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Preface

The Ministry of Indian Railways has been conducting Computer Based Tests (CBT) for numerous vacancies year after year. This year too, it is committed to hold the CBT for all the notified vacancies and has been actively assessing the ground situation imposed due to the ongoing pandemic. Hence, it now proposes to commence 1st stage Online Computer Based Tests from 15th December, 2019 and necessary action has been initiated in this regard.

This book is an endeavor of Oswaal Books to assist RRB NTPC aspirants prepare for and excel in this examination. It has been written to provide the aspirants well-conceptualized and structured practice material.

RRB NTPC Test Series 2023 intends to guide the students to solve questions with a higher degree of accuracy and within the stipulated time. It has been prepared by a team of expert academicians after thorough research and analysis of the RRB NTPC exam pattern, syllabus, and previous years' papers. The book aims to ease the learning methodology and facilitates last-minute revision, it gives a fair idea to the students about the structure of the question paper and the type of questions asked in the exam.

The volume begins with an overview of RRB NTPC exam, its notification, exam calendar, vacancies, pattern, and syllabus.The practice material has been bifurcated into two parts – previous year question papers and mock test papers - along with hints and solutions and the requisite tips and tricks. Students can analyze their performance and gauge their preparation with that of the toppers with a smart answer sheet provided in the book.

Immense efforts have been undertaken to maintain lucidity of the structure and uniquity of content. We hope that this book will help you at every step as you move closer to your career goal. We wish you all great success ahead!

All the Best !
Team Oswaal Books

How to use this Book

NAVIGATION

Who among

In which city was the information Fusion Centre-Indian Ocean Region inaugurated recently ?

● **TTA : 79 seconds**

A. Guwahti   B. Kolkata

C. Gurgaon   D. New Delhi

●--- **TTA : Ideal 'Time To Answer' this question**

SMART ANSWERSHEET

Correct %	Indicates % of students answered correctly.

Skipped %	Indicates % of students skipped questions.

😵 Easy   💬 Medium   🎯 Difficult

Q. A.	Correct	Skipped	Q. A.	Correct	Skipped	Q. A.	Correct	Skipped	Q. A.	Correct	Skipped	Q. A.	Correct	Skipped	Q. A.	Correct	Skipped	Q. A.	Correct	Skipped
1.B 😵	17%	39%	16.B 🎯	54%	37%	31.C 💬	58%	26%	46.B 🎯	47%	45%	61.D 🎯	64%	36%	76.C 😵	12%	50%	91.D 😵	34%	50%
2.B 🎯	62%	25%	17.C 😵	11%	48%	32.A 😵	58%	24%	47.D 💬	42%	40%	62.B 🎯	64%	36%	77.C 💬	7%	78%	92.A 😵	23%	49%
3.C 🎯	42%	25%	18.B 😵	26%	32%	33.B 💬	14%	48%	48.A 😵	23%	38%	63.B 😵	64%	36%	78.C 💬	7%	65%	93.D 😵	29%	57%
4.C 💬	60%	31%	19.C 💬	61%	33%	34.D 🎯	51%	36%	49.C 😵	35%	49%	64.B 😵	64%	36%	79.A 🎯	24%	64%	94.A 😵	43%	44%
5.C 😵	21%	30%	20.A 😵	25%	47%	35.C 😵	46%	27%	50.A 😵	14%	36%	65.C 🎯	64%	36%	80.D 💬	52%	42%	95.D 💬	32%	53%

Correct Answer ●

Skipped Question ●

Detailed Solutions on
www.oswaalbooks.com ●---

Available link for all test series on website

Direct QR code for the website ●---

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RRB NTPC Official Advertisement-2023

Railway Recruitment Board, Non-Technical Popular Categories 2023 or RRB NTPC 2023 is a popular recruitment exam conducted by the ministry of railways. Through this exam, the candidates are shortlisted for the graduate and undergraduate posts in the Indian Railways. To select the applicants, the ministry will conduct two computer-based tests (CBT) followed by the skill/ medical tests. Candidates who want to apply for the RRB NTPC 2023 exam have to fill an online application form before the last date. All the necessary details regarding the RRB NTPC 2023 exam are provided in the post below.

RRB NTPC 2023 Overview

Exam Name	RRB NTPC 2023
Full Form	Railway Recruitment Boards Non-Technical Popular Categories Exam 2023
Mode of Application	Online
Mode of exam	Online
Official Website	https://www.rrbcdg.gov.in/

RRB NTPC 2023 Main Highlights

- The following Railway Recruitment Boards (RRBs) will select the candidates on the basis of this exam – RRB Ahmedabad, Ajmer, Allahabad, Bangalore, Bhopal, Bhubaneshwar, Bilaspur, Chandigarh, Chennai, Gorakhpur, Guwahati, Jammu-Srinagar, Kolkata, Malda, Mumbai, Muzaffarpur, Patna, Ranchi, Secunderabad, Siliguri, Thiruvananthapuram.
- Eligibility criteria of RRB NTPC 2023 vary for different posts. Candidates are requested to check it carefully before submitting the form.
- After the 1st stage of computer-based test, RRBs will shortlist candidates 20 times the number of available vacancies.
- While filling the application form, candidates have to provide the preference for the posts available.
- Selected candidates have to execute surety and indemnity bond (if applicable) at the time of joining the railways.

Exam Calendar

Main Events	Tentative Dates
Publication of official notification	Last week of February 2023
Starting of online application form submission	1st week of March 2023
Last date to register on online portal	Last week of March 2023
Last date to submit application fee	1st week of April 2023
Final submission of the application form	2nd week of April 2023
Admit Card Availability	May 2023
Date of computer-based test (1st stage)	June 2023 to September 2023

RRB NTPC Vacancies Summarised

The available posts are divided among the undergraduate and graduate candidates as given below:

For undergraduate candidates (12th pass)

- Junior Clerk cum Typist
- Accounts Clerk cum Typist
- Junior Time Keeper
- Trains Clerk
- Commercial cum Ticket Clerk

For graduate candidates

- Traffic Assistant
- Goods Guard
- Senior Commercial cum Ticket Clerk
- Senior Clerk cum Typist
- Junior Account Assistant cum Typist
- Senior Time Keeper
- Commercial Apprentice
- Station Master

RRB NTPC 2023 Eligibility Criteria

As you can see, the posts are divided under two categories i.e. undergraduate and graduate candidates. The RRB NTPC eligibility criteria 2023 are different for undergraduate and graduate posts as illustrated below. Read basic eligibility for different posts:

For Undergraduate Post

- The age of a candidate must be between 18 to 30 years as on 1st July 2023.
- Applicant must have cleared the class 12th or equivalent exam from a recognized board.

For Graduate post

- The age of the candidates should be between 18 to 33 years as on 1st July 2023.
- The applicants should possess a bachelor's degree or equivalent from a recognized university.

Important Points regarding eligibility criteria

- Please note that the candidates waiting for the result of the prescribed educational qualification need not apply.
- SC/ST candidates will get a relaxation of 5 years in upper age limit.
- The relaxation in upper age limit for OBC candidates is 3 years.
- There will be some additional requirements for a few posts as well. For example – Candidates looking for junior accounts assistant cum typist post should have typing proficiency in English/ Hindi.
- Candidates with following nationalities only can apply
  - A citizen of India,
  - a subject of Bhutan,
  - subjects of Nepal,
  - a Tibetan refugee who came to India before 1st January 1962 with an intention to permanently settling here
  - An Indian origin person migrated to India from Burma, Sri Lanka, Pakistan, Vietnam and East African countries of Uganda, Kenya, Zambia, the united republic of Tanzania, Malawi, Ethiopia and Zaire.

RRB NTPC 2023 Application Form

The RRB NTPC Application Form 2023 for all the posts will be available online through the official website of the respective RRB in which the candidate is looking to apply.

1. To initiate the RRB NTPC 2023 application procedure, the candidates have to register by providing basic details such as name, date of birth, father's name, 10th class roll number, etc.
2. After registration, the candidates have to verify their email id and phone number using OTP.
3. Then, aspirants can proceed to fill out the rest of the details in the application form.
4. Make sure to enter the details as accurately as possible. Otherwise, the form may get rejected.
5. Candidates also need to choose the language in which they want to attempt the exam. The available languages are Assamese, Bengali, Gujarati, Hindi, Kannada, Konkani, Malayalam, Marathi, Manipuri, Punjabi, Telugu, Tamil and Urdu.

6. Additionally, the aspirants also need to provide their bank account details in the application form so that they can get the refund of an application fee.

7. Applicants also need to upload the scanned images of their photograph and signature in a proper format. The colored photograph must be taken on or after 1st January 2023.

8. SC/ ST candidates who will opt to avail free rail travel need to upload the scanned image of their SC/ ST certificate.

9. Candidates may save the confirmation page or take its printout for the future requirement.

Application Fee

The application fee varies for the candidates of different categories as given below:

- **Male candidates of General/ OBC candidates:** Rs. 500/- (Rs. 400/- to be refunded after appearing for 1st stage CBT)

- **Female/ PwBD/ Transgender/ SC/ ST/ Ex-Servicemen/ Economically Backward Classes:** 250/- (Fee will be refunded after appearing for 1st stage CBT)

Mode of Payment

- **Online:** Using credit card/ debit card/ Internet banking or UPI

- **Offline:** By submitting SBI challan at any branch of SBI or depositing post office challan at any branch of the computerized post office.

Exam Pattern

Read important information about exam pattern below:

1st Stage Computer-Based Test

- Mode of Exam: Online
- Duration of Exam: 90 minutes
- Number of Questions: 100
- Type of Questions: Objective type MCQ
- Maximum Marks: 100
- Marking Pattern: 1 mark will be given for a correct answer
- Negative Marking: 1/3 marks will be deducted for every incorrect answer.

