Base Numeral System
25. Trigonometry
26. Problems on Numbers
27. Problems on Age

MATHEMATICS

I

HIGHEST COMMON FACTOR (H.C.F) AND LEAST COMMON MULTIPLE (L.C.M)

- ◆ The H.C.F of two or more numbers is the biggest factor of the two numbers.
- ◆ The L.C.M of two or more numbers is the smallest number which can be completely divided by any of the given number.
- ◆ In general given two numbers p and q with L.C.M and H.C.F, $L.C.M \times H.C.F = p \times q$.
- ◆ If the GCD of any two numbers is 1 they are said to be relatively prime numbers. GCD or GCF or HCF are same.

Formulae to determine L.C.M and H.C.F of fractions

$$\text{L.C.M of fractions} = \frac{\text{L.C.M of the numerator numbers}}{\text{H.C.F of the denominator numbers}}$$

$$\text{H.C.F of fractions} = \frac{\text{H.C.F of the numerator numbers}}{\text{L.C.M of denominator numbers}}$$

Examples

1. Find the H.C.F of 189, 297 and 405.

Solution :

$$\begin{array}{r|l} 3 & 189, 297, 405 \\ 3 & 63, 99, 135 \\ 3 & 21, 33, 45 \\ & 7, 11, 15 \end{array}$$

$$3 \times 3 \times 3 = 27$$

2. Find the L.C.M of 125, 500 and 625.

Solution :

$$\begin{array}{r|l} 5 & 125, 500, 625 \\ 5 & 25, 100, 125 \\ 5 & 5, 20, 25 \\ 5 & 1, 4, 5 \\ 4 & 1, 4, 1 \\ & 1, 1, 1 \end{array}$$

$$\text{L.C.M is } 5 \times 5 \times 5 \times 5 \times 4 = 2500$$

Exercise

1. Find the H.C.F of 504 and 980.

- A) 28 B) 504
C) 56 D) 280

Solution :

504 and 980.

$$\begin{array}{r|l} 7 & 504, 980 \\ 4 & 72, 140 \\ & 18, 35 \end{array}$$

$$7 \times 4 = 28$$

$$\therefore \text{H.C.F} = 28$$

2. Find the L.C.M of 26 and 91.

- A) 91 B) 182
C) 52 D) 78

Solution :

26 and 91.

$$\begin{array}{r|l} 13 & 26, 91 \\ 2 & 2, 7 \\ 7 & 1, 7 \\ & 1, 1 \end{array}$$

$$\therefore \text{L.C.M} = 13 \times 2 \times 7 = 182$$

3. Find the H.C.F of 960 and 432.

- A) 960 B) 432
C) 48 D) None of these

Solution :

960 and 432

$$\begin{array}{r|l} 8 & 960, 432 \\ 2 & 120, 54 \\ 3 & 60, 27 \\ & 20, 9 \end{array}$$

$$8 \times 2 \times 3 = 48$$

$$\therefore \text{H.C.F} = 48$$

4. Find the H.C.F and L.C.M of 105 and 120.

- A) 15, 120 B) 15, 840
C) 56, 120 D) 120, 840

Solution :

105 and 120

$$105 = 7 \times 15 \quad 120 = 8 \times 15$$

H.C.F of 105 and 120 is 15 and L.C.M is

$$7 \times 8 \times 15 = 840$$

$$\begin{array}{r|l} 5 & 105, 120 \\ 3 & 21, 24 \end{array}$$

$$\text{HCF} = 5 \times 3 = 15$$

$$\text{LCM} = 5 \times 3 \times 7 \times 8 = 840$$

SURA'S ★★ MATHEMATICS

Thus, we have $\frac{1}{3}\pi r^2 h = 4928$

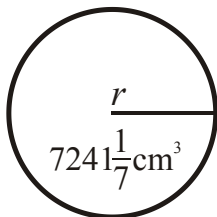
$$\Rightarrow \frac{1}{3} \times \frac{22}{7} \times r^2 \times 24 = 4928$$

$$\Rightarrow r^2 = \frac{4928 \times 3 \times 7}{22 \times 24} = 196.$$

Thus, the base radius of the cone, $r = \sqrt{196} = 14$ cm.

10. If the volume of a sphere is $7241\frac{1}{7}$ cu.cm, then find its radius. (Take $\pi = \frac{22}{7}$)

Solution:



Let r and V be the radius and volume of the sphere respectively.

Given that $V = 7241\frac{1}{7}$ cu.cm

$$\Rightarrow \frac{4}{3}\pi r^3 = \frac{50688}{7}$$

$$\Rightarrow \frac{4}{3} \times \frac{22}{7} \times r^3 = \frac{50688}{7}$$

$$r^3 = \frac{50688}{7} \times \frac{3 \times 7}{4 \times 22}$$

$$= 1728 = 4^3 \times 3^3$$

Thus, the radius of the sphere, $r = 12$ cm.

11. The radii of two right circular cylinders are in the ratio 2 : 3. Find the ratio of their volumes if their heights are in the ratio 5 : 3.

Solution:

Ratio of radii $r_1 : r_2 = 2 : 3$

Ratio of heights $h_1 : h_2 = 5 : 3$

Ratio of volumes $= \pi r_1^2 h_1 : \pi r_2^2 h_2$

$$= 2^2 \times 5 : 3^2 \times 3 = 4 \times 5 : 9 \times 3$$

$$V_1 : V_2 = 20 : 27$$

12. The volume of a cone with circular base is 216π cu. cm. If the base radius is 9 cm, then find the height of the cone.

Solution:

Volume of the cone $= 216\pi$ cu.cm, $r = 9$ cm

$$\frac{1}{3} \times \pi \times 9^2 \times h = 216\pi \quad h = 8 \text{ cm.}$$

13. The volume of a hemisphere is 1152π cu.cm. Find its curved surface area.

Solution:

Vol. of a hemisphere $= 1152\pi$ cu.cm.

$$\frac{2}{3}\pi r^3 = 1152\pi \quad r^3 = 3 \times 3 \times 4 \times 4 \times 4$$

$$r^3 = 3 \times 3 \times 3 \times 4 \times 4 \times 4 \Rightarrow r = 3 \times 4 = 12$$

$$C.S.A. = 2\pi r^2 = 2 \times \pi \times 12 \times 12 = 288\pi \text{ cm}^2$$

14. A solid wooden toy is in the form of a cone surmounted on a hemisphere. If the radii of the hemisphere and the base of the cone are 3.5 cm each and the total height of the toy is 17.5 cm, then find the volume of

wood used in the toy. (Take $\pi = \frac{22}{7}$)

Solution:

Hemispherical portion : Radius, $r = 3.5$ cm

Conical portion : Radius, $r = 3.5$ cm

Height, $h = 17.5 - 3.5 = 14$ cm

Volume of the wood = Volume of the hemisphere + Volume of the cone.

$$= \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h = \frac{\pi r^2}{3}(2r + h)$$

$$= \frac{22}{7} \times \frac{3.5 \times 3.5}{3} \times (2 \times 3.5 + 14) = 269.5$$

Hence, the volume of the wood used in the toy $= 269.5$ cu.cm.

15. Spherical shaped marbles of diameter 1.4 cm each, are dropped into a cylindrical beaker of diameter 7 cm containing some water. Find the number of marbles that should be dropped into the beaker so that the water level rises by 5.6 cm.

Solution:

Let n be the number of marbles needed. Let r_1 and r_2 be the radii of the marbles and cylindrical beaker respectively.

Marbles Cylindrical Beaker

Diameter, $2r_1 = 1.4$ cm Diameter, $2r_2 = 7$ cm

Radius $r_1 = 0.7$ cm Radius, $r_2 = \frac{7}{2}$ cm

Let h be the height of the water level raised.

Then, $h = 5.6$ cm

After the marbles are dropped into the beaker,

Volume of water raised = Volume of n marbles

$$\Rightarrow \pi r_2^2 h = n \times \frac{4}{3}\pi r_1^3$$

$$\text{Thus, } n = \frac{3r_2^2 h}{4r_1^3}$$

$$n = \frac{3 \times \frac{7}{2} \times \frac{7}{2} \times 5.6}{4 \times \frac{7}{10} \times \frac{7}{10} \times \frac{7}{10}} = 150.$$

\therefore The number of marbles needed is 150.

Exercise

1. A right circular cylinder has radius of 14 cm and height of 8 cm. Find its curved surface area and total surface area.

A) 1938 cm^2 B) 1836 cm^2
C) 1936 cm^2 D) 1840 cm^2

Solution:

radius = 14cm, height = 8 cm,

C.S.A. of a cylinder = $2\pi rh$.

$$= 2 \times \frac{22}{7} \times 14 \times 8 = 704 \text{ cm}^2$$

T.S.A. = $2\pi r(h + r)$

$$= 2 \times \frac{22}{7} \times 14(8 + 14) = 2 \times 22 \times 2 \times 22 = 1936 \text{ cm}^2$$

2. A mansion has 12 right cylindrical pillars each having radius 50cm and height 3.5 m. Find the cost to paint the lateral surface of the pillars at ₹ 20 per square metre.

A) ₹ 2460 B) ₹ 2640
C) ₹ 2540 D) ₹ 2650

Solution:

C.S.A. of 1 pillar = $2\pi rh$

$$r = 50 \text{ cm} = \frac{50}{100} = \frac{1}{2} \text{ m}$$

$h = 3.5 \text{ m}$

$$\therefore \text{C.S.A. of 12 pillars} = 12 \times 2 \times \frac{22}{7} \times \frac{1}{2} \times 3.5 = 132 \text{ m}^2$$

Cost of painting = ₹ 20

$$\therefore \text{Cost of painting} = 132 \times 20 = ₹ 2640$$

3. The radii of two right circular cylinders are in the ratio of 3 : 2 and their heights are in the ratio 5 : 3. Find the ratio of their curved surface areas.

A) 5 : 2 B) 2 : 5
C) 5 : 3 D) 6 : 5

Solution:

The radii of cylinders = 3 : 2

$$\Rightarrow r_1 : r_2 = 3 : 2$$

Heights ($h_1 : h_2$) = 5 : 3.

\therefore Ratio of C.S.A.

$$s_1 : s_2 = 2\pi r_1 h_1 : 2\pi r_2 h_2$$

$$= 3 \times 5 : 2 \times 3 = 5 : 2$$

4. The external diameter of a cylindrical shaped iron pipe is 25 cm and its length is 20 cm. If the thickness of the pipe is 1 cm, find the total surface area of the pipe.

A) 3618 cm^2 B) 3628 cm^2
C) 3168 cm^2 D) 3268 cm^2

Solution:

External diameter = 25 cm.

$$\therefore R = \frac{25}{2} \text{ cm} = 12.5 \text{ cm}$$

length = $h = 20 \text{ cm}$

thickness = $R - r = 1 \text{ cm}$.

$$\therefore r = 12.5 - 1 = 11.5$$

\therefore T.S.A. of a hollow cylinder

$$= 2\pi(R + r)(R - r + h)$$

$$= 2 \times \frac{22}{7} (12.5 + 11.5)(1 + 20)$$

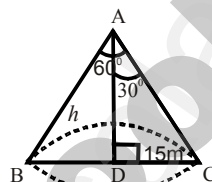
$$= 2 \times \frac{22}{7} \times 24 \times 21 = 3168 \text{ cm}^2$$

5. If the vertical angle and the radius of a right circular cone are 60° and 15 cm respectively, then find its height and slant height.

A) 30 cm B) 20 cm
C) 10 cm D) 50 cm

Solution :

Ans : A



Hint:
The vertical height always bisects the vertical angle.
 $\therefore \angle CAD = 30^\circ$

Vertical angle = 60°

$$\tan 30^\circ = \frac{15}{h} = \frac{1}{\sqrt{3}}$$

$$\therefore h = 15\sqrt{3} \text{ cm.}$$

$$\sin 30^\circ = \frac{15}{l} = \frac{1}{2} \Rightarrow l = 15 \times 2 = 30 \text{ cm}$$

6. Radius and slant height of a cone are in the ratio 3 : 5. If the curved surface area is 60π sq.cm, then find its total surface area.

