Geethanjali College of Engineering and Technology

AUTONOMOUS

(Accreditedby NBA, NAAC"A^{+}"Grade)

Cheeryal(V), Keesara(M), MedchalDistrict–501301(TS)

LOGICAL REASONING-II

Subject Code–(20MA32P01)

IIIYear B.Tech II Semester

2022-2023

Name: Roll No.:

Branch: **Section:**

Name of the Faculty:

DEPARTMENT OF FRESHMAN ENGINEERING

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COMMMON TO ALL RANCHES

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DEPARTMENT OF FRESHMAN ENGINEERING

20MA32P01 – Logical Reasoning-II

B. Tech. III Year, II Sem.

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Prerequisite(s): Logical Reasoning-I

Course Objectives: Develop ability to

1. Distinguish between permutation and combination and demonstrate how to determine each; Understand the basic concept of probability and illustration of Venn diagram; Classify the numbers and compute LCM, HCF, Square Roots, Cube Roots, Surds and Indices; Understand the concepts of allegation and mixture
2. Distinguish between the linear and circular sitting arrangements and also understand the coding and decoding problems; understand the pattern of number and letter series.
3. Understand concepts of calendars; classify the different forms of Alphabet Arrangements; interpret the clues in the form of direction wise.
4. Identify the placements of numerals and hands on clock; Understand the various properties of cubes; Understand the concepts of data sufficiency and data interpretation.

Course Outcomes:

At the end of the course, the students will be able to:

CO 1: Analyze the difference between permutation and combination and solve various arrangement and selection related problems; Evaluate probability problems using various rules; Apply appropriate methods to evaluate LCM, HCF, Square Roots, Cube Roots, Surds and Indices; Apply the rules of allegation to solve the problems related to mixture.

CO 2: Analyze the linear and circular sitting arrangements and also solve the coding and decoding problems with same and different set of letters; Evaluate the problems of number and letter series.

CO 3:Solve calendar related problems; Illustrate different forms of Alphabet Arrangements and problems based on letter word; Solve the problems using the various concepts of directions.

CO 4: Perform mathematical operations on clocks; Evaluate various problems on cubes and cuboids; Solve problems on data sufficiency and interpretation of data using various types of graphs.

Quantitative Aptitude:

1. **Permutation and Combinations:** Fundamental Principle of Counting, Counting Methods, Definition of permutation, Linear Permutations, Rank of a word, Circular Permutations, Definition of Combinations, Problems on Combinations. [4]
2. **Probability:** Definitions of Probability, Addition and Multiplication Theorems. Deductions: Introduction, expressing different types of statements using Venn diagrams, Definition of complimentary pairs, finding the conclusions using Venn diagrams for two and more statements. [4]
3. **Number system:** Classification of numbers, Divisibility rules, Finding the units digit, Finding remainders in divisions involving higher powers, LCM and HCF Models**,** Decimal fractions, Simplifications, Square Roots & Cube Roots, Surds and Indices. [4]
4. **Allegation and Mixture:** Definition of allegation, mean price, rules of allegation on quantity and cost price, diagrammatic explanation, removal and replacement. [4]

Logical Reasoning:

5. **Sitting Arrangement:** Problems on Linear arrangement, Problems on Circular arrangement, Problems on Double line-up, Problems on Selections and Problems on Comparisons.
   Coding and decoding: Coding using same set of letters, Coding using different set of Letters, Coding into a number Comparison & Elimination. [6]
6. **Number and letter Series:** Difference series, Product series, Squares series, Cubes series, Alternate series, Combination series, miscellaneous series, Place values of [4]
7. **Day sequence/Calendars**: Definition of a Leap Year, Finding the number of Odd days, framing the year code for centuries, finding the day of any random calendar date. [6]
8. **Alphabet Test:** Alphabetical order of verbs, letter-word problems, rule-detection, alphabetical quibble, word formation. [4]
9. **Direction sense Test:** Direction from the initial point: directions, cardinal directions, problems on distances, problems on clocks, problems on angles, problems on shadows. [4]
10. **Clocks**: Finding the angle when the time is given, Finding the time when the angle is known, Relation between Angle, Minutes and Hours, Exceptional cases in clocks. [4]