Subjects and distribution of questions

Subjects	Number of Questions	Maximum Marks
General Awareness	40	40
Mathematics	30	30
General Intelligence and Reasoning	30	30
Total	100 Questions	100 Marks

2nd Stage Computer Based Test

- Examination Mode: Online
- Duration of Exam: 90 minutes
- Total Number of Questions: 120
- Type of Questions: Objective type multiple choice questions
- Maximum marks: 120
- Marking Scheme: Each question will carry 1 marks
- Negative Marking: 1/3 marks will be deducted in case a wrong answer

Subjects	Number of Questions	Maximum Marks
General Awareness	50	50
Mathematics	35	35
General Intelligence and Reasoning	35	35
Total	120 Questions	120 Marks

RRB NTPC Syllabus

Given below are the subject-wise important topics for the RRB NTPC 2023 examination. Go through the detailed overview of syllabus here-

Mathematics: Number System, Decimals, Fractions, HCF, LCM, Time and Distance, Elementary Algebra, Simple and Compound Interest, Ratio and proportion, Profit and Loss, Geometry and Trigonometry, Elementary Statistics, etc.

General Intelligence and Reasoning: Analogies, Completion of Number and Alphabetical Series, Coding and Decoding, Reasoning, Syllogism, Jumbling, Venn Diagrams, Puzzle, Data Sufficiency, Mathematical Operations, Similarities and Differences, Relationships, etc.

General Awareness: Current Events of National and International Importance, Games and Sports, Art and Culture of India, Indian Literature, Monuments and Places of India, General Science and Life Science (up to 10th CBSE), Indian Polity and Governance- constitution and political system, General Scientific and Technological Developments including Space and Nuclear Program of India, etc.

RRB NTPC Admit Card

- The RRB NTPC Admit Card 2023 will get released on the official website about 10 days prior to the date of exam.

- SMS and email will also be sent to the candidates informing about the releasing of an admit card.

- Please note that the call letter or admit card will not be sent by post.

- Details about the examination venue and date will present on the admit card.

- Candidates should read the instructions given on the backside of an admit card very carefully.

- Aspirants also required to carry one photo identity proof along with the admit card.

- Candidates also need to bring one photograph (same as uploaded in the application form) at the examination center.

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Tips and Tricks for Mathematics

Nature of Questions	Chapters	Weightage	Topics	Tips
1. Soaring 2. East to Solve 3. Less time consuming	Simplifi-cation	4-5	Questions on BOD-MAS Rule, Fractions, Approximate Value, Surds and Indices etc.	**Solve Accordingly** **V** $\bar{x}$ (vinculum or bar) **B** {[()]} (brackets () -> {} -> []) **O** × (off or multiply) **D** ÷ (divide) **M** × (multiply) **A** + (add / sum) **S** − (subtract / minus) **Square Root** **Fractions** **(2 digits)** 35^2 (break the number into digits) $\dfrac{2}{5}+\dfrac{3}{4}$ multiply the denominator of the 1st fraction with the numerator of the second and viseversa $= 3<\text{-->}5^2$ $\dfrac{2\times4}{5\times4}+\dfrac{3\times5}{5\times4}$ n × (n + 1) [here, n=1st digit] & square of 2nd digit $= 3\times(3+1)$ & 5×5 $\dfrac{8+15}{20}$ = 12 & 25 = 1225 23/20 or 2.3/2
4. More accuracy possible	Interest	1-2	Problems on Simple and Compound Interest, and Installments	$SI = \dfrac{PRT}{100}$ Difference b/w CI & SI (2 years) $= \dfrac{PR^2}{100^2}$ Difference b/w CI & SI (3 years) $=$ $\dfrac{PR^2(300+R)}{100^3}$
	Percentage	2-3	Calculation-oriented basic Percentage Problems	**Percentage** 50% of x – Divide x by 2 25% of x – Divide x by 4 20% of x – 20 × x, place decimal before last 2 digit
	Ratio and Proportion	1-2	Problems on Simple/Compound Ratios and Direct/Indirect Proportions	If $x : y$ and $z : a$, then it can be solved as $(x*z)/(y*a)$ If the three ratios, $x: y$, $y: z$, $z: a$ is known, we can find x: a by the multiplying these three ratios $x/a = x/y * y/z * z/a$
	Average	2-3	Problems on Average Weight/Height/Marks etc.	Average $= \dfrac{\text{Total of data}}{\text{No. of data}}$

	Problems on Ages	1-2	Basic Problems on Ages	In most cases, assume present age as 'x', i.e., the base year works just fine. Past will be, $(x - 5)$ years and future can be denoted as $(x + 5)$.
1.Scoring 2.Easy if proper steps are followed 3. More time Consuming	Speed Time and Distance	1-2	Problems on Average/ Relative speeds, Boat, Trains etc	B km/hr to m/s$=$(B$\times$5/18) m/s B m/s to km/h$=$(B$\times$18/5) km/h
	Algebra	1-2	Basic Linear Equations in one or two variables	$3x - 4y = 13$ --- (i) $5x + 2y = -13$ ---(ii) $x = \dfrac{(-4)(-13)-(2)(13)}{(-4)(5)-(2)(3)} = \dfrac{26}{-26} = -1$ To find y put the value in one equation
	Profit and Loss	2-3	Problems on Profit/ Loss, Dishonest/ Successive dealings, Partnership etc.	If P% = CP = ? & SP = 144 Split 144 (difference should be 10) 144 = 18 $\times$ 8 (difference 10) Now if P% = CP put zero after smaller value And if L%=CP put zero after greater value Now answer will be 80
	Number Series	2-3	Moderate to difficult problems on Completing the series, Finding Missing/ Wrong Term	**Integers** – 1,3,5,9………. **Rational** ½, ¾, -- 1.75,3.25…. **Arithmetic** $x_n = x_1 + (n-1)\,d$ 3,8,13,18…. **Square** $x_n = n^2$ – 2,4,16,32…… **Fibonacci** — F_0=0, F_1=1, $F_n = F_{n-1} + F_{n-2}$. 0,1,1,2,3,5,8,13,21, 34,…
		1-2	Problems on Plane Figures such as Square, Rectangle, Circles etc.	Perimeter = sum of all side Rect. = $l+b+l+b$, Squ = $s+s+s+s$, Tri. = $a+b+c$ Area = multiplication of adjacent sides Rect. = $l\times b$, Squ = $s\times s$, Tri. = $(b\times h)/2$
1.Tricky 2. Less accuracy possible	Time and Work	1-2	Problems on Work efficiency, Wages and Pipes etc.	A= 10 & B= 20 days (to complete the same job.) A+B =? days (to complete the same job.) A's efficiency = 100/10 = 10%per day B's efficiency = 100/20 = 5%per day A+B = 100/15 = 6.66days
	Mixture problems	1-2	To Make A Mixture from Two Or More Entities/Mixtures	Allegation $= \dfrac{\text{Quantity of Cheaper}}{\text{Quantity of Dearer}}$ $= \dfrac{\text{CP of Dearer} - \text{Mean price}}{\text{Mean price} - \text{CP of Cheapter}}$

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Tips and Tricks for Reasoning

Name of Questions	Chapters		Comments	Tips
1.Scoring 2.Easy to Solve		0-2	Number, Letter and Meaningful Words based questions. GK based questions can also be asked.	Learn Alphabet's position E-J-O-T-Y = 5-10-15-20-25 C-M-W = 3-13-23 T=20 By shape you can remember H=8, F=6, X=24, V=21
3.Less Time Consuming	Analogy	0-2	Number, General Knowledge, Meaning and Letter based questions	Turn the analogies into sentences. Read the analogy problems as sentences, even if they aren't written that way
	Series	1-3	Mainly questions on Alphabet & Numbers series	Add, subtract, multiply, divide, square, cube Mix pattern; - N× (1+0), N× (1+.5), N× (1.5+1), N× (2.5+1.5) …
4.High Accuracy possible	Coding Decoding	0-2	Questions on Coding and Decoding by letter shifting, and Coding letters of a Word. Could also include Coding by Analogy and Coding Decoding based on numbers, Operations on place value and Coding and Decoding in fictitious language.	Letter position (A=1, B=2, C=3… Y=25, Z=26) Opposite position of letters (A=26, B=25… Z=1) Opposite of each letter (A=Z, B=Y, C=X….)
	Blood Relations	0-2	Mostly Family Tree problems. General Blood Relation problems are also possible.	In solving mixed Blood Relations questions, make sure, that the question is represented in diagrammatical format
	Clock and Calendar	0-2	Mostly based on calendar	**To find What was the day on week :**

To find What was the day on week :

1600-1699	1700-1799	1800-1899	1900-1999	2000-2099
6	4	2	0	6

Jan Oct	Feb Mar Nov	Apr Jul	May	Jun	Aug	Sep Dec
0	3	6	1	4	2	5

Sun=0.7, Mon=1, Tue=2, Wed=3, Thurs=4, Fri=5,

				1. Add the day digits to last two digits of the year 2. Divide last two digits of the year by four and add it to the result in step 1
				3. Add Month Code and Year Codes to the result obtained in step 3 4. Divide the result of step 4 by seven 5. Obtain the remainder and match with the day codes
	Ordering & Ranking	0-2	May be asked	Find the total no. of people if the ranks of one person is given from both sides (left & right) Total number of people = $R_1 + R_2 - 1$
	Directions & Distances	0-2	Simple problems that can be solved by just drawing all the information on paper. May be asked	**DIRECTION** Left + Left = Down, Left + Right = Up Right + Left = Up, Right + Right = Down Up + Left = Left, Up + Right = Right Down + Left = Right, Down + Right = Left
	Arranging Words in Meaningful Order	0-2	It can be a meaningful order of doing a certain task or following a certain rule	Sequence of stages/ series of events/ Increasing or decreasing value/ size/intensity/According to dictionary/ Objects/things from 'part' to 'whole'
	Word formation	0-2	From the given word find whether the given options can be formed or not	You should have strong vocabulary knowledge to judge the right spelling of a word
	Missing Number	0-2	Find the missing number from the given matrix or diagram	Observe & look for familiar pattern in the Questions The Second step is finding out the pattern There is no need to memorize any pattern You need is to understand the Concept and decipher the pattern

	Venn Diagram	0-2	Problems based on Venn Diagram	**If there are only two elements** $n(A \cup B) = n(A) + n(B) - n(A \cap B)$ **If there are three elements** $n(A \cup B \cup C)$ $= n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(C \cap A) + n(A \cap B \cap C)$
	Puzzle	0-2	Number based puzzles like $7 \times 5 \times 6 \times 5 = 6575$, then $8 \times 7 \times 4 \times 6 = ?$ **Or** Count number of trees in row type questions **Or** Find the correct equations type questions	Collect information; Arrange information Identify information; Approach step-by-step
	Non-Verbal Reasoning	0-3	Questions like Completing the pattern, Figure-based Analogy/Classification/Series or Cube-based questions may be asked.	Accuracy; Draw out the questions Practice; Attention to detail