A) $301\frac{5}{7} \text{ m}^2$ B) $301\frac{2}{5} \text{ m}^2$
C) $305\frac{2}{7} \text{ m}^2$ D) $305\frac{5}{7} \text{ m}^2$

Ans : A

Solution:

$r : l = 3 : 5$, let $r = 3x$ cm

C.S.A. = 60π $l = 5x$ cm

$$\pi rl = 60\pi$$

$$(3x)(5x) = 60$$

$$x^2 = 4, \quad x = 2$$

$$\therefore r = 6 \text{ cm}, \quad l = 10 \text{ cm}$$

T.S.A. = $\pi r(l + r)$

$$= \frac{22}{7} \times 6(10 + 6) = \frac{22}{7} \times 6 \times 16$$

$$\frac{2112}{7} = 301\frac{5}{7} \text{ m}^2$$

Hint:

$$x^2 = 4$$

$$x = \pm 2$$

-2 is inadmissible

SURA'S ★★ MATHEMATICS

7. If the curved surface area of a sphere is 98.56 cm^2 , then find the radius of the sphere.

- A) 2.4 cm B) 2 cm
C) 2.8 cm D) 4.8 cm

Solution:

C.S.A. of a sphere = 98.56 cm^2

$$4\pi r^2 = 98.56$$

$$\frac{1.12}{4.48}$$

$$\therefore r^2 = \frac{98.56}{4 \times 22} \times 7 = 7.84 \Rightarrow r = 2.8 \text{ cm.}$$

8. Radii of two solid hemispheres are in the ratio 3 : 5. Find the ratio of their curved surface areas and the ratio of their total surface areas.

- A) 2 : 4 B) 1 : 1
C) 2 : 1 D) 2 : 2

Solution:

Ratio of radii ($r_1 : r_2$) = 3 : 5

$$\text{Ratio of C.S.A} = C_1 : C_2 = 3^2 : 5^2 = 9 : 25$$

$$\text{Ratio of T.S.A} = T_1 : T_2 = 9 : 25$$

9. The radius of a solid sphere is 24 cm. It is melted and drawn into a long wire of uniform cross section. Find the length of the wire if its radius is 1.2 mm.

- A) 6.4 km B) 6.2 km
C) 12.2 km D) 12.8 km

Solution:

Radius of cylinder = 1.2 mm

$$= \frac{12}{10} \text{ mm} = \frac{12}{100} \text{ cm}$$

Volume of cylindrical wire = Volume of sphere

$$\pi \times \left(\frac{12}{100}\right)^2 \times h = \frac{4}{3} \pi \left(\frac{24}{100}\right)^3 \Rightarrow h = \frac{4}{3} \times \frac{24^3}{100^2} = 12.8 \text{ cm}$$

$$h = 64 \times 2 \times 100 \times 100 \text{ cm.}$$

$$= \frac{128 \times 100 \times 100}{100 \times 100} = 12.8 \text{ km}$$

10. Through a cylindrical pipe of internal radius 7 cm, water flows out at the rate of 5 cm/sec. Calculate the volume of water (in litres) discharged through the pipe in half an hour.

- A) 1386 l B) 1342 l
C) 1364 l D) 1384 l

Solution:

Ans : A

Volume of water discharged in 1 sec. = $\pi r^2 \times \text{speed}$

$$= \frac{22}{7} \times 7 \times 7 \times 5 \text{ cc}$$

$$\frac{1}{2} \text{ an hour} = \left(\frac{1}{2} \times \frac{30}{60} \times 60\right) \text{ seconds}$$

\therefore Vol. of water (in litres) discharged

$$\frac{11}{22} \times \frac{7}{35} \times \frac{30}{60} \times \frac{60}{60} = 1386 \text{ litres}$$

11. A hollow cylindrical pipe is of length 40 cm. Its internal and external radii are 4 cm and 12 cm respectively. It is melted and cast into a solid cylinder of length 20 cm. Find the radius of the new solid.

- A) 8 cm B) 12 cm
C) 16 cm D) 10 cm

Solution :

Ans : C

Volume of hollow cylinder

$$= \pi h (R^2 - r^2) = \pi \times 40 (12^2 - 4^2)$$

Volume of new solid cylinder made = $\pi \times 20 \times r^2$

$$\Rightarrow \pi \times 20 \times r^2 = \pi \times 40 \times 128 = 2 \times 2 \times 4 \times 4 \times 4$$

$$\therefore r = 2 \times 2 \times 4 = 16 \text{ cm.}$$

VOLUME AND SURFACE AREA OF CUBE AND CUBOID

- Volume of a cube with side 'a' units = a^3 cubic units.
- Surface Area of a cube with side 'a' units = $6a^2$ sq. units.
- Volume of a cuboid = lbh cubic units.
- Surface Area of a cuboid = $2(lb + bh + lh)$ sq. units.
- Length of diagonal of a cube with side 'a' units is $a\sqrt{3}$ units.
- Length of diagonal of a cuboid = $\sqrt{a^2 + b^2 + c^2}$ where a, b, c are the adjacent edges of a cuboid.

Examples

1. Given the side of a cube as 20 m. Find the length of the diagonal, volume and total surface area of the cube.

Solution :

Given : a = 20 m

$$\text{Diagonal} = a\sqrt{3} = 20\sqrt{3} \text{ m}$$

$$\text{Volume} = a^3 = 20 \times 20 \times 20 = 8000 \text{ m}^3$$

$$\text{Total surface area} = 6a^2 = 6 \times 20 \times 20 = 2400 \text{ m}^2$$

SURA'S ★★ MATHEMATICS

2. If the volume of a cube is 2197 cm^3 . Find the total surface area of the cube.

Solution :

Let the side of the cube = $x \text{ cm}$

Volume = $x^3 \text{ cm}^3 = 2197 \text{ cm}^3$ (given)

i.e., $x^3 = 13^3 \Rightarrow x = 13 \text{ cm}$

Total surface area = $6x^2 = 6 \times 13 \times 13 = 1014 \text{ cm}^2$

3. If the dimensions of a cuboid are 20 cm, 25 cm and 28 cm. Find the volume and surface area.

Solution :

Given $l = 20 \text{ cm}$, $b = 25 \text{ cm}$, $h = 28 \text{ cm}$

Volume = $l b h = 20 \times 25 \times 28 = 14000 \text{ cm}^3$

Surface area = $2 (lb + bh + lh)$

= $2 (20 \times 25 + 25 \times 28 + 28 \times 20) = 3520 \text{ cm}^2$

4. The volume of a cuboid is $87,480 \text{ cm}^3$. If the dimensions are in the ratio 5 : 4 : 6 then find the surface area of the cuboid.

Solution :

Let $l = 5x$, $b = 4x$ and $h = 6x$

Volume = $5x \times 4x \times 6x = 120x^3 = 87480 \text{ cm}^3$

$$\Rightarrow x^3 = \frac{87480}{120} = 729 = 9^3 \Rightarrow x = 9 \text{ cm}$$

$l = 5 \times 9 = 45 \text{ cm}$,

$b = 4 \times 9 = 36 \text{ cm}$ and

$h = 6 \times 9 = 54 \text{ cm}$

Surface area = $2 (lb + bh + lh)$

= $2 (45 \times 36 + 36 \times 54 + 54 \times 45) = 11,988 \text{ cm}^2$

Exercise

1. If the surface area of a cube is 864 m^2 find its volume.

- A) 1728 m^3 B) 1278 m^3
C) 1872 m^3 D) 1827 m^3

Solution :

Ans : A

Surface area of a cube = $6a^2 = 864 \text{ m}^2$

$$\Rightarrow a^2 = \frac{864}{6} = 144 \Rightarrow a = 12 \text{ m}$$

Volume = $a^3 = 12^3 = 1728 \text{ m}^3$

2. If the volume of a cube is 2744 m^3 find its total surface area. Also find the diagonal.

- A) 42 m B) $14\sqrt{3} \text{ m}$
C) $12\sqrt{3} \text{ m}$ D) $14\sqrt{2} \text{ m}$

Solution :

Ans : B

Volume of a cube = $a^3 = 2744 \Rightarrow a = \sqrt[3]{2744} = 14 \text{ m}$

Total surface area = $6a^2 = 6 \times 14 \times 14 = 1176 \text{ m}^2$

diagonal = $a\sqrt{3} = 14\sqrt{3} \text{ m}$.

3. If the dimensions of a cuboid are 12 cm, 15 cm and 18 cm. Find the volume.

- A) 3240 cm^3 B) 3420 cm^3
C) 3402 cm^3 D) 3842 cm^3

Solution :

Ans : A

$l = 12 \text{ cm}$, $b = 15 \text{ cm}$ and $h = 18 \text{ cm}$

Volume = $l b h = 12 \times 15 \times 18 = 3240 \text{ cm}^3$

4. If the volume of a cuboid is 5184 m^3 and the adjacent edges are in the ratio 2 : 3 : 4. Find the surface area of the cuboid.

- A) 1872 cm^2 B) 1827 cm^2
C) 1782 cm^2 D) 1482 cm^2

Solution :

Ans : A

Since the edges are in the ratio 2 : 3 : 4

let $l = 2x$, $b = 3x$ and $h = 4x$

Volume = $l b h = (2x)(3x)(4x) = 24x^3 = 5184 \text{ m}^3$

$$\Rightarrow x^3 = \frac{5184}{24} = 216$$

$$x = \sqrt[3]{216} = 6 \text{ m}$$

$l = 2(6) = 12 \text{ m}$, $b = 3(6) = 18 \text{ m}$ and $h = 4(6) = 24 \text{ m}$

Surface area = $2 (lb + bh + lh)$

= $2 (12 \times 18 + 18 \times 24 + 12 \times 24) = 1872 \text{ m}^2$

5. If the length of the diagonal of a cube is $7\sqrt{3} \text{ cm}$. Find the volume and total surface area of the cube.

- A) 284 cm^2 B) 294 cm^2
C) 248 cm^2 D) 249 cm^2

Solution :

Ans : B

Length of the diagonal = $a\sqrt{3} = 7\sqrt{3} \text{ cm} \Rightarrow a = 7 \text{ cm}$

Volume = $a^3 = 7^3 = 343 \text{ cm}^3$

Surface area = $6a^2 = 6 \times 7 \times 7 = 294 \text{ cm}^2$

6. If the surface area of a cube is 1350 cm^2 . Find its volume.

- A) 15 cm^3 B) 225 cm^3
C) 3325 cm^3 D) 3375 cm^3

Solution :

Ans : D

Surface area = $6a^2 = 1350 \text{ cm}^2$

$$\Rightarrow a^2 = \frac{1350}{6} = 225 \Rightarrow a = 15 \text{ cm}.$$

Volume = $a^3 = 15 \times 15 \times 15 = 3375 \text{ cm}^3$

7. If the surface area of a cuboid is 550 cm^2 and the edges are in the ratio 1 : 2 : 3. Find the volume of the cuboid.

- A) 250 cm^3 B) 450 cm^3
C) 550 cm^3 D) 750 cm^3

Solution :

Ans : D

Edges of a cuboid are in the ratio 1 : 2 : 3 (given)

$\Rightarrow l = x$, $b = 2x$ and $h = 3x$

Surface area = $2 (lb + bh + lh)$

= $2 (x \times 2x + 2x \times 3x + 3x \times x)$

= $2 (2x^2 + 6x^2 + 3x^2) = 22x^2 = 550 \text{ cm}^2$ (given)

$$\Rightarrow x^2 = \frac{550}{22} = 25 \Rightarrow x = 5 \text{ cm}$$

So, $l = 5 \text{ cm}$, $b = 10 \text{ cm}$ and $h = 15 \text{ cm}$

Volume = $l b h = 5 \times 10 \times 15 = 750 \text{ cm}^3$

SURA'S ★★ MATHEMATICS

2. Reshma is 40 years old and monisha is 60 years old.

How many years ago was the ratio of their ages 3 : 5?

- A) 10 years B) 20 years
C) 37 years D) 5 years

Solution :

Ans : A

Let x years ago, the ratio of their ages = 3 : 5

$$\frac{40-x}{60-x} = \frac{3}{5} \Rightarrow 200 - 5x = 180 - 3x$$

$$\therefore 2x = 20 \Rightarrow x = 10 \text{ years.}$$

3. If $1\frac{1}{2}$ years is added to $\frac{3}{7}$ age of Jaga, he will be half his age, what is his actual age?

- A) 20 years B) 21 years
C) 25 years D) 18 years

Solution :

Ans : B

Let Jaga's actual age be x $\frac{3}{7}x + 1\frac{1}{2} = \frac{x}{2}$

$$\Rightarrow \left(\frac{1}{2} - \frac{3}{7}\right)x = \frac{3}{2} \Rightarrow \frac{x}{14} = \frac{3}{2}$$

$$\Rightarrow x = \frac{3 \times 14}{2} = 21 \text{ years}$$

4. The sum of the age of father and his son is 100 years now. 5 years ago their ages were in the ratio of 2 : 1. The ratio of the ages of father and his son after 10 years will be

- A) 5 : 3 B) 4 : 3
C) 10 : 7 D) 3 : 5

Solution :

Ans : A

5 years ago, Father's age = $5x$ and Son's age = x years

Given, sum of ages at present = 100

$$2x + 5 + x + 5 = 100 \Rightarrow 3x = 90 \Rightarrow x = 30$$

$$\therefore \text{Father's present age} = 2x + 5 = 60 + 5 = 65 \text{ years}$$

$$\text{Son's present age} = x + 5 = 30 + 5 = 35 \text{ years}$$

$$\text{After 10 years, Ratio} = \frac{65+10}{35+10} = \frac{75}{45} = \frac{5}{3}$$

5. The ratio of ages of Jack and Jill is 4 : 3. The product of their ages is 432. What will be the ratio of their ages after 18 years?