11. **Cubes:** Basics of a cube, finding the minimum number of cuts when the number of identical pieces are given, Finding the maximum number of pieces when cuts are given, Problems on painted cubes of same and different colours, Problems on cuboids, Problems on painted cuboids, Problems on Dice. [4]
12. **Data Sufficiency:** Different models in Data Sufficiency, Problems on Data sufficiency, Problems on data redundancy. **Data Interpretation:** Problems on tabular form, Problems on Line Graphs, Problems on Bar Graphs, Problems on Pie Charts. [4]

TEXT BOOKS:

1. A modern approach to Logical reasoning, R S Agarwal, S. Chand Publications, 2013.
2. Quantitative Aptitude for Competitive Examinations, Dinesh Khattar. Pearson Education, 4th Edition, 2019.

REFERENCE BOOKS:

1. Quantitative Aptitude and Reasoning, R. V. Praveen, PHI Learning Private Ltd, 2nd Edition, 2013.
2. Quantitative Aptitude for competitive examinations, AbhijithGuha, McGraw Hill Education, 6th Edition, 2017.
3. Analytical & Logical Reasoning, Peeyush Bhardwaj, Arihant Publications, 4th Edition, 2015.
4. Logical Reasoning for the CAT, Arun Sharma, McGraw Hill Education, 2nd Edition 2014.

Modules

Module I

Permutation and Combinations: Fundamental Principle of Counting, Counting Methods, Definition of permutation, Linear Permutations, Rank of a word, Circular Permutations, Definition of Combinations, Problems on Combinations.

Alphabet Test: Alphabetical order of verbs, letter-word problems, rule-detection, alphabetical Quibble, word formation

.Module-II

Probability: Definitions of Probability, Addition and Multiplication Theorems. Deductions: Introduction, expressing different types of statements using Venn diagrams, Definition of complimentary pairs, finding the conclusions using Venn diagrams for two and more statements. **Number and letter Series:** Difference series, Product series, Squares series, Cubes series, Alternate series, Combination series, miscellaneous series, Place values of letters.

Module-III

Number system: Classification of numbers, Divisibility rules, Finding the units digit, Finding remainders in divisions involving higher powers, LCM and HCF Models**,** Decimal fractions, Simplifications, Square Roots & Cube Roots, Surds and Indices

Cubes: Basics of a cube, finding the minimum number of cuts when the number of identical pieces are given, Finding the maximum number of pieces when cuts are given, Problems on painted cubes Of same and different colours, Problems on cuboids, Problems on painted cuboids, Problems on Dice.

Module-IV

Allegation and Mixture: Definition of allegation, mean price, rules of allegation on quantity and cost price, diagrammatic explanation, removal and replacement.

Seating Arrangement: Problems on Linear arrangement, Problems on Circular arrangement, Problems On Double line-up, Problems on Selections, Problems on Comparisons.

Coding and decoding: Coding using same set of letters, coding using different set of letters, Coding into a number Comparison & Elimination

Module-V

Direction sense Test: Direction from the initial point: directions, cardinal directions, problems on distances, problems on clocks, problems on angles, problems on shadows.

Day sequence/Calendars: Definition of a Leap Year, Finding the number of Odd days, framing the year code for centuries, finding the day of any random calendar date.

Module-VI

Data Sufficiency: Different models in Data Sufficiency, Problems on Data sufficiency, Problems on data redundancy. **Data Interpretation:** Problems on tabular form, Problems on Line Graphs, Problems on Bar Graphs, Problems on Pie Charts.

Clocks: Finding the angle when the time is given, Finding the time when the angle is known, Relation between Angle, Minutes and Hours, Exceptional cases in clocks.

PERFORMANCE INDICATOR

S No.	Work Sheet No.	Topic	Assigned Date	Submission Date	Marks awarded	Faculty Sign.	Remarks
1.	1						
2.	2						
3.	3						
4.	4						
5.	5						
6.	6						
7.	7						
8.	8						
9.	9						
10.	10						
11.	11						
12.	12						

PERMUTATIONS AND COMBINATIONS

Worksheet-I

Please Tick Appropriate answers with PEN Only **25× 1 = 25**

1. Find the number of different words that can be formed with the letters of the 'BUTTER' so that the vowels are always together.