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Instructions

- *The test contains 100 objective type questions.*
- *All questions are compulsory.*
- *Complete the test within 90 minutes.*
- *All questions contain four alternatives, in which only one is correct.*

1. Which two banks were merged with Bank of Baroda with effect from 1st April 2019?
   (1) Syndicate Bank and UCO Bank
   (2) Union Bank of India and Andhra Bank
   (3) Vijaya Bank and Dena Bank
   (4) Allahabad Bank and Canara Bank

2. Two buses start from opposite points towards each other on a main road, 185 km apart. The first bus runs for 35 km and takes a right turn and runs for 17 km. It then turns left and runs for another 42 km and takes the direction back to reach the main road, in the meantime, due to a minor breakdown, the other bus has run only 36 km along the main road. What would the distance between the two buses be at this point?
   (1) 85 km   (2) 80 km
   (3) 75 km   (4) 72 km

3. Pattachitra style of painting is one of the oldest and most popular art forms of which of the following states?
   (1) Andhra Pradesh   (2) Rajasthan
   (3) Odisha   (4) Bihar

4. Which of the following states is NOT a member of 'Seven Sisters' states of North-East India?
   (1) Tripura   (2) Sikkim
   (3) Meghalaya   (4) Mizoram

5. Where is the headquarters of the International Court of Justice located?
   (1) The Hague   (2) Paris
   (3) Washington D.C.   (4) New York

6. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the odd one.
   (1) 12 - 96   (2) 13 - 104
   (3) 15 - 120   (4) 16 - 118

7. Mukesh was facing the south. He walked 5 km straight and from there he turned at a 90° angle to his right and walked 5 km. Then he turned at a 45° angle to his left and walked 3 km. Where will he be from his actual position?
   (1) North-west direction
   (2) South-west direction
   (3) South direction
   (4) South-east direction

8. What is Sukanya Samriddhi Yojana?
   (1) A small deposit scheme for the girl child.
   (2) A scheme to provide bicycles for girls studying in the 10th class.
   (3) A scheme to provide skills that give employability to women.
   (4) A scheme to develop self-defence skills in girls.

9. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.
   (1) Chalk   (2) Book
   (3) Pen   (4) Marker

10. Select the letter cluster that can replace the question mark (?) in the following series. BZA, DYC, FXE, HWG, ?
    (1) JUH   (2) JVH
    (3) KVI   (4) JVI

11. Who said, "Freedom is my birth right and I shall have it"?
    (1) Bhagat Singh
    (2) Bal Gangadhar Tilak
    (3) Gopal Krishna Gokhale
    (4) Chandra Shekhar Azad

12. Out of Harish's monthly salary of ₹45,000, $\frac{1}{3}$ of the expenditure are on education and $\frac{2}{6}$ of the expenditure are on food and other necessities. The rest of the salary goes towards his savings. The amount of savings is:
   (1) ₹22,500   (2) ₹12,000
   (3) ₹15,000   (4) ₹11,250

13. In which city was the Khelo India Youth Games, 2020 held?
   (1) Guwahati   (2) Kolkata
   (3) Chennai   (4) Bangalore

14. What is 'UBUNTU'?
   (1) Malware   (2) Operating system
   (3) External hard drive   (4) Web Browser

15. In which of the following continents is the Gobi desert located?
   (1) Europe   (2) North America
   (3) Asia   (4) Africa

16. Which part of the computer is called its brain?
   (1) CPU   (2) Monitor
   (3) Hard Disc   (4) ROM

17. Shweta and Harish completed a project with an income of ₹28,000. In this project Shweta worked for 20 days and Harish worked for 30 days. If their daily wages are in the ration of 5 : 6, then Shweta's share is:
   (1) ₹16,000   (2) ₹12,000
   (3) ₹18,000   (4) ₹10,000

18. If $\dfrac{1}{\sin^2 65° + \cos^2 65°} + \dfrac{\sin 15°}{\cos 75°} + \dfrac{\cos 65°}{\sin 25°} = \sqrt{3}\tan\theta$, then the value of θ is:
   (1) 45°   (2) 60°
   (3) 90°   (4) 30°

19. Where is the Sabarimala temple located?
   (1) Kerala   (2) Andhra Pradesh
   (3) Odisha   (4) Maharashtra

20. Which of the following passes connects Srinagar and Leh?
   (1) Nathu La   (2) Bara La
   (3) Jelep La   (4) Zoji La

21. In which state is the Kudanukulam Nuclear Power Station located?
   (1) Tamil Nadu   (2) Rajasthan
   (3) Karnataka   (4) Gujarat

22. A group of friends are sitting in an arrangement with one each at the corner of an octagon. All are facing the centre. Medha is sitting diagonally opposite Radha. Medha is on Seema's left. Raman is next to Seema and opposite to Govind. Govind is on Chandra's right. Shanti is not an Medha's right but is opposite to Shashi. Who is opposite to Chandra?
   (1) Seema   (2) Radha
   (3) Shanti   (4) Raman

23. Which of the following is in the list of Maharatna Central Public Sector Enterprises?
   (1) Central Coal fields Limited
   (2) Cochin Shipyard
   (3) India Tourism Development Corporation
   (4) Coal India Limited

24. Which of the following units is used for measuring the amount of a substance?
   (1) Tesla   (2) Joule
   (3) Lux   (4) Mole

25. The unit digit in $4 \times 38 \times 764 \times 1256$ is:
   (1) 5   (2) 4
   (3) 6   (4) 8

26. The ratio of ladies to gents numbers in a club is 3 : 2. Recently, 300 ladies joined the club and the ratio became 5 : 2. The number of lady members now in the club is:
   (1) 1200   (2) 900
   (3) 600   (4) 750

27. Between which two cities does India's first semi high-speed train 'Vande Bharat Express' run?
   (1) Puri and Howrah Junction
   (2) Ahmedabad and Mumbai Central
   (3) New Delhi and Varanasi Junction
   (4) Hazrat Nizamudding and Jhansi Junction

28. The value of $\dfrac{6}{5}$ of $\left(\dfrac{1}{3} + \dfrac{2}{4}\right) - \dfrac{5}{6}$ of $\left(\dfrac{3}{10} + \dfrac{12}{20}\right) - \dfrac{1}{6}$ is:
   (1) $\dfrac{1}{12}$ (2) $\dfrac{1}{3}$
   (3) $\dfrac{3}{4}$ (4) $\dfrac{5}{6}$

29. The ratio of two positive numbers is 3 : 7 and their LCM is 231. The smaller number is:
   (1) 55   (2) 33
   (3) 44   (4) 77

30. In which year was the Second battle of Panipat fought between Akbar and Hemu?
   (1) 1556   (2) 1576
   (3) 1536   (4) 1526

31. Who was the founder of the Prarthana Samaj?
   (1) Swami Dayanand Saraswati
   (2) Raja Ram Mohan Roy
   (3) Atmaram Pandurang
   (4) Swami Vivekananda

32. The cost price of an article is 75% of the marked price. If a discount of 15% is allowed, then the profit or loss percentage is:
   (1) 12.44% loss   (2) 15% profit
   (3) 15.55% loss   (4) 13.33% profit

33. Who is the author of 'Rajatarangini' ?
   (1) Jayadeva   (2) Kalidasa
   (3) Kalhana   (4) Chand Bardai

34. The simple interest on an amount of ₹3400 for 4 years is ₹680. The rate of interest is:
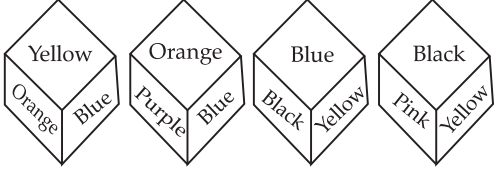   (1) 8%   (2) 4%
   (3) 5%   (4) 6%

35. Select the option that is related to the third term in the same way as the second term related to the first term.

Lawyer : court :: beautician : ?

(1) house   (2) ship

(3) class   (4) parlour

36. Though which of the following mediums can sound NOT travel?

(1) Vacuum   (2) Milk

(3) Air   (4) Steel

37. Which Indian state has the longest mainland coastline?

(1) Gujarat   (2) Maharashtra

(3) Odisha   (4) Kerala

38. What is the maximum strength of the members of the Lok Sabha?

(1) 543   (2) 547

(3) 549   (4) 552

39. Which of the following diseases is caused by a virus?

(1) Cholera   (2) Typhoid

(3) Chicken Pox   (4) Tuberculosis

40. The adjacent angles of a rhombus are in the ratio of 3 : 6. The smaller angle of the rhombus is:

(1) 120°   (2) 40°

(3) 80°   (4) 60°

41. In order to qualify in an examination, one has to secure 50% of the overall marks. In the examination consisting of two papers, a student secured 40% in the first paper of 200 marks. Minimum what percentage of marks should be secured in the second paper of 150 marks in order to qualify in the examination?

(1) 64%   (2) 60%

(3) 68%   (4) 65%

42. In the following question, select the related words from the given alternatives.

Writer : Pen :: Tailor : ?

(1) Scalpel   (2) Axe

(3) Needle   (4) Saw

43. Select the number from among the given options that can replace the question mark (?) in the following table.

5	4	3
6	5	4
7	6	5
384	245	?

(1) 269   (2) 249

(3) 144   (4) 244

44. The term 'Sericulture' is related to which of the following?

(1) Silk farming   (2) Fish farming

(3) Bird farming   (4) Bee farming

45. Name the theme declared by United Nations for World Environment Day, 2020.

(1) Beat Plastic Pollution

(2) Biodiversity

(3) Connecting People to Nature

(4) Water pollution

46. Which of the following is a multi-barrel rocket system developed by DRDO?

(1) Dhanush   (2) Trishul

(3) Pinaka   (4) Prithvi

47. Which of the following monuments is NOT located in Delhi?

(1) Humayun's Tomb   (2) India Gate

(3) Buland Darwaza   (4) Alai Darwaza

48. From among the given options, select the word which CANNOT be formed using the letters of the given word.

LAUGHTER

(1) GRUNT   (2) GATE

(3) HATE   (4) RATE

49. Mahatma Gandhi started the famous 'Salt March' from Sabarmati to Dandi. In which district of Gujarat is Dandi?

(1) Surat   (2) Navsari

(3) Porbandar   (4) Kutch

50. In the domain of computers and the internet, what is the full form of URL?

(1) Universal Resource Locator

(2) Uniform Resource Locator

(3) Unique Resource Location

(4) Unique Revoked Location

51. Select the option that is related to the third letter cluster in the same way as the second letter cluster is related to the first letter cluster.