- A) 7 : 6 B) 6 : 7
C) 7 : 8 D) 8 : 7

Solution :

Ans : A

Present age of Jack and Jill be $4x$ and $3x$ respectively, then, $4x \times 3x = 432$

$$x^2 = \frac{432}{12} = 36 \Rightarrow x = 6$$

Jack's age = 24 years and Jill's age = 18 years

After 18 years, the ratio of ages will be

$$= (24 + 18) : (18 + 18) = 42 : 36 = 7 : 6$$

6. Ten years ago A was half of B in age. If the ratio of their present ages is 3 : 4, what will be the total of their present ages?

- A) 10 years B) 35 years
C) 45 years D) 20 years

Solution :

Ans : B

Let A's present age be x and B's age be y .

$$\text{Ten years ago, } x - 10 = \frac{1}{2}(y - 10)$$

$$2x - 20 = y - 10$$

$$\Rightarrow 2x - y = 10 \quad \text{----- (1)}$$

$$\frac{x}{y} = \frac{3}{4} \Rightarrow x = \frac{3y}{4} \quad \text{----- (2)}$$

Using (2) in (1), we get

$$2\left(\frac{3y}{4}\right) - y = 10$$

$$\Rightarrow 3y - 2y = 20$$

$$\Rightarrow y = 20 \text{ and } x = \frac{3y}{4} \Rightarrow x = 15$$

$$\text{Total ages} = 20 + 15 = 35 \text{ years.}$$

7. The ages of Mohan and Sohan are in the ratio 5 : 7. If Mohan were 9 years older and Sohan 9 years younger, the age of Mohan would have been twice the age of Sohan. Find their ages.

- A) 15, 21 B) 20, 28
C) 12, 18 D) 16, 22

Solution :

Ans : A

Let the ages of Mohan and Sohan be $5x$ and $7x$ respectively.

$$\text{Given, } (5x + 9) = 2(7x - 9)$$

$$5x + 9 = 14x - 18 \Rightarrow 9x = 27 \Rightarrow x = 3$$

$$\text{Mohan's age} = 5x = 15 \text{ and}$$

$$\text{Sohan's age} = 7x = 21$$

8. A father is four times as old as his son today. After 20 years, he would be just twice as old. At the time of birth of his son, how much old must the father be?

- A) 40 years B) 20 years
C) 25 years D) 30 years

Solution :

Ans : D

Let age of Father and Son today be $4x$ and x respectively.

$$4x + 20 = 2(x + 20)$$

$$\Rightarrow 2x = 20 \Rightarrow x = 10 \text{ years.}$$

At the time of birth Father's age

$$= 4x - x = 40 - 10 = 30 \text{ years.}$$

9. Chitra got married 6 years ago. Today her age is $\frac{1}{4}$

times that at the time of her marriage. Her son is $\frac{1}{6}$

as old as she today. What is the age of her son today?

- A) 2 years B) 3 years
C) 4 years D) 5 years

Solution :

Ans : D

Let the age of Chitra and her Son be $6x$ and x today.

$$6 \text{ years hence, } (6x - 6) \times \frac{5}{4} = 6x$$

$$30x - 30 = 24x \Rightarrow 6x = 30$$

$$\Rightarrow x = 5 \therefore \text{Son's age} = 5 \text{ years}$$

SURA'S ★★ MATHEMATICS

10. I was x year old, six years ago. How old shall I be eight years hence?

- A) $x - 2$ B) $x + 14$
C) $x + 6$ D) $x + 2$

Solution :

Ans : B

At present, my age = $x + 6$

8 years hence, my age = $x + 6 + 8 = x + 14$

11. Rahul is half his father's age now. Fifteen years ago, he was one-third of his father's age. How old will Rahul be after 5 years?

- A) 35 years B) 30 years
C) 25 years D) 40 years

Solution :

Ans : A

Let the present age of Rahul and his Father be x and $2x$ respectively.

15 years ago, $\frac{1}{3}(2x - 15) = x - 15$

$\Rightarrow 2x - 15 = 3x - 45 \Rightarrow x = 30$

After 5 years, Rahul's age = $30 + 5 = 35$ years

12. Dipa is seven years older than Shikha. Fifteen years ago, Shika's age was three quarters of Dipa's age. Find the age of Dipa now.

- A) 36 years B) 43 years
C) 41 years D) 42 years

Solution :

Ans : B

Let shika's age = x years and Dipa's age = $x + 7$

Fifteen years ago, $x - 15 = \frac{3}{4}(x + 7 - 15)$

$4x - 60 = 3x - 24 \Rightarrow x = 36$

Dipa's age = $x + 7 = 36 + 7 = 43$ years

13. The product of the ages of Ankit and Nikita is 240. If twice the age of Nikita is more than Ankit's age by 4 years, what is Nikita's age?

- A) 12 years B) 13 years
C) 14 years D) 15 years

Solution :

Ans : A

Let Ankit's age = x and Nikita's age = $\frac{240}{x}$

Given, $20 \times \frac{240}{x} = x + 4$

$\Rightarrow 480 = x^2 + 4x$

$\Rightarrow x^2 + 4x - 480 = 0$

$\therefore (x + 24)(x - 20) = 0$

$\Rightarrow x = -24, 20 \Rightarrow x = 20$

Nikita's age = $\frac{240}{20} = 12$ years.

14. The ages of two persons differ by 16 years. If 6 years ago, the elder one is 3 times as old as the younger one, find the age of younger one.

- A) 14 years B) 30 years
C) 15 years D) 18 years

Solution :

Ans : A

Let the age of the younger person be x years.

\therefore Age of elder person = $x + 16$ years.

Given, $3(x - 6) = (x + 16 - 6) \Rightarrow 3x - 18 = x + 10$

$2x = 28 \Rightarrow x = 14$

\therefore Age of younger one = 14 years.

15. My brother is 3 years elder to me. My father was 28 years of age when my sister was born, while my mother was 26 years of age, when I was born. If my sister was 4 years of age when my brother was born, then, what was the age of my father and mother respectively when my brother was born?

- A) 32 yrs, 23 yrs B) 32 yrs, 29 yrs
C) 35 yrs, 29 yrs D) 35 yrs, 33 yrs

Solution :

Ans : A

My brother was born 3 years before I was born and 4 years after my sister was born.

Father's age when brother was born = $28 + 4 = 32$ years

Mother's age when brother was born = $26 - 3 = 23$ years

16. If 6 years are subtracted from the present age of Gagan and the remainder is divided by 18, then the present age of his grandson Anup is obtained. If Anup is 2 years younger to Madan whose age is 5 years, then what is Gagan's present age?

- A) 48 years B) 60 years
C) 84 years D) 96 years

Solution :

Ans : B

Anup's age = $5 - 2 = 3$ years and let Gagan's age = x years

Then, $\frac{x - 6}{18} = 3 \Rightarrow x - 6 = 54 \Rightarrow x = 60$

Gagan's age = 60 years.

17. A man got a child when he was 30 years. At which age, his age will be $2\frac{1}{2}$ times that of his child?

- A) 70 years B) 60 years
C) 50 years D) 40 years

Solution :

Ans : C

Let after x years after the Son has born, the age of Father

be $2\frac{1}{2}$ times that of his child.

Given, $30 + x = \frac{5}{2}x$

$\Rightarrow \frac{3x}{2} = 30 \Rightarrow x = 20$

After 20 years the man's age = $30 + 20 = 50$ years.

18. The sum of the ages of 2 brothers is 50. Ten years ago, the elder brother was twice the age of the younger. What is the present age of the elder?

- A) 30 years B) 35 years
C) 20 years D) 25 years

Solution :

Ans : A

Let the ages of 2 brothers be x and $50 - x$

Ten years ago $x - 10 = 2(50 - x - 10)$

$x - 10 = 100 - 2x - 20$

$\Rightarrow 3x = 90 \Rightarrow x = 30$

Age of the elder brother = 30 years.

★★★

GENERAL INTELLIGENCE AND REASONING

1. Coding – Decoding
2. Analogy
3. Odd One Out
4. Series
5. Missing Numbers
6. Arrangement of Words
7. Word Formation
8. Seating Arrangement
9. Ranking
10. Counting of Figures
11. Analytical Ability
12. Mathematical Symbol Operation
13. Directions Sense Ability
14. Blood Relations
15. Syllogism
16. Venn Diagram
17. Dice
18. Non – Verbal
19. Miscellaneous

1. CODING – DECODING

1. In a certain code language, "NUMBER" is written as "156897" and "BARREN" is written as "847791". How is "RUBBER" written in that code language?

A) 759597 B) 758897
C) 795957 D) 795579

Explanation :

N U M B E R B A R R E N
↓ ↓ ↓ ↓ ↓ ; ↓ ↓ ↓ ↓ ↓
1 5 6 8 9 7 8 4 7 7 9 1

Therefore

R U B B E R
↓ ↓ ↓ ↓ ↓
7 5 8 8 9 7

2. If GERMANY is written as 7, 5, 18, 13, 1, 14, 25, then how will INDIA be written in that code?

A) 5, 15, 2, 7, 5 B) 7, 15, 4, 9, 1
C) 9, 14, 4, 9, 1 D) 9, 13, 4, 9, 1

Explanation :

Position number in the English Alphabetical series.

G E R M A N Y
↓ ↓ ↓ ↓ ↓ ↓
7 5 18 13 1 14 25

Hence,

I N D I A
↓ ↓ ↓ ↓ ↓
9 14 4 9 1

3. If in a coded language "SOLICIT" is "VKEKNQU" then what is the code for "SOME"?

A) GOQU B) GQOU
C) EMOS D) GOOQ

Explanation :

S O L I C I T V K E K N Q U
 +2
 +2
 +2
 +2
 +2
 +2

Hence,

S O M E G O Q U
 +2
 +2
 +2
 +2

4. If in a coded language "LAYMAN" is "MBZNBO" then what would the code for "SHRED"?

A) TIDSF B) TISEF
C) TISFE D) DERSH

Explanation :

L A Y M A N M B Z N B O
 +1
 +1
 +1
 +1
 +1

Ans : (C)

Hence,

S H R E D T I S F E
 +1
 +1
 +1
 +1
 +1

5. If in a coded language A=3, L=36, D=12, P=48 and so on then what would the code be for "SHREW"?

A) 57, 24, 54, 15, 69
B) 24, 4, 22, 34, 12
C) 57, 24, 32, 15, 69
D) 24, 57, 32, 12, 3

Explanation :

Alphabetical place value $\times 3$

A $\Rightarrow 1 \times 3 = 3$

L $\Rightarrow 12 \times 3 = 36$

D $\Rightarrow 4 \times 3 = 12$

P $\Rightarrow 16 \times 3 = 48$

Hence,

S $\Rightarrow 19 \times 3 = 57$

H $\Rightarrow 8 \times 3 = 24$

R $\Rightarrow 18 \times 3 = 54$

E $\Rightarrow 5 \times 3 = 15$

W $\Rightarrow 23 \times 3 = 69$

Ans : (A)

6. If in a coded language "LAYETTE" is as "TTEELAY" then what would the code be for "STIFFEN"?

A) FENSFTI B) FEHNITI
C) JFIOWEN D) FENFSTI

Explanation :

L A Y E T T E
 ↙ ↘
T T E E L A Y

Hence,

S T I F F E N
 ↙ ↘
F E N F S T I

Ans : (D)

7. If in a coded language "3214576" is "RAINBOW" then what is the code for "BROWN"?

A) 34456 B) 53764
C) 57344 D) 57346

SURA'S 🌸 GENERAL INTELLIGENCE AND REASONING

8. I. Forbes II. Forest
III. Forensic IV. Formation
Choose the correct answer :
A) III, II, IV, I B) IV, III, II, I
C) I, II, III, IV D) I, III, II, IV

Explanation : Arrangement of words as per order in the dictionary. **Ans : (D)**

Forbes → I
↓
Forensic → III
↓
Forest → II
↓
Formation → IV

9. I. Ale II. Align
III. Amend IV. Anatomy
V. Alpine
Choose the correct option :
A) V, I, III, IV, II B) III, V, IV, I, II
C) I, II, III, V, IV D) I, II, V, III, IV

Explanation : Arrangement of words as per order in the dictionary. **Ans : (D)**

Ale → I
↓
Align → II
↓
Alpine → V
↓
Amend → III
↓
Anatomy → IV

10. I. Den II. Dragon
III. Drop IV. Desk
V. Doom
Choose the correct option :
A) V, IV, III, I, II B) I, IV, V, II, III
C) III, I, II, IV, V D) I, III, II, IV, V

Explanation : Arrangement of words as per order in the dictionary. **Ans : (B)**

Den → I
↓
Desk → IV
↓
Doom → V
↓
Dragon → II
↓
Drop → III

11. I. Rangle II. Regal
III. Royal IV. Room
V. Rested

Choose the correct option :

- A) I, V, IV, III, II B) IV, V, III, I, II
C) I, II, V, IV, III D) I, III, V, IV, II

Explanation : Arrangement of words as per dictionary order **Ans : (C)**

Rangle → I
↓
Regal → II
↓
Rested → V
↓
Room → IV
↓
Royal → III

12. I. Soul II. Strain
III. Syrup IV. Sand
V. Strained
Choose the correct option :
A) IV, I, II, V, III B) IV, II, I, V, III
C) V, IV, III, I, II D) IV, V, III, I, II

Explanation : Arrangement of words of per dictionary order. **Ans : (A)**

Sand → IV
↓
Soul → I
↓
Strain → II
↓
Strained → V
↓
Syrup → III

13. I. Yielded II. Yelp
III. Yeast IV. Yogurt
Choose the correct option :
A) II, III, IV, I B) III, II, I, IV
C) IV, I, II, III D) I, II, III, IV

Explanation : Arrangement of words as per dictionary order. **Ans : (B)**

Yeast → III
↓
Yelp → II
↓
Yielded → I
↓
Yogurt → IV

14. I. Nested II. Nation
III. Nippon IV. Niger
V. Nappy
Choose the correct option :
A) V, II, I, IV, III B) V, II, IV, I, III
C) II, I, V, IV, III D) II, V, I, III, IV

SURA'S 🌸 GENERAL INTELLIGENCE AND REASONING

Explanation :

Arrangement of words of per dictionary order.