   A. 5! /2! B. 60 C. 120 D. 100

2. In a supermarket, there are six different Chocos packets, four different Biscuit Packets and two different Nankeen packets are to be arranged on a shelf so that the Chocos Packet stand together, the Biscuit packet stand together and the Namkeen packet stand together. How many such arrangements are possible?

   A. 203760 B. 207360 C. 260730 D. 270630

3. Five people are to be arranged on five chairs for a photograph such that three people among them do not want to sit next to each other. Find out the number of ways in which this can be done.

   A. 15 B. 24 C. 12 D. 8

4. In how many ways 4 Indians, 5 Africans and 7 Japanese be seated in a row so that all people of same nationality sits together.

   A. 4! 5! 7! 3! B. 4! 5! 7! 5! C. 4! 6! 7! 3! D. None of these

5. How many ways a 6 member team can be formed having 3 men and 3 ladies from a group of 6 men and 7 ladies?

   A. 700 B. 720 C. 120 D. 500

6. A postmaster wants to get delivered 6 letters at six different addresses. In the Post office there are 2 postmen. Then in how many ways can the Postmaster send the letters at different addresses through the postmen?

   A. $\frac{6!}{2!}$ B. $6! \times 2!$ C. 64 D. 36

7. In a Job opening, 25 girls and 75 boys applied. The interviewer can select either a girl or a boy for the job. In how many ways the interviewer can make this selection?

A. $25C_1 \times 75C_1$ B. $(25C_1 \times 75C_1)/2$ C. $75C_2 \times 25C_2$ D. None of these

8. Suppose a city has m parallel roads running East-West and n parallel roads running North-South. How many rectangles are formed with their sides along these roads?

A. mn/4 B. {mn(m−1)(n−1)}/4 C. (m−1) (n−1)/4 D. None of these

9. If C(n, 7) = C(n, 5), find n

A. 5 B. 12 C.1 8 D. 9

10. If $18C_r = 18C_{r+2}$; find rC_5.

A. 45 B. 56 C.63 D. 42

11. In how many different ways can the letters of the word "MARRIAGE" be arranged such that all the vowels come together?

A. 720 B. 360 C. 180 D. 540

12. A bag contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the bag, if at least one black ball is to be included in the draw?

A. 64 B. 128 C.32 D.64

13. How many triangles can be formed by joining the vertices of an octagon?

A. 28 B. 120 C. 56 D. 112

14. In how many different ways can 5 girls and 5 boys form a circle such that the boys and the girls alternate?

A.1200 B.1400 C.2880 D.3212

15. Find out the number of ways in which 6 rings of different types can be worn in 3 fingers

A. 120 B. 729 C.125 D.720

16. How many two digit numbers can be generated using the digits 1,2,3,4 without repeating any digits.

A. 10 B. 12 C. 4 D. 16

17. There are 6 people in an office. A group consisting of 3 people has to be formed. In how many ways can the group be formed?

A.10 B.20 C.40 D.30

18. In how many ways can 7 boys be seated in a circular order?

A.120 B.720 C.5040 D.60

19. In how many ways can a team of 5 persons be formed out of total of 10 persons such that two particular persons should be included in each team?

A.56 B.120 C.28 D.112

20. If there are 9 horizontal lines and 9 vertical lines in a chess board, how many rectangles can be formed in the chees board?

A.1024 B.64 C.1296 D.920

21. What is the sum of all four digit numbers formed using the digits 2, 3, 4 and 5 without repetition?

A.93024 B.92314 C.91242 D.93324

22. A boy has 9 trousers and 12 shirts. In how many different ways can he select a trouser and Shirt?

A. 21 B.12 C. 9 D. 108

23. In how many ways can 10 books be arranged on a shelf such that a particular pair of books should always be together?

A.9! x 2! B.9! x 10! C.10! D.10! x 2!

24. In how many ways can a team of 5 people be formed out of a total of 10 persons such that two particular persons should be included in each team?