RAMO : SCPS :: VXMJ : ?

(1) WZPN   (2) WQPN

(3) WQZN   (4) WPZN

52. If $a^3 - b^3 = 625$, $a^2 - b^2 = 25$ and $a + b = 5$ then the value of $a^2 + ab + b^2$ is:

(1) 125   (2) 5

(3) 25   (4) 150

53. Who among the following was the youngest President of India?

(1) Shri Neelam Sanjiva Reddy

(2) Dr. Rajendra Prasad

(3) Dr. S. Radhakrishnan

(4) Dr. Zakir Hussain

54. The sum of two numbers is 60 and their HCF and LCM are 12 and 72 respectively. The sum of the reciprocol of the two number is:

(1) $\dfrac{5}{12}$ (2) $\dfrac{1}{5}$

(3) $\dfrac{5}{72}$ (4) $\dfrac{5}{6}$

55. The greatest number that will divide 155, 260, 315 and leave the remainders 5, 10 and 15 respectively is:
(1) 75   (2) 50
(3) 10   (4) 25

56. The value of $180 \div (2^3 + 3^2 + 1) + 37 - 20$ equal to:
(1) 27   (2) 20
(3) 25   (4) 23

57. The angles of a triangle are $2x°$, $(3x° - 8°)$ and $(5x° - 12°)$. The greatest angle of the triangle is:
(1) 40°   (2) 112°
(3) 118°   (4) 88°

58. The simple interest on a sum of amount for 2 years at 10% per annum is ₹500. The compound interest on the same sum at the same rate for the same time is:
(1) ₹525   (2) ₹510
(3) ₹515   (4) ₹520

59. The smallest 5 digit number that leaves a remainder of 6 when divided by 7 is:
(1) 10003   (2) 10007
(3) 10002   (4) 10009

60. Who was honoured with the 55th Jnanpith Award for the year 2019?
(1) Chitra Mudgal
(2) Shobha Rao
(3) A Achuthan Namboothiri
(4) Krishna Sobti

61. In which year was The Environment (Protection) Act passed by the Parliament of India?
(1) 1990   (2) 1991
(3) 1986   (4) 1988

62. Which of the following countries is NOT a permanent member of United Nations Security Council?
(1) China   (2) United Kingdom
(3) Japan   (4) France

63. X and Y together can complete a piece of work in 12 days, Y and Z can do it 18 days and X and Z can complete the same work in 15 days. If X, Y and Z can together complete the work, approximately how many days will be required to complete the work?
(1) 12   (2) 18
(3) 14   (4) 10

64. Select the option that is related to the third term in the same way as the second term is related to the first term.
Pediatrics : children :: neurology : ?
(1) heart   (2) eyes
(3) brain   (4) veins

65. In general, the most appropriate average value in measuring central tendency is:
(1) mode   (2) median
(3) range   (4) mean

66. Which of the following shows a symbiotic relationship?
(1) Funaria   (2) Ulothrix
(3) Marsilea   (4) Lichen

67. Which of the following countries is NOT a member of **BIMSTEC**?
(1) Maldives   (2) India
(3) Bhutan   (4) Nepal

68. The value of $\dfrac{\sqrt{54} \times \sqrt{125}}{\sqrt{24} \times \sqrt{45}}$ is:
(1) 4   (2) 2.5
(3) $2\sqrt{5}$ (4) $4\sqrt{6}$

69. The value of $5\sin14° \sec76° + 3\cot15° \times \cot 75° + 2\tan45°$ is:
(1) 0   (2) 10
(3) 1   (4) 8

70. Which of the following two countries of South America are land locked?
(1) Chile and Ecuador
(2) Brazil and Venezuela
(3) Guyana and Suriname
(4) Paraguay and Bolivia

71. A class of 50 girls and 70 boys sponsored a musical programme. If 40% of the girls and 50% of the boys attended, approximately what percentage of the class attended the programme?
(1) 42%   (2) 44%
(3) 46%   (4) 48%

72. If all the special characters are dropped from the below arrangement, which of the following will be the 10th to the right of X?
3 X ! B 9 # F 4 5 * 1 K 2 $ 8 R S % Z
(1) 8   (2) R
(3) S   (4) 2

73. Which Sikh guru established the Khalsa Panth?
(1) Shri Guru Nanak ji
(2) Shri Guru Har Gobind ji
(3) Shri Guru Tegh Bahadur ji
(4) Shri Guru Gobind Singh ji

74. A cylinder has a height of 14 cm and the curved surface area is 528 cm². The volume of the cylinder is:
(1) 1244 cm³   (2) 792 cm³
(3) 1584 cm³   (4) 2538 cm³

75. A rope is divided into three different parts. The first part is $\dfrac{1}{5}$ of the whole length, the second part is $\dfrac{3}{2}$ of the first. The third part is what fraction of the rope?
(1) $\dfrac{1}{3}$ (2) $\dfrac{3}{4}$
(3) $\dfrac{1}{2}$ (4) $\dfrac{2}{3}$

76. The value of $5\dfrac{2}{3} + 0.73 - 3.123$ is equal to:
(1) 2.55   (2) 3.27
(3) 3.12   (4) 5.73

77. A train leaves station A towards station B at the speed of 50 km/hr. After half an hour, another train leaves station B towards station A at 150 km/hr. The distance between the stations is 725 km. The distance of the point from station A where the two trains are to meet is:

(1) 150 km | (2) 168 km
(3) 200 km | (4) 250 km

78. If the mass of a person is 60 kg on the surface of earth then the same person's mass on the surface of the moon will be:
(1) 360 kg | (2) 60 kg
(3) 10 kg | (4) 0 kg

79. If $\dfrac{x}{2}+\dfrac{2}{y}=1$ and $\dfrac{y}{2}+\dfrac{2}{z}=1$, then the value of $\dfrac{z}{2}+\dfrac{2}{x}$ is:
(1) 0 | (2) 1
(3) −1 | (4) 2

80. Where is the Central Potato Research Institute of India located?
(1) Ranchi | (2) Lucknow
(3) Shimla | (4) Delhi

81. In which year did ISRO launch the Mars Orbiter Mission?
(1) 2012 | (2) 2015
(3) 2014 | (4) 2013

82. What is to be added to 12% of 2400, so that the sum will be equal to 18% of 5400?
(1) 288 | (2) 952
(3) 684 | (4) 972

83. In a rectangle, the length is twice the breadth and the perimeter of the rectangle is 48 cm. The area of the rectangle is:
(1) 288 cm² | (2) 128 cm²
(3) 512 cm² | (4) 144 cm²

84. Select the combination of letters that when sequentially placed in the blanks will create a repetitive pattern.
c_bba_cab_ac_ab_ac
(1) a; c; b; c; b | (2) a; b; c; b; c
(3) b; a; b; c; c | (4) b; c; a; c; b

85. If $\sin\theta=\dfrac{3}{4}$ and $\cos\theta=\dfrac{5}{4}$, then the value of $\dfrac{1+\tan\theta}{1-\cot\theta}$ is:
(1) $\dfrac{11}{5}$ | (2) $\dfrac{2}{5}$
(3) $-\dfrac{12}{5}$ | (4) $-\dfrac{8}{5}$

86. Select the option that is related to the third number in the same way as the second number is related the first number.
21 : 11 :: 31 : ?
(1) 16 | (2) 15
(3) 17 | (4) 18

87. Select the number from among the given options that can replace the question mark (?) in the following table.

28	63	94
8	18	?
6	9	13

(1) 69 | (2) 76
(3) 75 | (4) 48

88. P is the brother of Q and R. S is R's mother. T is P's father. Which of the following statements CANNOT be definitely true?
(1) T is S's husband | (2) S is P's mother
(3) T is Q's husband | (4) T is Q's father

89. From among the given options, select the word which CANNOT be formed using the letters of the given word.
DAUGHTER
(1) HURT | (2) GET
(3) TOUGH | (4) DATE

90. Four different positions of a cube are shown in the figure. Which of the following colours is on the face opposite to the face that has black written on it?

(1) Purple | (2) Pink
(3) Blue | (4) Orange

91. Five students are sitting in a row, Sunil is neither a neighbour of Aastha nor Shyam, Aastha is a neighbour of Shyam and she is on the left end of the row. Sunil is a neighbour of Manjeet, Manjeet is exactly in the middle of the row, and is not a neighbour of Amita. Who are the neighbours of Sunil?
(1) Manjeet and Amita | (2) Shyam and Amita
(3) Shyam and Manjeet | (4) Aastha and Manjeet

92. Select the number from among the given options that can replace the question mark (?) in the following series.
69, 55, 26, 13, ?
(1) 2 | (2) 5
(3) 3 | (4) 4

93. Five girls Beena, Leena, Meena, Reena and Teena are playing game. They are sitting in a row facing towards the north. Meena is sitting at the west end and Teena is sitting at the end. Leena and Reena are sitting together next to each other. Beena is sitting to the left of Leena and to the right of Meena. Who is sitting second from the east end?
(1) Leena | (2) Reena
(3) Teena | (4) Beena

94. Select the number that can replace the question marks (?) in the following series.
97, 86, 101, 89, 107, ?, ?
(1) 114; 169 | (2) 94; 115
(3) 84; 125 | (4) 121; 144

95. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.
**Statements:**

All Roses are Red.
Some Red are Colours.
All Colours are Paints.
Conclusions:
I. Some Red are Paints
II. All Red are Roses.
(1) Neither conclusion I nor II follows.
(2) Only conclusion I follows.
(3) Both conclusion I and II follow.
(4) Only conclusion II follows.