Nappy → V



Nation → II



Nested → I



Niger → IV



Nippon → III

15. I. Operate II. Oyster
III. Oracle IV. Otis
V. Official

Choose the correct option :

- A) V, I, III, II, IV B) V, III, I, II, IV
C) V, III, I, IV, II D) V, I, III, IV, II

Explanation :

Arrangement of words of per dictionary order.

Official → V



Operate → I



Oracle → III



Otis → IV



Oyster → II

16. I. Storm II. Strap
III. Strangle IV. Stamped
V. Satire

Choose the correct answer :

- A) V, I, IV, III, II B) V, I, III, IV, II
C) V, IV, I, III, II D) V, III, IV, I, II

Explanation :

Arrangement of words as per dictionary order.

Satire - V



Stamped - IV



Storm - I



Strangle - III



Strap - II

Ans : (A)

17. I. Treadmill II. Treason

- III. Treacherous IV. Tread

Choose the correct answer :

- A) II, III, IV, I B) III, IV, II, I
C) III, IV, I, II D) I, II, III, IV

Explanation :

Arrangement of words as per dictionary order :

Treacherous - III



Tread - IV



Treadmill - I



Treason - II

18. I. Probation II. Selection
III. Application IV. Confirmation
V. Appointment

Choose the correct answer :

- A) III, II, V, I, IV B) V, I, IV, II, III
C) IV, I, III, II, V D) III, II, V, IV, I

Explanation :

Logical meaningful order of words.

Applications - III



Selection - II



Appointment - V



Probation - I



Confirmation - IV

19. I. Sleep II. Cold
III. Blanket IV. Winter
V. Warm VI. Shop

Choose the correct answer :

- A) IV, II, VI, III, V, I
B) IV, III, VI, II, I, V
C) VI, III, II, I, IV, V
D) IV, III, II, VI, I, V

Explanation :

Logical and meaningful order of words.

winter - IV



Cold - II



Shop - VI



Blanket - III



Warm - V



Sleep - I

Ans : (C)**Ans : (C)****Ans : (A)****Ans : (A)**

SURA'S GENERAL INTELLIGENCE AND REASONING

No advocate is hardworking \rightarrow (E-type)

Some hardworking are beautiful \rightarrow (I-type)

$E + I \rightarrow O$ - type of conclusion.

"Some beautiful are not advocates". Hence the conclusion III follows. "Some beautiful are not advocates \rightarrow conversion into "Some advocates are not beautiful". Hence, the conclusion II follows.

12. Statements :

I. Some authors are teachers.

II. No teacher is a lady.

Conclusions :

I. Some teachers are not ladies

II. Some ladies are not teachers

Select the correct answer :

A) Conclusion I follows

B) Conclusion II follows

C) Neither I nor II follows

D) Both I and II follow

Explanation :

Some authors are teachers \rightarrow (I - type)

No teacher is a lady \rightarrow (E - type)

$I + E \Rightarrow O$ - type of conclusion

"Some authors are not ladies"

Hence the neither conclusions I nor II follow.

13. Statements :

I. All cups are glasses

II. Some cups are pens

Conclusions :

I. Some pens are cups

II. Some pens are glasses

III. Some pens are not cups

Select the correct answer :

A) Only Conclusion I and III follow

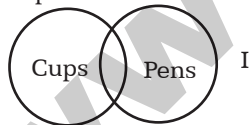
B) Only Conclusion II and III follow

C) Only Conclusion I and II follow

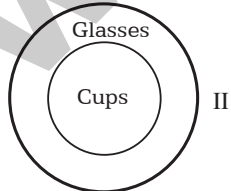
D) All Conclusions follow

Explanation :

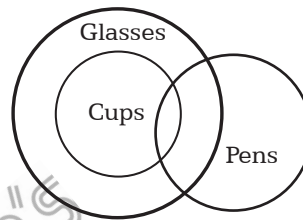
Some cups are pens \rightarrow conversion into "Some pens are cups".



Hence the conclusion I follows. All the cups are glasses.



Combining I & II we get,



'Some pens are glasses'. Hence the conclusion II follows.

14. Statements :

I. No cities are countries.

II. No countries are villages

Conclusions :

I. Some countries are cities

II. No villages is city

Select the correct answer :

A) Only Conclusion I follows

B) Only Conclusion II follows

C) Both Conclusions follows

D) Neither Conclusions I nor Conclusions II follows

Explanation :

Ans : (D)

Both the premises are Universal Negative (E-type). No conclusion follows from the Negative premises.

15. Statements :

I. All cups are vegetables

II. All vegetables are pens

Conclusions :

I. Some pens are vegetables

II. Some pens are cups

Select the correct answer :

A) Only Conclusion I follows

B) Only Conclusion II follows

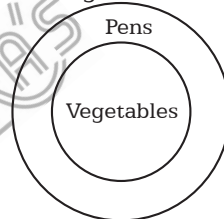
C) Both Conclusions follow

D) Neither Conclusions I nor Conclusions II follows

Explanation :

Ans : (C)

All vegetables are pens \rightarrow conversion into 'Some pens are vegetables'



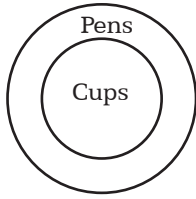
Hence the conclusion I follows.

All cups are vegetables \Rightarrow A - type

All vegetables are pens \Rightarrow A - type

$A + A \Rightarrow A$ - type of conclusion.

All cups are pens \rightarrow conversion into "some pens are cups".



Hence the conclusion II follows.

16. Statements :

- I. Some plants are trees
- II. All trees are bushes

Conclusions :

- I. Some bushes are plants
- II. All bushes are plants
- III. No bush is plants

Select the correct answer :

- A) Only Conclusion I follows
- B) Only Conclusion III follows
- C) Only Conclusion I and III follows
- D) Only Conclusion II and III follows

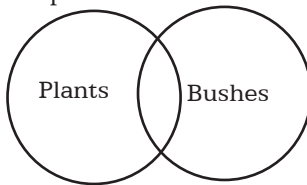
Explanation :

Some plants are trees \Rightarrow (I - type)

All tree are buses \Rightarrow (A - type)

$I + A \Rightarrow$ I - type of conclusion

Some plants are bushes \rightarrow conversion into 'Some bushes are plants.



Hence the conclusion I follows.

17. Statements :

- I. Some mangoes are fruits
- II. All fruits are Vegetables

Conclusions :

- I. Some mangoes are Vegetables
- II. Some fruits are mangoes
- III. Some Vegetable are fruits.

Select the correct answer :

- A) Only Conclusion II follows
- B) Only Conclusion II and III follow
- C) Only Conclusion I and III follow
- D) All conclusions are follow

Explanation :

Some mangoes are fruits \Rightarrow (I - type)

All fruits are vegetables \Rightarrow (A-type)

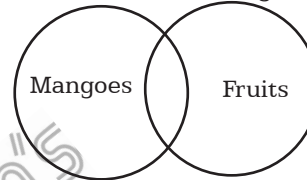
$I + A \Rightarrow$ I - type of conclusion

'Some mangoes are vegetables'

Hence conclusion I follows.

From statement I

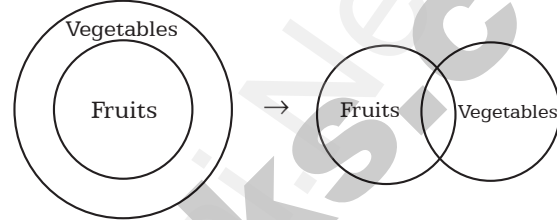
Some mangoes are fruits" \rightarrow Conversion into "Some fruits are mangoes"



Hence the conclusion II follows.

From statement II

All fruits are vegetables \rightarrow conversion into 'Some vegetables are fruits.'



Hence the conclusion III follows.

18. Statements :

- I. All inductors are condensers.
- II. Some resistors are inductors.
- III. All atomic numbers are resistors.

Conclusions :

- I. All atomic numbers are condensers.
- II. Some atomic numbers are condensers
- III. Some condensers are resistors.
- IV. All resistors are condensers

Select the correct answer :

- A) Only I follows
- B) Only II follows
- C) Only I and II follow
- D) Only II, III and IV follow

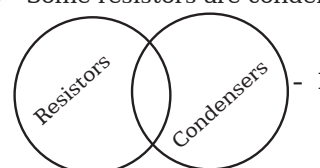
Explanation :

Some resistors are inductors \Rightarrow (I - type)

All inductors are condensers \Rightarrow (A - type)

$I + A \Rightarrow$ I - type of conclusion

'Some resistors are condensers'.



"Some condensers are resistors". Hence the conclusion III follows.

Again,

'Some condensers are resistors' \rightarrow conversion into "All resistors are condensers"

SURA'S GENERAL INTELLIGENCE AND REASONING

Conclusions :

- I. Interest in debating can be created by force.
 II. Some students eventually will develop interest in debating.

Select the correct answer :

- A) Only Conclusion I follows
 B) Only Conclusion II follows
 C) Both I and II follow
 D) Neither I nor II follows

Explanation :

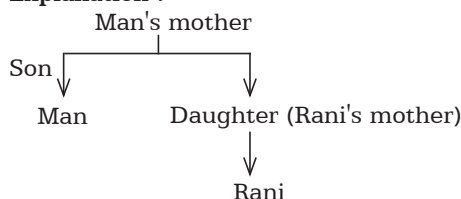
Any effect is made assuming that it will have some positive effect on some persons. Therefore, only conclusion II follows.

Ans: (B)

121. Pointing to a man in a photograph. Rani said "His mother's only daughter is my mother". How is Rani related to that man ?

- A) Wife B) Sister
 C) Niece D) Nephew

Explanation :



Ans: (C)

The man is maternal uncle to Rani. Hence Rani is niece of that man.

Directions (Qns. 122-124) : Study the following information and select the correct answer

Five boys are sitting on a bench to be photographed. Sachin is to the left of Ram and to the right of Bin. Monty is to the right of Ram. Rony is between Ram and Monty.

122. Who is second from the right in the photograph?

- A) Monty B) Ram
 C) Rony D) Bin

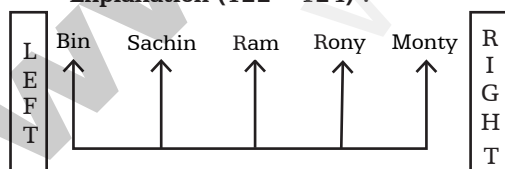
123. Who is in the middle of the photograph?