A.56 B.120 C.28 D.112

25. What is the value of $100P_2$?

A.12000 B.5600 C.9900 D.9801

Alphabet Test

WORKSHEET – II

Please Tick Appropriate answers with PEN Only **25× 1 = 25**

1. If a meaningful English word has to be formed using 1st, 3rd, 5th and 8th letters of the word (each letter to be used once only) "SOUVENIR" then which of the following will be third letter of such word? If more than one such words can be formed then mark 'M' as your answer and if no meaningful English word can be formed then mark "P" as your answer.
   A. E B. S C. R D. M
2. If a meaningful English word has to be formed using 1^{st}, 4^{th}, 5^{th}, 8^{th}, 9^{th} and 15^{th} letters of the word "Acknowledgement" such that one letter is used only once then which of the following is third letter of that word? If more than one such words can be formed then mark 'X' as your answer, if no such word can be formed then mark 'Y' as your answer.
   A. A B. E C. N D. X
3. How many independent words can 'HEARTLESS' be divided into without changingthe order of the letters and using each letter only once?
   A. 2 B. 3 C. 4 D.5
4. How many independent words can 'STAINLESS' be divided into without changing the order of the letters and using each letter only once?
   A. Nil B. One C. Two D. Three
5. From the word 'ASTOUNDER', how many independent words can be made with-out changing the order of the letters and using each Letter only once?
   A. Nil B. One C. Two D. Three
6. From the word 'BEHIND', how many independent words can be made without changing the order of the letters and using each Letter only once?
   A. 1 B. 2 C. 3 D. 4
7. From the word 'LAPAROSCOPV, how many independent Meaningful words can be made without changing the order of the letters and using each letter only once?
   A. 1 B. 2 C. 3 D. 4

8. How many independent words can 'DETERMINATION' be divided into without changing the order of the letters and using each letter only once?
   A. 1 B. 2 C. 3 D. 4
9. Which letter in the word 'SELFRIGHTEOUSNESS' does not change its position when the letters are reversed?
   A. E B. G C. H D. T
10. If the positions of the first and sixth letters of the word 'BENEFICIAL' are inter- changed, Similarly, the positions of the second and seventh Letters are interchanged and so on, which letter will be third from the right end after rearrangement?
    A. C B. E C. F D. N
11. If the first and second letters in the word 'MISFORTUNE' were interchanged, also the third and the fourth letters, the fifth and the sixth letters and so on, which letter would the be the Eighth letter counting to your left?
    A. O B. F C. S D. T
12. Which letter will be the fifth from the right if the first and the Second, the third and the fourth and so on are interchanged in the Word 'COMPANIONATE'?
    A. A B. I C. N D. O
13. If the last four letters of the word 'CONCENTRATION' are written in reverse order followed by next two in the reverse order and next three in the reverse order and then followed by the first four in the reverse order, counting from the end, which letter would be eighth? In the new arrangement?
    A. N B. T C. E D. R
14. If the positions of the third and tenth letters of the word 'DOCUMENTATION' are interchanged, and likewise the position of the fourth and seventh Letters, the second and sixth letters, is also interchanged, which of the following will be eleventh letter from the right end?
    A. C B. I C. T D. U
15. If in the word 'DISTURBANCE', the first letter is interchanged with the last letter, the second letter is interchanged with the tenth letter and so on, which letter would come after the letter *T* in the Newly formed word?
    A. I B. N C. S D. T

16. Number of letters skipped in between adjacent letters in the Series is two. Which of the following series observes this rule?
A. MPSVYBE B. QSVYZCF C.SVZCGJN D. ZCGKMPR

17. Number of letters skipped in between adjacent letters in the series is odd. Which of the Following series observes this rule?

A. BDHLR B. FIMRX C. EIMQV D. MPRUX

18. The letters shipped in between the adjacent letters in the Series are followed by equal space. Which of the following Series observes this rule?
A. HKNGSW B. RVZDFG C. RVZDHL D. SUXADF

19. Select that series in which letters are not according to a general rule
A. CEGIKM B. MORTVX C. PRTVXZ D. ZBDFHJ

20. The letters of the word NUMKIPP are in disorder. If they are arranged in proper order, the name of a

Vegetable is formed. What is the last letter of the word so formed?