96. Four letter clusters have been given, out of which three are alike in some manner and one is different. Select the odd one.
(1) IKJL   (2) EGFH
(3) MNPO   (4) ACBD

97. Four word-pairs have been given, out of which three are alike in some manner and one is different. Select the odd one.
(1) Paper : noter   (2) Giftr : gift wrap
(3) Head : cap   (4) Hand : glove

98. Find the number of triangles in the diagram given below:
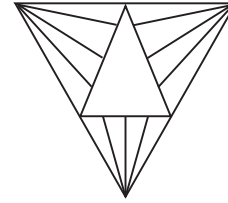
(1) 30   (2) 31
(3) 32   (4) 29

99. Select the number that can replace the question mark (?) in the following series.
5, 10, 17, 26, ?
(1) 37   (2) 35
(3) 36   (4) 34

100. The positions of Deepti and Mohan in a row are 14th from the left and 9th from the right respectively. If they interchange their places, then Mohan will be 21st from the right, find the position of Deepti from the left row and the total number of persons in the row.
(1) 24, 38   (2) 33, 27
(3) 26, 34   (4) 34, 26

SMART ANSWERSHEET ✎

Correct %	Indicates % of students answered correctly.

Skipped %	Indicates % of students skipped questions.

🔄 Easy | 💬 Medium | 🎯 Difficult

Q. A.	Correct / Skipped	Q. A.	Correct / Skipped	Q. A.	Correct / Skipped	Q. A.	Correct / Skipped	Q. A.	Correct / Skipped	Q. A.	Correct / Skipped	Q. A.	Correct / Skipped
1.(3)	18% 62%	16.(1)	56% 29%	31.(3)	23% 56%	46.(3)	43% 46%	61.(3)	19% 70%	76.(2)	6% 84%	91.(1)	54% 19%
2.(4)	26% 63%	17.(4)	11% 48%	32.(4)	60% 31%	47.(3)	42% 41%	62.(3)	17% 72%	77.(3)	8% 78%	92.(4)	63% 17%
3.(3)	49% 36%	18.(2)	27% 32%	33.(3)	14% 49%	48.(1)	24% 38%	63.(4)	35% 42%	78.(2)	7% 66%	93.(2)	10% 31%
4.(2)	58% 24%	19.(1)	61% 33%	34.(3)	51% 37%	49.(2)	35% 49%	64.(3)	21% 30%	79.(2)	24% 64%	94.(2)	11% 65%
5.(1)	33% 53%	20.(4)	26% 47%	35.(4)	46% 28%	50.(4)	14% 36%	65.(4)	16% 67%	80.(3)	53% 42%	95.(2)	16% 46%
6.(4)	54% 36%	21.(1)	23% 35%	36.(1)	20% 59%	51.(1)	16% 53%	66.(4)	26% 56%	81.(4)	11% 65%	96.(3)	42% 41%
7.(2)	51% 43%	22.(1)	67% 19%	37.(1)	37% 51%	52.(1)	18% 53%	67.(1)	9% 69%	82.(3)	22% 42%	97.(1)	19% 37%
8.(1)	18% 62%	23.(4)	20% 59%	38.(4)	19% 66%	53.(1)	31% 47%	68.(2)	14% 69%	83.(2)	40% 43%	98.(3)	75% 17%
9.(2)	21% 62%	24.(4)	30% 23%	39.(3)	29% 52%	54.(3)	18% 50%	69.(2)	25% 53%	84.(1)	16% 50%	99.(1)	62% 25%
10.(4)	43% 48%	25.(4)	54% 37%	40.(4)	51% 27%	55.(2)	47% 45%	70.(4)	15% 74%	85.(3)	30% 44%	100.(3)	17% 39%
11.(2)	31% 53%	26.(4)	37% 39%	41.(1)	58% 26%	56.(1)	22% 63%	71.(3)	26% 55%	86.(1)	13% 70%		
12.(3)	43% 44%	27.(3)	42% 25%	42.(3)	16% 69%	57.(4)	11% 71%	72.(2)	13% 70%	87.(3)	6% 53%		
13.(1)	29% 57%	28.(1)	56% 33%	43.(3)	30% 33%	58.(1)	23% 51%	73.(4)	15% 46%	88.(3)	18% 65%		
14.(2)	23% 49%	29.(2)	25% 41%	44.(1)	50% 41%	59.(3)	17% 36%	74.(3)	6% 78%	89.(3)	37% 48%		
15.(3)	34% 50%	30.(1)	36% 52%	45.(2)	41% 46%	60.(3)	16% 70%	75.(3)	25% 64%	90.(4)	12% 50%		

PERFORMANCE ANALYSIS

| OVERALL	
Avg. Score	48/100
Toppers Score	93/100
Cut Off	83/100
Your Score	_____

ANSWERS WITH EXPLANATIONS

1. Option (3) is correct
   Explanation:- Vijaya Bank and Dena Bank banks were merged with Bank of Baroda. The merger took effect on 1 April 2019. Customers, including depositors of Vijaya Bank and Dena Bank will be treated as customers of Bank of Baroda.

2. Option (4) is correct.
   Explanation:-
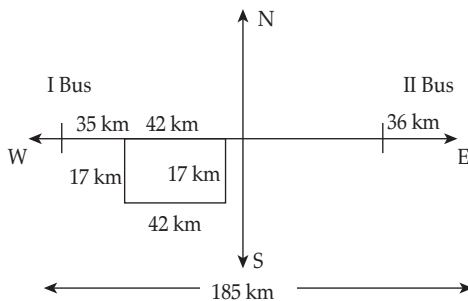
   Bus 1 covered a total distance on main raod = 35 + 42 = 77 km
   Bus 2 covered a total distance on main road = 36 km
       Given total distance = 185 km
       Distance between two buses = 185 – (77 + 36)
       = 185 – 113 = 72 km

3. Option (3) is correct
   Explanation:- Pattachitra style of painting is one of the oldest and most popular art forms of Odisha. The name Pattachitra has evolved from the Sanskrit words patta, meaning canvas, and chitra, meaning picture.

4. Option (2) is correct
   Explanation:- Sikkim is not a member of "seven sisters states" of north east India. The interdependence of the states and their geographical features between Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland, and Tripura has given origin to the name "Seven Sisters of India".

5. Option (1) is correct
   Explanation:- The seat of the Court is at the Peace Palace in The Hague (Netherlands) since 1946. The International Court of Justice is composed of 15 judges elected to nine-year terms of office by the United Nations General Assembly and the Security Council.

6. Option (4) is correct.
   Explanation:-
   $12 \to 96$, $13 \to 104$, $15 \to 120$, $16 \to 118$
   First three are in same manner
   is $12 \times 8 \to 96$, $13 \times 8 \to 104$, $15 \times 8 \to 120$
   But $16 \times 8 \to 128$ is should be
   $16 \to 118$ is different

7. Option (2) is correct.
   Explanation:-
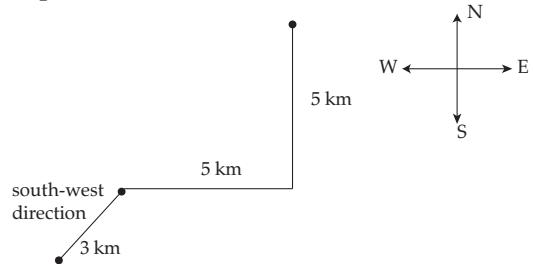
8. Option (1) is correct
   Explanation:- Sukanya Samriddhi Yojana is a small deposit scheme for girl child. Government of India introduced this saving scheme targeted at the parents of girl children. The scheme encourages parents to build a fund for the future education of their female child.
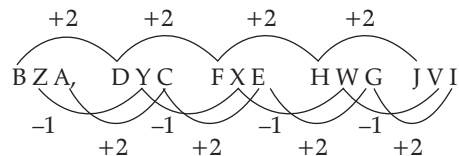
9. Option (2) is correct.
   Explanation:- Chalk, Pen, and Marker are alike in same manner but Book is different one.
   Chalk   Pen   Book (✓)   Marker

10. Option (4) is correct.
    Explanation:-
    BZA, DYC, FXE, HWG, ?

11. Option (2) is correct
    Explanation:- Bal Gangadhar Tilak was an Indian nationalist, and an independence activist. His slogan 'Swaraj is my birth right and I shall have it' caught the imagination of a country fighting to free itself from the colonial rule.

12. Option (3) is correct.
Explanation:- Given Monthly salary of Harish's = ₹45000

Expenditure on Education = $\frac{1}{3}$ of his salary = ₹45000 × $\frac{1}{3}$ = ₹15000

Expenditure on food = $\frac{2}{6}$ of his salary = 45000 × $\frac{2}{6}$ = ₹15000

Saving = 45000 – (15000 + 15000) = ₹15000

13. Option (1) is correct
Explanation:- Khelo India Youth Games is a part of the revamped national programme for development of sports in India. The third Khelo India Youth Games was held from 10 January 2020 to 22 January 2020 in Guwahati, Assam, India. It is a government initiative to strengthen the sports ecosystem by encouraging mass participation and promotion of excellence.

14. Option (2) is correct
Explanation:- Ubuntu is a Linux distribution based on Debian and composed mostly of free and open-source Operating System. It's very easy to use. Ubuntu is officially released in three editions:- Desktop, Server, and Core for Internet of things devices and robots.

15. Option (3) is correct
Explanation:- The Gobi Desert is a large desert or brushland region in East Asia and is the sixth largest desert in the world. The Gobi Desert lies in the territory of the People's Republic of China and the State of Mongolia. The region is famous for its unique nature formations, many places of real dinosaur fossils, and many endemic flora and fauna. The Gobi is overall a cold desert, with frost and occasionally snow occurring on its dunes.

16. Option (1) is correct
Explanation:- The CPU is called the brain of computer. It is the "Central Processing Unit" and delivers instructions and commands. The CPU is constantly following instructions of computer programs that tell it which data to process and how to process it. Without a CPU, we could not run programs on a computer.