- A) Bin B) Ram
 C) Rony D) Sachin

124. Who is second from the left in the photograph?

- A) Rony B) Monty
 C) Bin D) Sachin

Explanation (122 – 124) :



122. C) Rony is second from the right in the photograph.

123. B) Ram is in the middle of the photograph.

124. D) Sachin is second from the left in the photograph.

125. Answer the question based on the information given below :

If '+' is '×', '-' is '+', '×' is '÷' and '÷' is '-' then

$$9 \div 5 + 4 - 3 \times 2 = ?$$

- A) 2 B) - 9
 C) - 3 D) - 9.5

Explanation :

$+$ \Rightarrow \times	$-$ \Rightarrow $+$
\times \Rightarrow \div	\div \Rightarrow $-$

Ans: (D)

$$9 \div 5 + 4 - 3 \times 2 = ?$$

$$9 - 5 \times 4 + 3 \div 2 = ?$$

$$\Rightarrow 9 - 5 \times 4 + \frac{3}{2}$$

$$\Rightarrow 9 - 20 + \frac{3}{2}$$

$$\Rightarrow \frac{18 - 40 + 3}{2} = \frac{21 - 40}{2}$$

$$\Rightarrow \frac{-19}{2} = -9.5$$

126. Ram said, "This girl is the wife of the grandson of my mother".

Who is Ram to the girl?

- A) Husband
 B) Father
 C) Father-in-Law
 D) Grandfather

Explanation :

Ans: (C)

Grandson of Ram's mother is son of Ram. Hence Ram is father in-law of that girl.

127. Read the statements and select a Conclusion from the given alternatives.

Statements :

Sukhvinder emphasized the need to replace the present training programme by other methods which will bring out the real merit of the candidates.

Conclusions :

- I. It is bit important to bring out the real merit of the candidates.
 II. The present training programme does not bring out the real merit of the candidates.

Select the correct answer :

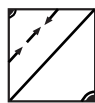
- A) Only Conclusion I follows
 B) Only Conclusion II follows
 C) Both I and II follow
 D) Neither I nor II follows.

Ans: (B)

SURA'S GENERAL INTELLIGENCE AND REASONING

128. Complete the figure X from the given alternatives 1, 2, 3 and 4 :

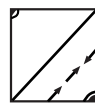
Figure X :



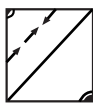
(1)
A) 1
C) 3



(2)



(3)
B) 2
D) 4

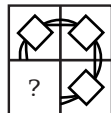


(4)

Ans: (D)

129. Complete the figure X from the given alternatives 1, 2, 4 and 4 :

Figure X:



(1)
A) 1
C) 3



(2)



(3)
B) 2
D) 4



(4)

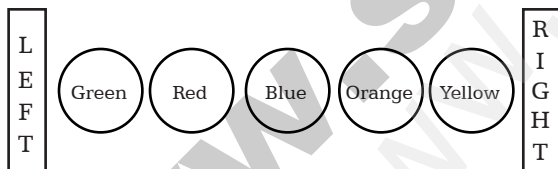
Ans: (B)

130. Five coloured balls are arranged in a row, Red ball is to the left of Blue ball and to the right of Green ball. Yellow ball is to the right of Blue ball. Orange ball is between Blue and Yellow balls, then which ball is to the left of Orange ball?

A) Red
B) Blue
C) Green
D) Yellow

Explanation :

Ans: (B)



131. Friends A, B, C, D, E, F and G are sitting on a bench in a row facing north to be photographed.

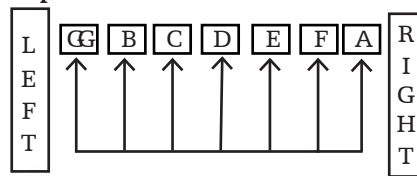
- F is to the immediate right of E.
- E is fourth to the right of G.
- C is an immediate neighbour of B and D.
- The one who is third to the left of D, is at an end.

Who is to the left of C?

A) G and B
B) Only B
C) D, E, F and A
D) G, B and C

Explanation :

Ans: (A)



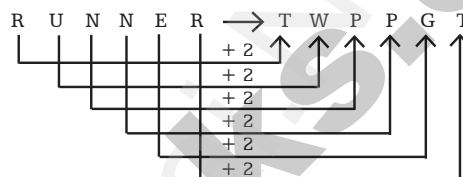
G and B are to the left of C.

132. In a certain code language, RUNNER is written as TWPPGT. How will MOUSE be written in that code language?

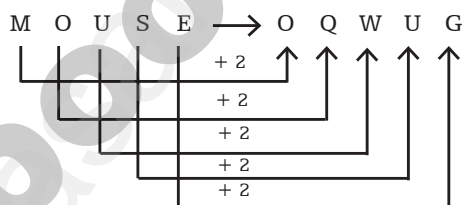
A) QOWUF
B) OUGQW
C) UGOQC
D) OQWUG

Explanation :

Ans: (D)



Similarly,

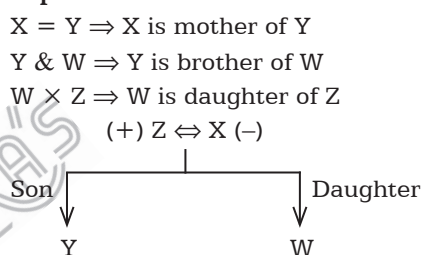


133. If 'Parul & Quilon' means Parul is brother of Quilon, 'Parul = Quilon' means Parul is mother of Quilon and 'Parul × Quilon' means Parul is daughter of Quilon, then who is father in 'X = Y & W × Z'?

A) Y
B) X
C) W
D) Z

Explanation :

Ans: (D)



Z is father of W.

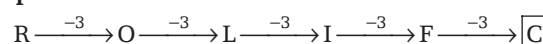
134. Complete the series :

R, O, L, I, F, ?

A) C
B) D
C) H
D) G

Explanation :

Ans: (A)



General Awareness / Knowledge

- ❖ General Science
- ❖ History
- ❖ Geography
- ❖ Polity
- ❖ Economics
- ❖ Science & Technology
- ❖ UNO, Other International & National Organisation
- ❖ Computer & IT
- ❖ Awards
- ❖ Sports
- ❖ Important Days
- ❖ Important Years Declared by the UNO
- ❖ Books and Authors

GENERAL SCIENCE

1. Who invented Helicopter ?

- A) Copernicus B) Sikorsky
C) Cockrell D) Drinker

Explanation :

Ans : (B)

Attempts to create helicopters can be traced back to Leonardo da Vinci, but the first working prototype helicopter, the VS-300, was invented by Igor Sikorsky in 1939. The next model he designed was the R-4 in 1942, which was the world's first mass produced helicopter.

2. The disease Beri Beri is caused due to the deficiency of which of the following ?

- A) Vitamin B2 B) Vitamin B1
C) Vitamin B12 D) Vitamin E

Explanation :

Ans : (B)

Beri Beri is a disease caused by a Vitamin B1 (thiamine) deficiency. There are two types of the disease: wet beri beri and dry beri beri. Wet beri beri affects the heart and circulatory system. In extreme cases, wet beri beri can cause heart failure. Dry beri beri damages the nerves and can lead to a loss of muscle strength and eventually, muscle paralysis.

3. Chlorophyll was first isolated and named by

- A) Caventou B) Pelletier
C) Chlorophyll D) Caventou and Pelletier

Explanation :

Ans : (D)

Chlorophyll was first isolated and named by Joseph Bienaime Caventou and Pierre Joseph Pelletier in 1817. It is a chemical found in the chloroplasts of plants that allows the plant to absorb light. Energy from the light is used in photosynthesis to make glucose.

4. Which of the following organisms does not fit into the Cell Theory ?

- A) Bacteria B) Virus
C) Fungi D) Plants

Explanation :

Ans : (B)

The Cell Theory states that all living things are made of cells, cells are the basic units of structure and function of living things, and that all cells come from other cells. Since viruses are not made of cells, and do not use cells in any of their processes, they are not related to the cell theory.

5. Which among the following is not a characteristic of transition metals ?

- A) Tendency to gain electrons
B) Low electronegativity
C) Low ionization energy
D) Malleability

Explanation :

Ans : (A)

The transition metals have a tendency to lose electrons. Since the electrons in the highest energy level are actually on a lower principal energy number than the ones before them, this makes it relatively easy to lose some or all of their electrons to land in stable state. When these metals form ions, the 4s electrons are always lost first; so, they form only cations (positive ions).

6. Ethylene is a molecule.

- A) polar B) ionic
C) covalent D) nonpolar

Explanation :

Ans : (D)

Ethylene (C_2H_4) is a non-polar molecule. This is because, unlike a polar molecule, it has an even distribution of electrical charges. Since, the double bond is between two carbon atoms, there is no difference in the electronegativity. This is why, the shared pair of electrons can lie in between those to carbon atoms. As a result, ethylene is a non-polar and linear molecule.

7. If water smells bad, then that odour can be removed by adding

- A) alum B) bleach
C) activated carbon D) deactivated nitrogen

Explanation :

Ans : (C)

Adding powdered activated carbon to water or using of granular activated carbon (GAC) in the water filter can remove bad taste and foul smell. Powdered activated carbon (PAC) is the preferred method when the taste and odour is moderate and infrequent. Activated carbon works by a phenomenon called "Adsorption", which is where the odour compound is trapped inside the activated carbon and retained, but the material doing the adsorption does not change size.

8. Acceleration is

- A) Inversely proportional to force
B) Inversely proportional to mass
C) Directly proportional to mass
D) Directly proportional to force

Explanation :

Ans : (D)

Acceleration, in physics, is the rate of change of velocity of an object with respect to time. An object's acceleration is the net result of any and all forces acting on the object, as described by Newton's Second Law. Newton's Second Law of motion states that acceleration is directly proportional to net force when mass is constant.

9. If ice floating on water in a vessel melts, the water level in the vessel

- A) increases
B) does not change
C) first increases before decreasing
D) decreases

Explanation :

Ans : (B)

When ice floating on water in a vessel melts, the water level in the vessel does not change. This is because when floating, the ice displaced and amount of water equal to its mass, and when melted, it becomes an amount of water equal to its mass. It is in accordance with Archimedes Principle, which states that the mass of the liquid displaced by a floating object is equivalent to the mass of the object.

10. Which is not a natural fibre ?

- A) Linen B) Silk
C) Jute D) Nylon

28. Tha Pallava dynasty had their capital at:

- A) Kancheepuram B) Thanjavur
C) Madurai D) Vengi

Explanation :

Ans : (A)

Kancheepuram was the capital of the Pallava dynasty, who ruled most of present day Tamil Nadu from the 4th to 9th centuries. AD. Huien Tsang visited this city and wrote about its glorious culture. The Pallavas were the first well-known dynasty in the history of South India after the fall of the Satavahanas.

29. Who convened the 'Congress of Vienna', 1815 ?

- A) Napoleon Bonaparte
B) Mussolini
C) Metternich
D) Bismarck

Explanation :

Ans : (C)

The Congress of Vienna was convened in 1815 by the four European powers which had defeated Napoleon. It was a meeting of ambassadors of European states chaired by Austrian statesman Klemens von Metternich, and held in Vienna from November 1814 to June 1815. Metternich convened the Congress to provide a long-term peace plan for Europe.

30. Stories of Buddha's birth and his previous lives are contained in:

- A) Tripitakas B) Triratnas
C) Panchatantra tales D) Jataka-tales

Explanation :

Ans : (D)

The Jataka-tales are a voluminous body of literature on the previous births of Gautama Buddha in both human and animal form. Part of the canon of sacred Buddhist literature, it consists of some 550 anecdotes and fables that depict earlier incarnations of the Buddha. Most of the Jataka tales date to the 4th century B.C.

31. The term Renaissance means:

- A) The Era of Religious Reforms
B) The Golden Age
C) The Dark Age
D) The Age of Reason, Enlightenment and Discoveries

Explanation :

Ans : (D)

Renaissance refers to the period in European Civilization immediately following the Middle Ages that was characterized by a surge of interest in classical learning and values. It led to enlightenment in knowledge and precipitated the 'Age of Reason' where logic and science was applied to test the validity of theory. The Renaissance also witnessed the discovery and exploration of new continents, the decline of the feudal system and the growth of commerce, and the invention of powerful innovations as paper, printing, the mariner's compass, and gunpowder.

32. Which of the following sultans adopted Persian customs and manners in court:

- A) Alauddin Khilji
B) Jalaluddin Khilji
C) Iltutmish
D) Balban

Explanation :

Ans : (D)

Balban was convinced that the glory of Kingship was possible only by following the Persian traditions and he very carefully followed these traditions in his personal and public life. He introduced in his court the Persian etiquette and adopted the Persian customs and manners. He did so in order to gain legitimacy for his rule.

33. In Akbar's regime, was the military head.

- A) Sultan Ahmed Fawad
B) Suri Moja
C) Mir Khaas
D) Mir Bakshi

Explanation :

Ans : (D)

During Akbar's period, the head of military was called the Mir Bakshi who was appointed from among the leading nobles of the court. He was in charge of intelligence gathering, and also made recommendations to the emperor for military appointments and promotions.