17. Option (4) is correct.
Explanation:- Total Income = ₹28000   (i)
In this Project Shweta worked for 20 and Harish workded for 30 days
Daily wage ratio = 5 : 6
Shweta's earning = 5 × x × 20 = 100x
Harish's earning = 6 × x × 30 = 180x
Total income = 100x + 180x = 28000
∴ x = ₹100
Shweta's share = 100x = 100 × 100 = ₹10000

18. Option (4) is correct.
Explanation:-

$$\frac{1}{1} + \frac{\sin 15° \sin 25° + \cos 75° \cos 65°}{\sin 25° \cos 75°} = \sqrt{3} \tan \theta$$

$$1 + \frac{\sin 15° \sin 25° + \cos(90° - 15°)\cos(90° - 25°)}{\sin 25° \cos 75°}$$

$$= \sqrt{3} \tan \theta$$

$$1 + \frac{\sin 15° \sin 25° + \sin 15° \sin 25°}{\sin 25° \cos 75°} = \sqrt{3} \tan \theta$$

$$1 + \frac{2 \sin 15° \sin 25°}{\sin 25° \cos 75°} = \sqrt{3} \tan \theta$$

$$\Rightarrow \quad 1 + \frac{2 \sin 15°}{\sin(90° - 75°)} = \sqrt{3} \tan \theta$$

$$1 + \frac{2 \sin 15°}{\sin 15°} = \sqrt{3} \tan \theta$$

$$3 = \sqrt{3} \tan \theta$$

$$\therefore \quad \tan \theta = \frac{3}{\sqrt{3}} = \sqrt{3}$$

$$\therefore \quad \theta = \tan^{-1}\left(\sqrt{3}\right)$$

$$\theta = 60°$$

19. Option (1) is correct
Explanation:- Sabarimala Temple, dedicated to Lord Ayyappa, is the most famous and prominent among all the Sastha temples in Kerala. The Sabarimala Temple is located at Sabarimala hill inside the Periyar Tiger Reserve in the Perinad Village, Pathanamthitta district, Kerala, India.

20. Option (4) is correct
Explanation:- Zoji La is a high mountain pass located in the Kargil district of Ladakh. The pass links Leh and Srinagar and provides an important link between Union Territories of Ladakh and Kashmir. It is also known as the "Mountain Pass of Blizzards".
In 2018, the Zojila tunnel project was launched. It will provide all-weather connectivity between Srinagar, Kargil and Leh.

21. Option (1) is correct
Explanation:- Kudankulam Nuclear Power Plant is the largest nuclear power station in India, situated in Kudankulam in the Tirunelveli district of Tamil Nadu. Kudankulam is India's first nuclear plant to use imported pressurised water reactor (PWR) technology. The existing nuclear power plants in India use pressurised heavy water reactor or boiling water reactor technology.

22. Option (1) is correct.
Explanation:-
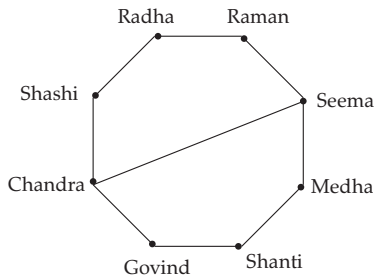
Chandra's opposite to Seema.

23. Option (4) is correct

Explanation:- Coal India Limited was accorded the status of a 'Maharatna' Central Public Sector Enterprise by the government of India in 2011. Coal India Limited is an Indian central public sector undertaking under the ownership of the Ministry of Coal, Government of India. It was established in 1975.

24. Option (4) is correct

Explanation:- The mole is the unit of amount of substance in the International System of Units (SI). The quantity amount of substance is a measure of how many elementary entities of a given substance are in an object or sample.

25. Option (4) is correct.

Explanation:- Unit digit in
$= 4 \times 38 \times 764 \times 1256,$
$\Rightarrow$ unit palce in $4 \times 8 \times 4 \times 6 = 32 \times 24$
$\Rightarrow 2 \times 4 = 8$
Unit digit is 8.

26. Option (4) is correct.

Explanation:- Given ratio of ladies and gents in a club is 3 : 2

$$\frac{L}{G} = \frac{3}{2} \qquad (i)$$

If recently 300 ladies joined the club then ratio becomes 5 : 2

$$\frac{L+300}{G} = \frac{5}{2} \qquad (ii)$$

From (i) $G = \frac{2}{3}L$

From (ii) $G = \frac{2}{5}(L + 300)$

Equating

$$\frac{2}{3}L = \frac{2}{5}L + \frac{2}{5} \times 300$$

$$\left(\frac{2}{3} - \frac{2}{5}\right)L = 120$$

$\Rightarrow \qquad \left(\frac{1}{3} - \frac{1}{5}\right)L = 60$

$\Rightarrow \qquad \frac{2}{15}L = 60$

$\therefore \qquad L = \frac{60 \times 15}{2} = 30 \times 15 = 450$

$L = 450$

Number of lady members $= 450 + 300 = 750$

27. Option (3) is correct

Explanation:- The Vande Bharat Express is one of the prestigious and modern trains. It is a semi-high-speed, electric multiple unit train managed by the Indian Railways. The first Vande Bharat Express train was flagged off on the New Delhi-Kanpur- Allahabad-Varanasi route on February 15, 2019.

28. Option (1) is correct.

Explanation:- $\frac{6}{5} \times \left[\frac{5}{6}\right] - \frac{5}{6}$ of $\left(\frac{3}{10} + \frac{12}{20}\right) - \frac{1}{6}$

$$= 1 - \frac{5}{6} \text{ of } \frac{9}{10} - \frac{1}{6}$$

$$= 1 - \frac{5}{6} \times \frac{9}{10} - \frac{1}{6}$$

$$= 1 - \frac{3}{4} - \frac{1}{6}$$

$\Rightarrow \qquad = \frac{1}{4} - \frac{1}{6} = \frac{2}{24} = \frac{1}{12}$

29. Option (2) is correct.

Explanation:- Given the ratio of two positive number is 3 : 7

Let the number is $3x$ and $7x$

Their L.C.M = 231

L.C.M of $3x$ and $7x$

$= 3 \times 7 \times x = 231$

$x = \frac{231}{21} = 11$

Then numbers are $3x = 3 \times 11 = 33$ smaller

$7x = 7 \times 11 = 77$ largest

So smaller number is 33.

30. Option (1) is correct

Explanation:- The second battle of Panipat took place in 1556. The Second Battle of Panipat was fought between the forces of Hemu and the army of Akbar, on November 5, 1556. Hemu had conquered Delhi and Agra a few weeks earlier by defeating Mughal forces under Tardi Beg Khan in the battle of Delhi and crowned himself Raja Vikramaditya at Purana Quila in Delhi.

31. Option (3) is correct

Explanation:- The Prarthana Samaj, a leading society for socio-religious reform was established on 31 March 1867 in Bombay by Atmaram Panduranga. The society was against the social evils that were prevalent then like child marriage, widow suppression, dowry, sati, untouchability, etc. It also propagated monotheism and denounced idol worship.

32. Option (4) is correct.

Explanation:- Let M.P = ₹100, Then C.P. = ₹75 discount is 15%

Discount = $100 \times \dfrac{15}{100}$ = ₹15

S.P. = M.P. – discount = 100 – 15 = ₹85

Profit = S.P. – C.P. = 85 – 75 = 10

Proft % = $\dfrac{\text{S.P.} - \text{C.P.}}{\text{C.P.}} \times 100$ = $\dfrac{10}{75} \times 100$

$= \dfrac{40}{3}$ = 13.33%

33. Option (3) is correct

Explanation:- Rajatarangini is the oldest and fullest record of Kashmir history written by Kalhana in the 12th century CE. Rajatarangini is a metrical legendary and historical chronicle of the north-western part of India, particularly the kings of Kashmir.

34. Option (3) is correct.

Explanation:-   P = ₹3400

   T = 4 years

   S.I. = ₹680

R (Rate of interest) = ?

We have

Simple interest = $\dfrac{P \times R \times T}{100}$

$680 = \dfrac{3400 \times R \times 4}{100}$

∴ $R = \dfrac{680 \times 100}{3400 \times 4}$

R = 5% rate of Interest.

35. Option (4) is correct.

Lawyer : Court : : Beautician: ?

Explanation:- Lawyer related to Court

In the same way Beautician related to parlour because both are the work place of lawyer and beautician.

36. Option (1) is correct

Explanation:- The sound is a mechanical energy which can be produced only due to the vibration produced in the material body. The mechanical waves need some material medium for propagation. The vacuum has no material medium, therefore, sound energy cannot propagate.

Speed of sound in air = 343 m/s.

The sound frequency at which a human can hear ranges between 20Hz to 20kHz.

37. Option (1) is correct

Explanation:- From the above Indian states, Gujarat has the longest coastline, measuring 1214.7 kilometres and accounting for around 23% of the country's total mainland coastline.

38. Option (4) is correct

Explanation:- The maximum strength of the House envisaged by the Constitution is 552, which is made up by election of upto 530 members to represent the States, upto 20 members to represent the Union Territories and not more than two members of the Anglo-Indian Community to be nominated by the Hon'ble President, if, in her/his opinion, that community is not adequately represented in the House. After coming into effect of The Constitution (One Hundred and Fourth Amendment) Act, 2019, the provision of special representation of the Anglo-Indian community in the House of the People by nomination has not been extended further.

39. Option (3) is correct.

Explanation: - Chicken pox is one of the highly contagious infection caused by the varicella-zoster virus (VZV) resulting in itchy skin blisters.

40. Option (4) is correct.

Explanation:- We have sum of adjacent angle of a rhombus is equal to 180°

Given ratio of adjacent angle = 3 : 6 = 1 : 2

If one angle is x and second angle is $2x$

$x + 2x = 180°$

∴ $x = \dfrac{180°}{3} = 60°$

Smallest angle is 60 degree

41. Option (1) is correct.

Explanation:- Over all marks = 200 + 150 = 350 marks

50% of over all marks = $\dfrac{350 \times 50}{100}$ = 175 marks

A student secure 40% in the Ist paper of 200 marks. Marks obtained in 1st paper =

$\dfrac{200 \times 40}{100}$ = 80 marks

Remaining marks secure in II paper

= 175 – 80 = 95 marks

% of marks secure in II paper = $\dfrac{95}{150} \times 100$ = $\dfrac{190}{3}$ = 63.3 ≅ 64%.

42. Option (3) is correct.

Explanation:- Writer : Pen : : Tailor : ?

Writer use Pen to complete his written work.

In the same way Tailor use Needle to complete his work.

Correct answer is Needle.

43. Option (3) is correct.

Explanation:-

5	4	3
6	5	4
7	6	5
384	245	?

Used concept is

$7^3 + 6^2 + 5 = 384$

$6^3 + 5^2 + 4 = 245$

$5^3 + 4^2 + 3 = 144$

44. Option (1) is correct

Explanation:- Sericulture is the cultivation of silkworms for the production of silk. The process of rearing silkworms for the extraction of silk is called silk farming or sericulture. It was discovered by the Chinese 5,000 years ago.

45. Option (2) is correct

Explanation:- "Biodiversity" is the theme declared by United Nations for World Environment Day, 2020, with a focus on its role in providing the essential infrastructure that supports life on Earth and human development. Biodiversity is defined as the variation in life of plants and animals living in a specific environment. These variety of animals and plants functions together in an ecosystem to carry out a balanced and maintained life.

46. Option (3) is correct.

Explanation:- Pinaka is multi-barrel rocket launcher which is developed by the Defence Research and Development Organisation (DRDO) for the Indian Army.

47. Option (3) is correct

Explanation:- Buland Darwaza is located at Fatehpur Sikri, Agra District in Uttar Pradesh. Buland Darwaza was built to commemorate Akbar's victory over Gujarat. It was built in 1602 by Mughal emperor Akbar. The Buland Darwaza, approached by 42 steps and 53.63m high and 35 meters wide, is the highest gateway in the world.

48. Option (1) is correct.

Explanation:- GATE formed by using the letters of the word LAUGHTER

HATE formed by using the letters of the word LAUGHTER

RATE formed by using the letters of the word LAUGHTER

But GRUNT cannot formed by using the letters of the work LAUGHTER

Because N is not present in the word LAUGHTER.

49. Option (2) is correct

Explanation:- Dandi is a village in the Jalalpore taluka, Navsari District, Gujarat, India. Dandi is famous for Mahatma Gandhiji's historical Salt Satyagraha. He reached the coast of Dandi on 5 April 1930 after marching a distance of 200 miles. On 6 April formally launched the Civil Disobedience Movement by breaking the salt laws.

50. Option (2) is correct

Explanation:- URL stands for Uniform Resource Locator. It is the address of a resource, which can be a specific webpage or a file, on the internet. It is also known as web address when it is used with http.

The URL of a web page is displayed above on the page in the address bar.

A typical URL looks like this:

http://www.javatpoint.com/full-form
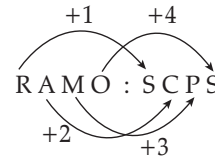
The above URL contains:

protocol: http

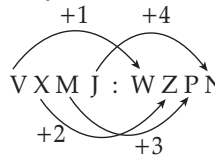host or domain: www.javatpoint.com

Path of the resource: /full-form

51. Option (1) is correct.

Explanation:- RAMO : SCPS : : VXMJ : ?

In the same way

Correct answer WZPN.

52. Option (1) is correct.

Explanation:-

$$a^3 - b^3 = 625$$

$\therefore \quad (a - b)(a^2 + ab + b^2) = 625 \qquad (1)$

$(a - b)(a + b) = 25 \qquad (2)$

$a + b = 5 \qquad (3)$

from (2) and (3)

$(a - b) \times 5 = 25$

$\therefore \qquad (a - b) = 5 \qquad (4)$

from (1) and (4)

$5(a^2 + ab + b^2) = 625$

$\therefore \qquad a^2 + ab + b^2 = 125$

53. Option (1) is correct

Explanation:- Shri Neelam Sanjiva Reddy was the youngest President of India. He entered the office at the age of 64 years. He was the sixth President and youngest Indian President of India to be elected unopposed, who served from 1977 to 1982. He was the Speaker of the Lok Sabha from 1967 to 1969 and again in 1977.

54. Option (3) is correct.

Explanation:- Given sum of two numbers is 60

Let a, b be two numbers

Then $a + b = 60 \qquad (1)$

Given H.C.F. and L.C.M. of the numbers are 12 and 72

We have

Product of two numbers = H.C.F. × L.C.M.

$ab = 12 \times 72 \qquad (2)$

Then sum of their reciprocal

$$\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{60}{12 \times 72} = \frac{5}{72}$$

55. Option (2) is correct.

Explanation:- The greatest number that will divide 155, 260, 315 and leave the remainder 5, 10 and 15 respectively

155 – 5 = 150 = 50 × 3

260 – 10 = 250 = 50 × 5

315 – 15 = 300 = 50 × 6

So, greatest divisor is 50.

56. Option (1) is correct.

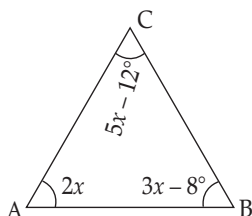**Explanation:-** The value of $180 ÷ (2^3 + 3^2 + 1) + 37 - 20$ equal to

$180 ÷ (8 + 9 + 1) + 37 - 20$

$= 180 ÷ (18) + 17$

$\Rightarrow \dfrac{180}{18} + 17 = 10 + 17 = 27$

57. Option (4) is correct.

Explanation:- The angles of a triangle are $2x$, $3x - 8°$ and $5x - 12°$

We have

$\angle A + \angle B + \angle C = 180°$ (1)

In a $\angle ABC$

$2x + 3x - 8 + 5x - 12° = 180$

$10x - 20° = 180°$

$10x = 200°$

$x = 20°$

Greatest angle is $5x - 12°$

$= 5 × 20 - 12 = 100 - 12 = 88°$

58. Option (1) is correct.

Explanation:- Given

Simple Interest (S.I.) = ₹500

T = 2 years   R = 10%

P = ?

We have,

$$S.I. = \frac{P × R × T}{100}$$

$$\therefore \quad 500 = \frac{P × 10 × 2}{100}$$

$$P = \frac{500 × 100}{20} = ₹2500$$

We have, C.I. $= P\left[\left(1 + \dfrac{R}{100}\right)^T - 1\right]$

$$= 2500\left[\left(1 + \frac{10}{100}\right)^2 - 1\right]$$

$$= 2500\left[\frac{121}{100} - 1\right]$$

$$= 2500 × \frac{21}{100} = ₹525.$$

C.I. = ₹525 (Compound Interest)

59. Option (2) is correct.

Explanation:-

10003 – 6 = 9997 is not divisible by 7.

10002 – 6 = 9996 is divisible by 7

```
   7)10002 ( 1428
      7
     ──
      30
      28
     ──
      20
      14
     ──
      62
     −56
     ──
       6
```

Smallest 5 digit number 10002.

60. Option (3) is correct

Explanation:- Akkitham Achuthan Namboothiri received 55th Jnanpith Award for the year 2019. The Jnanpith Award is the Highest Literary award in India. It is awarded to an author to acknowledge his/her excellence in Literature. Akkitham Achuthan Namboothiri was an Indian poet and essayist who wrote in Malayalam.

61. Option (3) is correct

Explanation:- Environment Protection Act was passed on 23rd May 1986 and came into force on 19 November 1986. Environment Protection Act is an Act to provide for the protection and improvement of environment and for matters connected therewith. It prohibits or restricts the setting and /or operation of any industrial facility on environmental grounds. The Act is widely considered to have been a response to the Bhopal gas leak.

62. Option (3) is correct

Explanation:- Japan is not a permanent member of United Nations Security Council. The Security Council was created after the aftermath of World War II. Its five permanent members are Second World War victors. Japan was a part of the Axis group who were defeated in the Second World War. Japan will serve as a non-permanent member of the Security Council for 2023-2024.

63. Option (4) is correct.

Explanation:-

$x + z$ Complete a work in 15 days

$x + y$ Complete a work in 12 days.

$y + z$ complete a work in 18 days.

One day work done by

$$x + y = \frac{1}{12} \qquad (1)$$

$$x + z = \frac{1}{18} \qquad (2)$$

$$z + x = \frac{1}{15} \qquad (3)$$

By adding equations (1), (2) and (3),
One day work

$$2(x + y + z) = \frac{1}{12} + \frac{1}{18} + \frac{1}{15}$$

$$= \frac{15 + 10 + 12}{180} = \frac{37}{180 \times 2}$$

$$(x + y + z) = \frac{37}{180 \times 2}$$

Number of days to complete a work by $(x + y + z)$

$$= \frac{180}{37} \times 2$$

$$= 10 \text{ days (approx.)}$$

64. Option (3) is correct.

Explanation: -

Padiatrics : Children : : Neurology : ?

Pediatrics related to children (heath) in the same way "Neurology" is related to brain.

65. Option (4) is correct.

Explanation:- In general, the most appropriate average value is measuring current tendency is

i.e. Mean $\bar{x} = \dfrac{\sum x}{n} = \dfrac{x_1 + x_2 + x_3 + \ldots\ldots x_n}{n}$

In which all value are used .

66. Option (4) is correct.

Explanation: - Symbiosis is a relationship or interaction between two or more species that share a common habitat.

There are three types of behaviors seen in symbiotic interactions:

Mutualism: Mutualism occurs when both creatures involved benefit from each other.

Commensalism: Only one organism benefits from commensalism, whereas the other is neither benefited nor injured.

Parasitism: Parasitic relationships benefit one creature while harming the other.

Example of a symbiotic relationship is Lichens.

67. Option (1) is correct

Explanation:- Maldives is not a member of BIMSTEC. BIMSTEC was established in the year 1997. Bay of Bengal Initiative for Multi-Sectorial Technical and Economic Cooperation (BIMSTEC) comprises Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand.

68. Option (2) is correct.

Explanation:-

$$\frac{\sqrt{6 \times 9} \times \sqrt{25 \times 5}}{\sqrt{6 \times 4} \times \sqrt{5 \times 9}} \Rightarrow \frac{\sqrt{6} \times \sqrt{9} \times 5\sqrt{5}}{\sqrt{6} \times 2 \times \sqrt{5} \times \sqrt{9}}$$

$$= \frac{5}{2} = 2.5$$

69. Option (2) is correct.

Explanation:-

$$5 \sin 14° \sec 76° + 3 \cot 15° \times \cot 75° + 2 \tan 45°$$

$$\frac{5 \sin 14°}{\cos(90° - 14°)} + 3\frac{1}{\tan 15°} \times \cot(90° - 15°) + 2 \times 1$$

$$5 + 3 \times \frac{1}{\tan 15°} \times \tan 15° + 2 \qquad [\because \sin 14° = \cos 76°]$$

$$5 + 3 + 2 = 10$$

70. Option (4) is correct

Explanation:- A landlocked country is a country that has no access to marine water bodies and is entirely bordered by land. Bolivia and Paraguay are two countries in South America that are landlocked while the rest are dispersed across Europe, Africa, and Asia.