34. Who pioneered the guerrilla warfare methods ?

- A) Babur B) Akbar
C) Shivaji D) Bajirao Peshwa

Explanation :

Ans : (C)

Chatrapati Shivaji Maharaj is assumed to be first to use guerrilla warfare in India that included tactics like ambushes, sabotage, raids and hit-and-run. He started guerrilla warfare against the Mughals and other powers in 1645 leading to establishment of the Maratha state in 1674, sowing seeds of what would become the Maratha empire.

35. In which year East India Company was ceased to work and India was completely undertaken by British Government ?

- A) 1838 B) 1919
C) 1858 D) 1898

Explanation :

Ans : (C)

The rule of East India Company (EIC) in India began in 1757 and lasted until 1858, following the Indian Rebellion of 1857, the Government of India Act 1858 led to the British Crown's assuming direct control of India. Under the Government of India Act 1858, the Crown took over its Indian possessions, administrative powers, and its armed forces.

36. At which location, a sculptor of chariot of Harappan time was found ?

- A) Lothal B) Banawali
C) Daimabad D) Kalibangan

Explanation :

Ans : (C)

Daimabad in Ahmednagar district of Maharashtra has a sculpture of a chariot belonging to the Harappan time. The chariot is 45 cm long and 16 cm wide, yoked to two oxen, driven by a man 16 cm high standing on it. The site is famous for the recovery of many bronze goods influenced by the Harappan culture.

37. First Satyagrah started from Champaran for opposing the cultivation of

- A) Cotton B) Indigo
C) Silk D) Kesar

Explanation :
Gandhi started The Champaran Satyagrah in 1917 to better the lot of Indigo planters. The movement revolved around the peasants (Bhumihars) of the Champaran and other areas of North Bihar who had to grow Indigo under the Tinkathia system. Champaran was the first of three movements during 1917-18 that marked the entry of Gandhi in Indian politics.

38. Who was the founder of 'Vikramshila University' ?

- A) Vijay sen B) Atisa
C) Dharampal D) Ballal Sen

Explanation :
The Vikramshila University was established by Pala ruler Dharampal (783 to 820) near Bhagalpur in Bihar as a seat of learning. It was one of the two most important centres of Buddhist learning during the Pala Empire, along with Nalanda University. It lasted four centuries before being destroyed during an attack by Bakhtiyar Khilji of the Delhi Sultanate.

39. When India got Independence, who was the Prime Minister of England ?

- A) William Bentick
B) Warren Hasting
C) Margaret Thatcher
D) Clement Atlee

Explanation :
Clement Atlee was the Prime Minister of England during 26 July, 1945-26 October, 1951 when India attained independence. He supervised the process by which India was partitioned into India and Pakistan in 1947. He also arranged the independence of Burma (Myanmar,) and Ceylon (Sri Lanka)

40. Which among the following was one of the discoverers of Indus Valley Civilization ?

- A) Lord Wooley
B) Daya Ram Sahni
C) V.S. Agarwal
D) A.L. Basham

Explanation :
Daya Ram Sahni was an Indian archaeologist who supervised the excavation of the Indus Valley site at Harappa in 1921-22. A protege of John Marshall, Sahni became the first Indian to be appointed Director-General of the Archaeological Survey of India (ASI) in 1931, a position he held till 1935.

41. When was Delhi declared as the capital of India ?

- A) 1901 B) 1911
C) 1913 D) 1921

Explanation :
In 1911, it was announced that the capital of British held territories in India was to be transferred from Calcutta to Delhi. The name "New Delhi" was given in 1927, and the new capital was inaugurated on 13 February, 1931.

42. Magical charms and spells are given in which of the following Vedas ?

- A) Rig Veda B) Sama Veda
C) Yajurveda Veda D) Atharva Veda

Explanation :
The Atharva Veda, also known as "Veda of magical formulas", consists of rituals, magical charms to address superstitious anxiety, spells to remove maladies believed to be caused by demons, and herbs and nature-derived potions as medicine. It represents a developing 2nd millennium BCE tradition of magico-religious rites.

43. In Indus Valley Civilization, Dholavira is famous for which of the following ?

- A) Rock cut architecture
B) Sea port
C) Water Conservation
D) Pottery

Explanation :
The Indus site of Dholavira is notable for its futuristic water-harvesting techniques. It has given ample evidence of rainwater harvesting network, a system of tanks and ponds that supplied water and even a sewage system way advanced for its times. Water conservation of Dholavira speaks volume about their advanced hydraulic engineering.

44. Who was the founder of Arya Samaj ?

- A) Mula Shankar
B) Bal Gangadhar Tilak
C) Swami Dayanand Saraswati
D) Rabindra Nath Tagore

Explanation :
The Arya Samaj was founded by Dayanand Saraswati in Bombay on 7 April, 1875. Dayanand was a Hindu religious leader and a renowned scholar of the Vedic lore and Sanskrit language. He was the first to give the call for Swaraj as "India for Indians" in 1876, a call later taken up by Lokmanya Tilak.

45. The famous 'Hawa Mahal' is in which city of Rajasthan ?

- A) Ajmer B) Jodhpur
C) Jaipur D) Kota

Explanation :
Hawa Mahal is a palace in Jaipur, Rajasthan. It is so named because it was essentially a high screen wall built so the women of the royal household could observe street festivals while unseen from the outside. The structure was built in 1799 by Maharaja Sawai Pratap Singh

46. Where is Pushkar Fair held ?

- A) Bihar
B) Uttar Pradesh
C) Madhya Pradesh
D) Rajasthan

Explanation :
The Pushkar Fair is an annual five-day camel and livestock fair held in the town of Pushkar in Rajasthan. It is one of the world's largest camel fairs that is held on the banks of the Pushkar lake. It is celebrated for five days from the Kartik ekadashi to Kartik Poornima, the full moon day of Kartik in Hindu calendar.

47. Who was the last Mughal emperor ?

- A) Babar B) Noor Jehan
C) Akbar D) Bahadur shah II

consumers and various forms of market participants with business. Companies normally avoid ethics for the sake of business enhancement and profit making.

11. Select the correct option about Corporate Social Responsibility (CSR)

- I. It is important for a company to maintain a strong competitive position.
It is an economic component.
- II. It is important for a company to perform in a manner consistent with expectations of Government and Law.

Select the correct answer :

- A) Both I and II correct B) Both I and II incorrect
C) II only correct D) I only correct

Explanation :

Ans : (A)

According to Carroll, CSR is a multi-layer concept consisting of four inter-related aspects of responsibilities, namely economic, legal, ethical, and philanthropic. Economic components of corporate social responsibility includes:

- ◆ It is important to perform in a manner consistent with maximizing earnings per share.
- ◆ It is important to be committed to being as profitable as possible.
- ◆ It is important to maintain a strong competitive position.
- ◆ It is important to maintain a high level of operating efficiency. The legal responsibility of business corporations demands that business abide by the law of land and play by the rule of the game. Abiding by laws is the prerequisite for any corporation to be socially responsible. In other words, legal responsibility is about maximizing one's profit while obeying the rules and regulations that is set by the government.

12. Match the characteristics with their market structure:

- a) MC=Price
b) Firm will tend to set output so that it earns maximum profits.

Codes :

- | a) | b) |
|---------------------|--------------------------|
| A) Pure Competition | Pure Monopoly |
| B) Pure Monopoly | Monopolistic Competition |
| C) Oligopoly | Monopolistic Competition |
| D) Pure Competition | Oligopoly |

Explanation :

Ans : (A)

Equilibrium exists when the D and S functions are equal, i.e. D = S

According to the question,

$$80200 - 13P = 6200 + 12P \text{ Or, } 7400 = 25P$$

$$\text{So, } P = ₹ 2,960$$

Putting the value of P in any of the demand or supply values,

$$\text{we get } 80200 - (13 \times 2960) = 80200 - 38480 = 41720 \text{ units.}$$

13. Balance of Trade is the difference between

- A) Country's Income and Expense
B) Country's Exports and Imports
C) Country's Tax Revenue and Expense
D) Country's capital inflow and outflow

Explanation :

Ans : (B)

Balance of Trade (BOT) is the difference between a country's imports and its exports for a given time period. It is the largest component of the country's balance of payments. If a country's exports are of greater value than it imports, it is called a trade surplus, and conversely, if a country imports are of greater value than its exports, it is called a trade deficit or "trade gap".

14. An economy in which there are no flows of labour, goods or money to and from other nations is a/an

- A) slow economy B) mixed economy
C) closed economy D) open economy

Explanation :

Ans : (C)

An economy that does not interact with the economy of any other country is known as closed economy. A closed economy is self-sufficient, meaning no imports are brought in and no exports are sent out. It is the opposite of an open economy, in which a country conducts trade with outside regions.

15. Elasticity of demand is the degree of responsiveness of demand of a commodity to a

- A) change in consumers' wealth
B) change in the price of substitutes
C) change in consumers' tastes
D) change in its price

Explanation :

Ans : (D)

The elasticity of demand, also known as price elasticity of demand, is the degree of responsiveness of demand to change in price. Its measure depends upon comparing the percentage change in the price with the resultant percentage change in the quantity demanded. Thus, elasticity of demand is the ratio of percentage change in amount demanded to a percentage change in price.

16. The price of a commodity is the same as

- A) Average revenue B) Total cost
C) Average cost D) Total revenue

Explanation :

Ans : (A)

Average Revenue refers to revenue received per unit of output sold. It is the same as Price of the commodity. Average revenue can be obtained by dividing the total revenue by the number of units sold, Thus, Average Revenue (AR) = Total Revenue (TR)/Quantity sold (Q) When we take the case of a single commodity, $TR = P \times Q$

$$\text{So, } AR = \frac{P \times Q}{Q} = P, \text{ where } P = \text{Price of the commodity.}$$

17. Which one of the following is not a feature of monopoly ?

- A) Single seller of the product
B) Heavy selling costs
C) Barriers to entry of new firms
D) Price discriminations

Explanation :

Ans : (B)

Heavy selling costs is one of the defining features of an oligopoly. Firms resort to heavy selling cost to attract customers. Under this market form, the firms have to compete to promote their sale by largely homogeneous

products, differentiated mainly by heavy advertising and promotional expenditure that ultimately adds to the total selling cost.

18. The supply of labour in the market depends on

- A) The proportion of the population in the labour force
- B) the number of person hours put in by each person
- C) the size of population
- D) All the above.

Explanation :

Ans : (D)

Supply of labour in an economy depends upon both economic as well as non-economic factors. It depends upon the size of population, the number of workers available for work, out of a given population, the number of hours worked, the intensity of work, the skills of workers their willingness to work and the mobility of labour.

19. Over the years, birth rate in India has and death rate has

- A) risen, fallen
- B) risen, risen
- C) fallen, risen
- D) fallen, fallen

Explanation :

Ans : (D)

Both birth rate and death rate show a falling trend in India. Recent data shows that birth rate has gradually decreased in the past decade except during the years 2005 and 2007. Death rate has also fallen consistently due to drastic improvement in provision and access to better health services and living conditions. India is, at present, in late third stage of demographic transition that is marked by declining birth rate and low death rate.

20. Which one of the following has not been launched during the tenure of the NDA Government at the Centre ?

- A) Pradhan Mantri Jan Dhan Yojana
- B) MGNREGA Programme
- C) Swachh Bharat Abhiyan
- D) Ujjwala Yojana

Explanation :

Ans : (B)

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a labour law and social security measure that was enacted as National Rural Employment Guarantee Act on 25 August 2005. It was launched by Prime Minister Manmohan Singh on 2 February 2006. It is the largest and most ambitious social security and public works Programme in the world.

21. Which one of the following organisations is a financial institution ?

- A) KVIC
- B) IFCO
- C) SEBI
- D) ICICI

Explanation :

Ans : (D)

ICICI (Industrial Credit and Investment Corporation of India) Bank is an Indian multinational banking and financial services company headquartered in Mumbai, Maharashtra. It is the largest private sector bank and overall the second largest bank in India after State Bank of India

22. What was the period of 5th Five Year Plan in India ?

- A) 1974 to 1979
- B) 1969 to 1974
- C) 1985 to 1990
- D) 1980 to 1985

Explanation :

Ans : (A)

The duration of the Fifth Five-Year Plan was 1974-79. It laid stress on employment, poverty alleviation (Garibi Hatao), and justice. The plan also focused on self-reliance in agricultural production and defence.

23. Who proposed Gandhian Plan (Economic policy) in 1944 ?

- A) Mannarayan
- B) M.N. Roy
- C) Jaiprakash
- D) Amartya sen

Explanation :

Ans : (A)

In 1944, the Gandhian Plan was put forward by Shriman Narayan Aggarwal who was principal of Wardha Commercial College. Its basic elements followed the Gandhian principle and was a modest kind of plan. It is known as Gandhian Plan, as it was based upon Gandhian philosophy

24. If initiatives have been taken for environment-efficiency and recycle and reuse of materials in a corporation, then under which kind of responsibility does it come ?