71. Option (3) is correct.

Explanation:-

No. of girls = 50 in class

No of boys = 70 in class

40% Girls and 50% Boys are attend the musical programme

$$\frac{50 \times 40}{100} = 20 \text{ girls attended the programme}$$

$$\frac{70 \times 50}{100} = 35 \text{ boys attended the programme}$$

Total students in class = 50 + 70 = 120

Attendance % of total students $= \dfrac{55}{120} \times 100$

$$= \frac{55 \times 5}{6} = \frac{275}{6} = 46\%$$

72. Option (2) is correct.

Explanation:- 3 X !B9#F45*1K2$8RS%Z

If we drop all the special characters from the series we get

3XB9F451K28RSZ

So, that 10th character to the right of X is R

73. Option (4) is correct

Explanation:- Guru Gobind Singh Ji established the Khalsa Panth in 1699. It was established in order to teach the followers that no ritual or superstition is above the Almighty and one should not fall for any superstition.

74. Option (3) is correct.

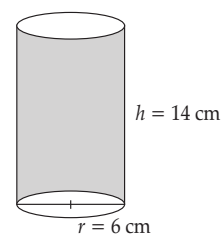**Explanation:-** Given height of cylinder h = 14 cm and the curved surface area is 528 cm^2

The value of the cylinder is
We have curved surface area of cylinder S = $2\pi rh$

$$2\pi rh = 528$$

$$\therefore \pi rh = 264$$

$$r = \frac{264}{\pi \times h} = \frac{264}{\frac{22}{7} \times 14}$$

h = 14 cm

r = 6 cm

$$r = \frac{264}{22 \times 2} = \frac{132}{22} = \frac{66}{11} = 6$$

The volume V = $\pi r^2 h = \dfrac{22}{7} \times 36 \times 14$

$= 44 \times 36 = 1584 \text{ cm}^3$

75. Option (3) is correct.

Explanation:- Let l be the length of rope

First Part = $\dfrac{1}{5}l$

Second Part = $\dfrac{3}{2}$ Ist part = $\dfrac{3}{2} \times \dfrac{l}{5} = \dfrac{3l}{10}$

Let third part is A

Then, I + II + A = l

$\dfrac{l}{5} + \dfrac{3l}{10} + A = l$

$\dfrac{5l}{10} + A = l$

$\therefore \qquad \dfrac{l}{2} + A = l$

$A = l - \dfrac{l}{2} = \dfrac{l}{2}$

Hence IIIrd part is $\dfrac{1}{2}$ of l. (length of rope)

76. Option (2) is correct.
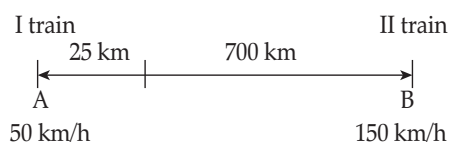
Explanation:-

$5\dfrac{2}{3} + 0.73 - 3.123$

$= \dfrac{17}{3} + 0.73 - 3.123$

$= 5.666 + 0.73 - 3.123$

$= 2.543 + 0.73 = 3.273$

77. Option (3) is correct.

Explanation:-

I train   II train

25 km   700 km

A   B

50 km/h   150 km/h

Distance covered by train 1 in half an hour

$= 50 \times \dfrac{1}{2} = 25$ km

Remaining distance = 725 – 25 = 700 km

Both the trains run in opposite direction

Then speed = 50 + 150 = 200 km/h

700 km distance covered in

T = $\dfrac{700}{200}$ h = $\dfrac{7}{2}$ h

From (A) distance covered = $50 \times \dfrac{7}{2}$ km = 175 km

Total distance from (A) covered by (I) train = 25 + 175 = 200 km

78. Option (2) is correct.

Explanation:-

Given mass of a person = 60 kg

We have mass of a person on the earth = Mass of a person of the moon

So, that mass of same person on moon = 60 kg (Mass always constant).

79. Option (2) is correct.

Explanation:-

Given $\dfrac{x}{2} + \dfrac{2}{y} = 1$ (1)

$\dfrac{y}{2} + \dfrac{2}{z} = 1$ (2)

From (1) $\dfrac{x}{2} = 1 - \dfrac{2}{y} = \dfrac{y-2}{y}$

$\therefore \dfrac{2}{x} = \dfrac{y}{y-2}$ (3)

From (2) $\dfrac{2}{z} = 1 - \dfrac{y}{2} = \dfrac{2-y}{2}$

$\therefore \qquad \dfrac{z}{2} = \dfrac{2}{2-y}$ (4)

Then $\dfrac{z}{2} + \dfrac{2}{x} = \dfrac{2}{2-y} + \dfrac{y}{y-2}$

$= \dfrac{2}{2-y} - \dfrac{y}{2-y} = \dfrac{2-y}{2-y} = 1$

Hence $\dfrac{z}{2} + \dfrac{2}{x} = 1$

80. Option (3) is correct

Explanation:- Central Potato Research Institute is situated in the heart of Shimla near Bemloe, Himachal Pradesh, India. It was established in 1949 at Patna, Bihar on the recommendation of the Agricultural Advisor to the Government of India, Sir Herbert Steward.

It was later on, shifted to Shimla in 1956 in order to facilitate hybridization work in potato breeding and maintain seed potato health..

81. Option (4) is correct.

Explanation:- The Mars Orbiter Mission (MOM) was launched on 5th November 2013 by the Indian Space Research Organisation (ISRO). MOM is popurly known as Mangalyaan. ISRO has become the fourth space agency to successfully send a spacecraft to Mars orbit. Though the designed mission life is 6 months, MOM completed 7 years in its orbit on Sept 24, 2021.

82. Option (3) is correct.

Explanation:-

Let x be added to 12% of 2400

So, that the sum will be equal to 18% of 5400

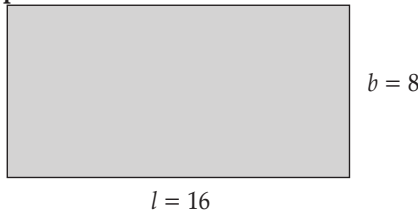$x + \dfrac{2400 \times 12}{100} = \dfrac{5400 \times 18}{100}$

$x + 288 = 972$

$\therefore \qquad x = 972 - 288 = 684$

$x = 684$

83. Option (2) is correct.
Explanation:-

$b = 8$

$l = 16$

Given $l = 2b$ (1)
Perimeter of rectangle is 48 cm
$2(l + b) = 48$ (2)
From (2) $2l + 2b = 48$ from (1)
$2l + l = 48$
$\therefore 3l = 48$
$l = \dfrac{48}{3} = 16$

$l = 16, b = 8$
Area of rectangle $= l \times b$
$= 16 \times 8 = 128 \text{ cm}^2$

84. Option (1) is correct.
Explanation:-
c_bba_cab_ac_ab_ac
Only option (1) a, c, b, c, b complete the sequence i.e.
c a b b a c c a b b a c c a b b a c

85. Option (3) is correct.
Explanation:-

Note: The value of $\cos\theta \neq \dfrac{5}{4}$ $(\theta \in R)$

Given $\sin\theta = \dfrac{3}{4}$ and $\cos\theta = \dfrac{5}{4}$

$\therefore \tan\theta = \dfrac{\sin\theta}{\cos\theta} = \dfrac{3}{4} \times \dfrac{4}{5} = \dfrac{3}{5}$

$\cot\theta = \dfrac{5}{3}$

Then, $\dfrac{1+\tan\theta}{1-\cot\theta} = \dfrac{1+\dfrac{3}{5}}{1-\dfrac{5}{3}} = \dfrac{\dfrac{8}{5}}{\dfrac{-2}{3}} = \dfrac{8}{5} \times \dfrac{-3}{2} = \dfrac{-12}{5}$

$\dfrac{1+\tan\theta}{1-\cot\theta} = \dfrac{-12}{5}$

86. Option (1) is correct.
Explanation:-)
21 : 11 : : 31 : ?
Used concept is $11 \times 2 - 1 = 21$
Same way $16 \times 2 - 1 = 31$
Correct answer is 16.

87. Option (3) is correct.
Explanation:-

28	63	94
8	18	?
6	9	13

Concept is used
$6^2 - 8 = 36 - 8 = 28$
$9^2 - 18 = 81 - 18 = 63$
$13^2 - 75 = 169 - 75 = 94$
Correct value is 75.

88. Option (3) is correct.
Explanation:-
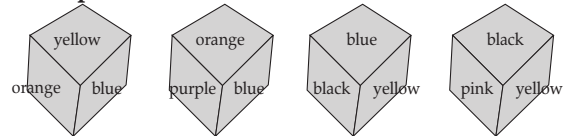T is Father of P, R's mother is S and P is brother of Q and R
1. T is S's husband (True)
2. S is P's Mother (True
3. T is Q's husband (False)
4. T is Q's father (True)

89. Option (3) is correct.
Explanation:- Word TOUGH cannot be formed by using the word 'DAUGHTER' become "O" is not appear in this word.
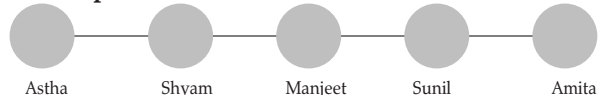
90. Option (4) is correct.
Explanation:-

Black is opposite to the orange.

91. Option (1) is correct.
Explanation:-

Astha   Shyam   Manjeet   Sunil   Amita

Neighbours of Sunil are Manjeet and Amita

92. Option (4) is correct.
Explanation:-
69, 55, 26, 13, ?
Used concept is $(6 \times 9) + 1 = 55$
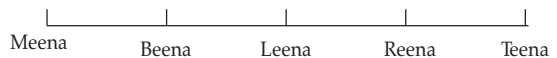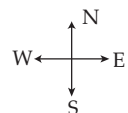$69 - 55 \Rightarrow (6 \times 9) + 1 = 55$
$55 - 26 \Rightarrow (5 \times 5) + 1 = 26$
$26 - 13 \Rightarrow (2 \times 6) + 1 = 13$
$13 - 4 \Rightarrow (1 \times 3) + 1 = 4$

93. Option (2) is correct.
Explanation:-

Meena   Beena   Leena   Reena   Teena

So, Reena is sitting second to the East.