- A) Financial responsibility
- B) Environmental responsibility
- C) Economic and social responsibility
- D) Social responsibility

Explanation :

Ans : (B)

Environmental responsibility refers to an organization/company's duties to abstain from damaging natural environments in which it operates. It includes covering the implications of the operations for the environment; adopting recycle and reuse policy to reduce and eliminate waste; maximizing the efficiency and productivity of resources and minimizing activities that influence the enjoyment of the resources by future generations.

25. Suppose the equilibrium price for sugar is ₹ 50/kg. If the government sets a price floor of ₹ 70/kg then

- A) quantity of sugar demanded will be greater than the quantity demanded at equilibrium price
- B) there will be a shortage of sugar in the market
- C) there will be a surplus of sugar in the market
- D) quantity of sugar supplied will be less than what was supplied at the equilibrium price

Explanation :

Ans : (C)

The equilibrium price is the market price where the quantity of goods supplied is equal to the quantity of goods demanded. This is the point at which the demand and supply curves in the market intersect. If a price floor is set above the free-market equilibrium price (as shown where the supply and demand curves intersect), the result will be surplus of the goods in the market. A price floor will also lead to a more inefficient market and a decreased total economic surplus.

26. Area which supports the economy and export trade of a seaport is called its :

- A) export basin
- B) hinterland
- C) economic zone
- D) umland

Explanation :

The World Trade Organization (WTO) is an organization that intends to supervise and liberalize international trade. The organization officially commenced on January 1, 1995 under the Marrakesh Agreement, replacing the General Agreement on Tariffs and Trade (GATT), which commenced in 1948.

9. Who were made the permanent members of the U.N. Security- Council ?

- A) One representative from each continent
- B) Five major powers of the Allied Forces in the Second World War
- C) Five members elected by the U.N. General Assembly at the initial Constitution
- D) Funding members of the U.N.

Explanation :

The permanent members of the United Nations Security Council, also known as the Permanent Five, Big Five, or P5, include the following five governments: China, France, Russia, the United Kingdom, and the United States. They are also the only countries officially recognized as "nuclear-weapon states" under the Nuclear Non-Proliferation Treaty (NPT).

10. According to the UN Convention on the Rights of the Child which of the following is not a right?

- A) Safe drinking water
- B) Adequate standard of living
- C) Employment
- D) Protection from exploitation

Explanation :

The United Nations Convention on the Rights of the Child (UNCRC) is a human rights treaty setting out the civil, political, economic, social, health and cultural rights of children. The UN General Assembly adopted the Convention and opened it for signature on 20 November, 1989 (the 30th anniversary of its Declaration of the Rights of the Child). It came into force on 2 September, 1990. The Convention deals with the child-specific needs and rights.

11. Special Drawing Rights (SDR) facility is available at

- A) International Monetary Fund (IMF)
- B) World Bank (IBRD)
- C) International Development Association (IDA)
- D) Organisation of Economic Cooperation and Development (OECD)

Explanation :**Special Drawing Rights (SDRs)**

♦ The IMF has succeeded in establishing a scheme of Special Drawing Rights (SDRs) which is otherwise called 'Paper Gold'. They are form of international reserves created by the IMF in 1969 to solve the problem of international liquidity. They are allocated to the IMF members in proportion to their Fund quotas. SDRs are used as a means of payment by Fund members to meet balance of payments deficits and their total reserve position with the Fund.

Ans. (C)

Thus SDRs act both as an international unit of account and a means of payment. All transactions by the Fund in the form of loans and their repayments, its liquid reserves, its capital, etc., are expressed in the SDR.

♦ The achievements of the fund can be summed up in the words of Haien that 'Fund is like an International Reserve Bank.'

12. The headquarters of UNESCO is in

- A) New York
- B) The Hague
- C) Paris
- D) Moscow

Explanation :

The United Nations Educational, Scientific and Cultural Organization is a specialized agency of the United Nations (UN). Its purpose is to contribute peace and security by promoting international collaboration through education, science, and culture in order to further universal respect for justice, the rule of law, and human rights along with fundamental freedom proclaimed in the UN Charter. The headquarters of UNESCO is in Paris.

13. The UN Secretary-General holds office for a period of

- A) 3 years
- B) 4 years
- C) 5 years
- D) 6 years

Explanation :

The Secretary-General of the United Nations is the head of the United Nations Secretariat, one of the principal organs of the United Nations. The Secretary-General also acts as the de facto spokesperson and leader of the United Nations. The United Nations Charter provides for the Secretary-General to be appointed by the General Assembly upon the recommendation of the Security Council.

14. In which year did the UN General-Assembly adopt the Universal Declaration of Human Rights?

- A) 1945
- B) 1948
- C) 1952
- D) 1955

Explanation :

The text was drafted in 1947, when the Commission on Human Rights first met to prepare an International Bill of Human Rights, and December 1948, when the General Assembly adopted the Universal Declaration. The Universal Declaration of Human Rights, though not legally binding, was adopted by the General Assembly in 1948 as a common standard of achievement for all. The Assembly regularly takes up human rights issues.

15. Which of the following is not associated with the UN organisation ?

- A) ILO
- B) WHO
- C) FAO
- D) ASEAN

Explanation :**Association of South East Asian Nations (ASEAN)**

ASEAN was established on 8 August 1967 in Bangkok by the five original member countries: Indonesia, Malaysia, Philippines, Singapore and Thailand. Later Brunei Darussalam, Vietnam, Laos and Myanmar and Cambodia joined. Besides ten members of the ASEAN, there are six

Ans. (D)

"dialogue partners" which have been participating in its deliberations. They are China, Japan, India, South Korea, New Zealand and Australia.

16. The International Criminal Police Organisation (INTERPOL) has its headquarters at

- A) London B) Paris
C) Bonn D) Montreal

Explanation :

Ans. (B)

The International Criminal Police Organization (ICPO), widely known as INTERPOL, is an intergovernmental organization facilitating international police cooperation. It was established as the International Criminal Police Commission (ICPC) in 1923 and adopted its telegraphic address as its common name in 1956. Its headquarters is located in Lyon, Paris.

17. Once elected for a full term, a judge serves on the International Court of Justice for

- A) five years B) six years
C) nine years D) ten years

Explanation :

Ans. (C)

The International Court of Justice is the primary judicial organ of the United Nations. It is based in the Peace Palace in The Hague, the Netherlands. The ICJ is composed of fifteen judges elected to nine year terms by the UN General Assembly and the UN Security Council from a list of persons nominated by the national groups in the Permanent Court of Arbitration.

18. The UN flag was adopted by the General Assembly on

- A) October 20, 1947 B) January 1, 1952
C) June 24, 1973 D) August 15, 1982

Explanation :

Ans. (A)

The flag of the United Nations was adopted on October 20, 1947, and consists of the official emblem of the United Nations in white on a blue background.

19. Where is headquarters of European Union located ?

- A) London B) Paris
C) Brussels D) Bonn

Explanation :

Ans. (C)

The European Union (EU) is an economic and political union of 27 member states which are located primarily in Europe. Important institutions of the EU include the European Commission, the Council of the European Union, the European Council, the Court of Justice of the European Union, and the European Central Bank. The European Parliament is elected every five years by EU citizens.

20. IMF was established to meet which of the following objectives?

- 1) Promoting International Monetary Cooperation
- 2) Expanding International trade
- 3) Lessening the disequilibrium in balance of trade
- 4) Avoiding competitive exchange depreciations

Select the correct answer :

- A) (1), (2) and (3) B) (1), (3) and (4)
C) (2) and (4) D) (1), (2), (3) and (4)

Explanation :

Ans. A)

International Monetary Fund

- ♦ The purpose of International Monetary Fund is to secure and promote economic and financial cooperation among member countries.
- ♦ The IMF was established to assist the member nations to tide over the Balance of Payments disequilibrium in the short term. At present, the IMF has 189 member countries with Republic of Nauru joined in 2016.

21. The International Court of Justice sits in

- A) Geneva B) Hague
C) Vienna D) Rome

Explanation :

Ans. (B)

The International Court of Justice (commonly referred to as the World Court or ICJ) is the primary judicial organ of the United Nations. It is based in the Peace Palace in The Hague, the Netherlands.

22. Which institution is known as 'soft loan window' of the World Bank ?

- A) International Finance Corporation
B) International Development Agency
C) International Monetary Fund
D) Indian Development Forum

Explanation :

Ans. (B)

The IDA lends to countries with the aim to finance projects that will develop infrastructure and improve education, healthcare, access to clean water and sanitation facilities, and environmental responsibility. It is considered to be the soft lending window of the World Bank, while the IBRD is considered to be the hard lending window.

23. The headquarters of World Health Organisation (WHO) is at

- A) London B) Geneva
C) Paris D) Washington

Explanation :

Ans. (B)

The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that is concerned with international public health. It was established on 7 April 1948, with headquarters in Geneva, Switzerland, and is a member of the United Nations Development Group.

24. Which one country is not a permanent member of the Security Council of the United Nations ?

- A) France
B) Germany
C) Russia
D) United States of America

Explanation :

Ans. (B)

The Security Council is made up of 15 member states, consisting of 5 permanent members—China, France, Russia, the United Kingdom and the United States—and 10 non-permanent members, currently (2022) Albania, India, Brazil, Gabon, Ghana, Ireland, Kenya, Mexico, Norway, and UAE.

It has six official languages: Arabic, Chinese, English, French, Russian, and Spanish.

BOOKS	AUTHORS	BOOKS	AUTHORS
One World to Share	Sridath Ramphal	Rang-e-Shairi	Raghupati Sahai 'Firaq' Gorakhpuri
Operation Bluestar-the True Story	Lt-Gen K S Brar	Ratnavali	Harsha Vardhan
Our Films, Their Films	Satyajit Ray	Ravi Paar (Across the Ravi)	Gulzar
Our India	Minoo Masani	Rediscovering Gandhi	Yogesh Chadha
Out of Dust	F D Karaka	Reminiscences of the Nehru Age	M O Mathai
Padmavati	Malik Mohammed Jayasi	Return of the Aryans	Bhagwan S Gidwani
Painter of Signs	R K Narayan	Returning to the Source	Acharya Rajneesh
Pakistan in the 20 th Century	Lawrence Ziring	Revenue Stamp	Amrita Pritam
Pakistan Papers	Mani Shankar Aiyer	Rich Like Us	Nayantara Sehgal
Panchagram	Tarashankar Bandopadhyaya	Ritu Ka Pehla Phool	Vijendra
Panchtantra	Vishnu Sharma	Ritu Samhara	Kalidas
Pakistan Cut to Size	D R Mankekar	River Sutra	Gita Mehta
Passage to England	Nirad C. Chaudhuri	Road to Freedom	K K Khullar
Past Forward	G R Narayanan	Rukh Te Rishi	Harbhajan Singh
Pather Panchali	Bibhuti Bhushan Bandyopadhyaya	Sader-i-Riyasat	Karan Singh
Pinjar	Amrita Pritam	Sardar Patel and Indian Muslims	Rafiq Zakaria
Plans for Departure	Nayantara Sehgal	Sakharam Binder	Vijay Tendulkar
Portrait of India	Ved Mehta	Saket	Maithili Sharan Gupta
Post Office	Rabindranath Tagore	Satyartha Prakash	Swami Dayanand
Prathama Pratishruti	Ashapura Devi	Satanic Verses	Salman Rushdie
Prem Pachisi	Prem Chand	Savitri	Aurobindo Ghosh
Premonitions	P N Haksar	Sceptred Flute	Sarojini Naidu
Price of Partition	Rafiq Zakaria	Scholar Extraordinary	Nirad C Chaudhuri
Prison and Chocolate Cake	Nayantara Sehgal	Scope of Happiness	Vijayalakshmi Pandit
Prison Diary	Jayaprakash Narayan	Search for Home	Sasthi Brata
Prisoner's Scrapbook	L K Advani	Sense of Time	S H Vatsyayan
Prithviraj Raso	Chand Bardai	Seven Summers	Mulk Raj Anand
Profiles & Letters	K Natwar Singh	Tamas	Bhisham Sahni
Punjab, The Knights of Falsehood	K P S Gill	Tarkash	Javed Akhtar
Quest for Conscience	Madhu Dandavate	Tehriq-e-Mujahideen	Dr Sadiq Hussain
Radharani	Bankim Chandra Chatterjee	The Assassination	K Mohandas
Raghuvamsa	Kalidas	The Betrayal of East Pakistan	Lt Gen A A K
Rajtarangini	Kalhana	The Calcutta Chromosome	Amitav Ghosh
Ram Charit Manas	Tulsidas	The Career & Legend of Vasco de Gama	Sanjay Subramanyam
Ramayana	Maharishi Valmiki (in Sanskrit)	The Chinese Betrayal	B N Mullick
Ramayana Dharshanam	K V Puttappa	The Congress Splits	R P Rao
Rangbhoomi	Prem Chand	The Defeat or Distant Drumbeats	Bhaskar Roy

BOOKS	AUTHORS
Unhappy India	Lala Lajpat Rai
Until Darkness	Parvin Ghaffari
Utouchable	Mulk Raj Anand
Urvashi	Ramdhari Singh 'Dinkar'
Uttar Ramcharita	Bhava Bhuti
Untold Story	Gen B M Kaul
Vanity Fair	Thackeray
Vendor of Sweets	R K Narayan
Venisamhara	Narayana Bhatt
Village by the Sea	Anita Desai
Village	Mulk Raj Anand
Vinay Patrika	Tulsidas
Virangana	Maithili Sharan Gupta
Vish Vriksha	Bankim Chandra Chatterjee
Voice of Conscience	V V Giri
Voice of Freedom	Nayantara Sehgal
Waiting for the Mahatma	R K Narayan
Walls of Glass	K A Abbas
War and No Peace Over Kashmir	Maroof Raza
War of Indian Independence	Vir Savarkar
We, Indians	Khushwant Singh
We, the People	N A Palkhivala
Widening Divide	Rafiq Zakaria
Wings of fire, an Autobiography	Dr A P J Abdul Kalam & A. Tiwari
Witness to History	Prem Bhatia
Without Fear or Favour	Neelam Sanjiva Reddy
Women and Men in My Life	Khushwant Singh
Worshipping False Gods	Arun Shourie
Wreck	Rabindra Nath Tagore
Yajnaseni	Dr Pratibha Roy
Yama	Mahadevi Verma
Yashodhara	Maithili Sharan Gupta
Yayati	V S Khandekar
Year of the Vulture	Amita Malik
Years of Pilgrimage	Dr Raja Ramanna
Yesterday and Today	K P S Menon

BOOKS	AUTHORS
Zulfikar Ali Bhutto & Pakistan	Rafi Raza
From dependence to Self Reliance : Mapping India's Rise as a Global Superpower	Economist Dr Bimal Jalan
'A confused Mind story' Indian Revenue Service (IRS) Joint Commissioner GST	Mr. Sahil Seth
MBBS Course books in Hindi version	Launched by Home Minister Amit Shah
'Pandemic Disruptions and Odisha's Lessons in Governance'	Dr Amar Patnaik
"The Philosophy of Modern Song"	Bob Dylan
Ambedkar and Modi: Reformer's Ideas Performer's Implementation	Released by Former President Ram Nath Kovind and compiled by Bluekraft Digital Foundation.
"Rajini's Mantras: Life lessons from India's most-loved Superstar"	P.C. Balasubramanian
"Will Power: The Inside Story of the Incredible Turnaround in Indian Women's Hockey"	Sjoerd Marijne
Science Behind Surya Namaskar	Dr Kalubhai
The Hero of Tiger Hill	Subedar Major Yadav
Indian Banking in Retrospect - 75 years of Independence	Dr Ashutosh Raravikar
India's Economy From Nehru to Modi	Pulapre Balakrishnan
Rusty Skies and Golden Winds'	Sannidhya Sharma
Lion of the Skies	Stephen Barker
Dangerous Earth	Marine biologist Ellen Prager
Lockdown Lyrics	Sanjukta Dash
Dilip Kumar : In the Shadow of a Legend	Faisal Farooqui
Beyond the Misty Veil	Ms Aradhana Johri (Senior IAS)
The India Story	Bimal Jala
Ashtang Yoga	Dr Sonu Phogat



ENGLISH LANGUAGE

1. English Grammar (Descriptive)
2. Spot the error
3. Fill in the blanks
4. Synonyms & Antonyms
5. Misspelled words
6. Idioms & Phrases
7. One word substitution
8. Improvement of sentences
9. Active / Passive voice
10. Conversion of direct / indirect speech
11. Shuffling of sentences in a passage
12. Cloze Test
13. Comprehension
14. Miscellaneous

ENGLISH GRAMMAR (DESCRIPTIVE)

SINGULAR & PLURAL FORMS

I. Simple rules for plurals

a) add '-s' words ending in consonants boy - boys desk - desks book - books cow - cows	b) add '-es' words ending in -s, -sh, -ch, -x class - classes brush - brushes tax - taxes dish - dishes	c) add '-es' words ending in vowels buffalo - buffaloes negro - negroes hero - heroes echo - echoes
d) add '-s' words ending in vowels - exceptions dynamo - dynamos piano - pianos kilo - kilos ratio - ratios	e) Change 'y' into 'ies' baby - babies army - armies city - cities story - stories	f) Change of inside vowel man - men woman - women mouse - mice goose - geese tooth - teeth

II. Other Plurals :

1. No Change : apparatus / apparatuses chassis, poultry, cattle headquarters, people, shorts aircraft, trousers, jeans	2. sis - ses, xis - xes analysis - analyses basis - bases; crisis - crises diagnosis - diagnoses; thesis - theses synopsis - synopses hypothesis - hypotheses axis - axes	3. us - i fungus - fungi stimulus - stimuli radius - radii alumnus - alumni cactus - cacti / cactuses terminus - termini / terminuses syllabus - syllabi
4. on - a criterion - criteria phenomenon - phenomena memorandum - memoranda	5. lum - la, tum - ta curriculum - curricula; erratum - errata	6. us - ora, era corpus - corpora; genus - genera
7. eau - eaux beau - beaux; bureau - bureaux / bureaus	8. la - lae, bra - brae formula - formulae vertebra - vertebrae	9. ex - ices / exes apex - apices / apexes index - indices / indexes
10. ix - ices / ixes appendix - appendices / appendixes	11. cus - ci focus - foci / focuses	12. Nouns take 's' commander-in-chief : commanders-in-chief son-in-law : Sons-in-law on-looker : on-lookers step-son : step - sons maid-servant : maid-servants passer-by : passers-by man servant : men servants
13. chief - chiefs gulf - gulfs proof - proofs handkerchief - handkerchiefs	14. dwarf - dwarfs, dwarves hoof - hoofs, hooves scarf - scarfs, scarves	
	15. ox - oxen child - children	

Singular	Plural
aircraft	aircraft
analysis	analyses
baby	babies
boat	boats
box	boxes
bus	buses

Singular	Plural
cactus	cacti
cat	cats
child	children
city	cities
crisis	crises
criterion	criteria

<p>Explanation : At is used to show place.</p> <p>17. 'The burglar said, "Your life your gold. You decide". Use the right conjunction. A) who B) or C) because D) except</p> <p>Explanation : Alternative is evident</p> <p>18. Find a better equivalent for 'lively child' from the given words' A) active B) cheerful C) sad D) pessimistic</p> <p>Explanation : Lively = active</p> <p>19. The youth in our country is vibrant. 'The youth' in the sentence is a noun. A) Abstract B) Collective C) Common D) Uncountable</p> <p>Explanation : The youth ⇒ young people</p> <p>20. She sat her desk all the evening writing the letter. Complete the sentence. A) under B) on C) at D) above</p> <p>Explanation : At is used to say where somebody/something is.</p> <p>21. Fill in the blank using the right article. There is a concert of choir music at university to-night. A) no article can be used here B) a C) the D) an</p> <p>Explanation : Place is definite</p> <p>22. A. I am going for the cinema B. Are you ? I thought Complete the dialogue. A) you were going for the cinema B) you are going for the cinema C) you were not going for the cinema D) you are not going for the cinema</p> <p>Explanation : Question tag (are you?) is affirmative. Therefore, main sentence will be in negative.</p> <p>23. 'The river in the morning was pleasantly cool'. Identify the adverb in the sentence. A) cool B) pleasantly C) morning D) river</p> <p>Explanation : Pleasantly modifies adjective cool</p> <p>24. What are you talking about ? Identify the preposition in the sentence. A) about B) what C) talking D) you</p>	<p>Explanation : About is used to show connection About = on the subject of something</p> <p>25. The mob was very much agitated. What type of noun is used in the sentence A) Proper noun B) Pronoun C) Collective D) Abstract</p> <p>Explanation : Mob ⇒ group of agitators/people</p> <p>26. She cut the ribbon with a knife. Identify the preposition in the sentence. A) the B) with C) a D) she</p> <p>Explanation : With ⇒ using something</p> <p>27. The bananas are almost ripe to be eaten. Identify the adverb in the sentence. A) eaten B) ripe C) bananas D) almost</p> <p>Explanation : Almost modifies adjective ripe</p> <p>28. The army fought bravely in the war. Identify the adverb in the sentence. A) bravely B) army C) war D) fought</p> <p>Explanation : Bravely modifies verb fought</p> <p>29. The invitation came at an early date. 'at' refers to : A) place B) time C) manner D) measure</p> <p>Explanation : Here, at refers to time</p> <p>30. Fill with the right preposition. "The bull was hit the whip" A) using B) by C) with D) at</p> <p>Explanation : Appropriate preposition will be 'with'</p> <p>31. 'It was you who sang'. 'it' is a A) Adverb B) Verb C) Pronoun D) Noun</p> <p>Explanation : It comes for a noun. It is a pronoun</p> <p>32. Identify the phrasal preposition in the sentence. "By virtue of her being the minister, she hoisted the flag" A) By virtue B) Being C) Virtue D) By virtue of</p> <p>Explanation : By virtue of = because or as a result of; on account of.</p> <p>33. Fill in the blank using the right pronoun. 'The students enjoyed' A) herself B) themselves C) ourselves D) himself</p>
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Explanation :**Ans : (B)**

Students ⇒ Plural. Its pronoun should be they/ them/ themselves. Its reflexive pronoun is themselves

34. 'My daughter follows me wherever I go'.

What type of adverb has been used in the sentence?

- A) Manner B) Time
C) Frequency D) Place

Explanation :**Ans : (A)**

Adverb of manner is used to tell us the way or how something is done.

35. Which is the correct spelling of the adjective 'angry' when it becomes an adverb ?

- A) angrier B) angry
C) angrily D) angriest

Ans : (C)

36. The plural of "ox" is

- A) Oxes B) Oxen
C) Oxies D) Ox

Ans : (B)

37. Name of the kind of gender of "Doctor"

- A) Masculine gender
B) Feminine gender
C) Neuter gender
D) Common gender

Explanation :**Ans : (D)**

A noun that denotes either a male or a female is called common gender

38. An action undertaken long before and which is still going on is said to be of tense.

- A) Present indefinite
B) Present perfect
C) Past continuous
D) Present perfect continuous

Ans : (D)

39. Past participle of "Sow" is

- A) Sew B) Sown
C) Sowed D) Sewn

Explanation :**Ans : (B)**

Sow ⇒ Sowed ⇒ Sown (past participle)

The fields around had been sown with wheat.

Fill in the blank with the most appropriate preposition given below :

40. The young seagull was alone his ledge.

- A) on B) to
C) up D) but

Ans : (A)

41. His two brothers and his sister had already flown away the day

- A) about B) before
C) without D) over

Ans : (B)

42. He had been afraid to fly them.

- A) but B) next
C) during D) with

Ans : (D)

43. He was near the sea now, flying straightit, facing out over the ocean.

- A) over B) out
C) during D) but

Ans : (A)

44. He saw a vast green sea beneath him, little ridges moving over it.

- A) with B) over
C) during D) but

Ans : (A)

45. It was now two o'clock of a moonless night.

- A) about B) under
C) without D) beside

Ans : (A)

46. It was some time mother 'got through' to Bodwell.

- A) before B) about
C) across D) against

Ans : (A)

47. The six member women crew broke many stereotypes their record-setting sail.

- A) about B) out
C) during D) but

Ans : (C)

48. But we slowly built upon it through three years training.

- A) as B) for
C) from D) of

Ans : (D)

49. We were beginning you.

- A) about B) until
C) without D) over

Ans : (C)

50. What a thunderclap these words were me!

- A) to B) with
C) of D) but

Ans : (A)

51. You will persuade him to come and return him.

- A) before B) from
C) during D) for

Ans : (A)

Complete the following sentence using the most appropriate tense form of the verb given below :

52. He the heat because he had not eaten since the previous nightfall.

- A) felt B) feels
C) has felt D) had felt

Ans : (A)

53. His mother up a piece of fish and was flying across to him with it.

- A) has picked B) picks
C) had picked D) has been picking

Ans : (C)

54. He screamed with fright and to rise again.

- A) is attempting B) attempted
C) attempt D) has attempted

Ans : (B)

55. I supposed at first that it was my father or my brother Roy, who to Indianapolis.

- A) goes B) has gone
C) have gone D) had gone

Ans : (D)

56. We saw nothing coming; we only the steps.

- A) have heard B) heard
C) hears D) are hearing

Ans : (B)

57. Herman rushed to his room and the door.

- A) slammed B) slams
C) is slamming D) has slammed

Ans : (A)