A. K B. M C. N D. P

Directions (21-25): Following questions are based on the five words given below, Study the following words and answer the following question:

MINTS RAGSE CULTS NIGAS PEMTO

21. If the given words are arranged in the order as they appear in a dictionary from left to right, which of the following word will be the fifth from the left end?
A. MINTS B. RAGSE C. CULT D. NIGAS E. PEMTO
22. If the letters of the given words are arranged in alphabetical order, then within the word how many Meaningful words will be formed?

A. Four B. Three C. Two D. One E. None
23. How many letters are there between the first Letter of third word from left end and Last Letter of the Second word from right end

A. Eight B. Nine C. Ten D. Fifteen E. Sixteen
24. How many vowels are there in between the first letter of first word from left and last letter of last word from right (According to the alphabetical order)?
A. Two B. Three C. None D. Five E. None of these

25. How many letters are there between the first letters of last word from left and first letter of the second word from left (According to the alphabetical order)?
    A. Four B. Fourteen C. Twenty D. Six E. One

PROBABILITY

Worksheet-III

Please Tick Appropriate answers with PEN Only 25× 1 = 25

1. An event in the probability that will never be happened is called as –
   A. Unsure event B. Sure event C. Possible event D. Impossible event
2. What will be the value of $P(\bar{E})$ if P(E) = 0.07?
   A. 90 B. 0007 C. 0.93 D. 72
3. What will be the probability of getting odd numbers if a dice is thrown?
   A. 0.5 B. 2 C. 3.5 D. 2.5
4. What is the probability of getting a sum as 3 if a pair of dice is thrown?
   A. 1/9 B. 1/18 C. 4 D. 1/36
5. What is the probability of getting an even number when a dice is thrown?
   A. 1/6 B. 1/2 C. 1/3 D. 1/4
6. The probability of getting two tails when two coins are tossed is –
   A. 1/6 B. 1/2 C. 1/3 D. 1/4
7. What is the probability of getting the sum as a prime number if two dice are thrown?
   A. 5/12 B. 5/24 C. 5/30 D. 1/36
8. What is the probability of getting at least one head if three unbiased coins are tossed?
   A. 1/2 B. 7/8 C. 5/8 D. 8/9
9. What is the probability of getting 1 and 5 if a dice is thrown once?
   A. 1/3 B. 1/6 C. 2/3 D. 8/9
10. What will be the probability of losing a game if the winning probability is 0.3?
    A. 0.5 B. 0.7 C. 0.8 D. 0.6
11. If two dice are thrown together, what is the probability of getting an even number on one dice and an odd number on the other dice?
    A. 1/4 B. 3/5 C. 3/4 D. 1/2
12. In a box, there are 8 orange, 7 white, and 6 blue balls. If a ball is picked up randomly, what is the probability that it is neither orange nor blue?
    A. 1/3 B. 1/21 C. 2/21 D. 5/21
13. A card is drawn from a pack of 52 cards. What is the probability of getting a king of a black suit?

    A. 1/26 B.1/52 C. 3/26 D. 7/52

14. A dice is thrown twice. What is the probability of getting two numbers whose product is even?
    A. 6/4 B. 3/4 C. 5/4 D. 3/4
15. Suppose a number x is chosen from the numbers -2, -1, 0, 1, 2. What will be the probability of $x^2 > 0$?
    A. 1/5 B. 2/5 C. 4/5 D. 3/5
16. If a number is selected at random from the first 50 natural numbers, what will be the probability that the selected number is a multiple of 3 and 4?
    A. 7/50 B. 4/25 C. 2/25 D. 3/25
17. What is the probability of getting a prime number from the numbers started from 1 to 100?
    A. 1/100 B. 1/25 C. 24/25 D. 1/4
18. What is the probability of drawing an ace from a pack of 52 cards?
    A. 4/13 B. 1/52 C. 1/13 D. 2/13
19. In 30 balls, a batsman hits the boundaries 6 times. What will be the probability that he did not hit the boundaries?
    A. 4/5 B. 1/5 C. 3/5 D. 2/5
20. Which of the following probability cannot exist?
    A. 2/5 B. -1.5 C. 3/5 D. 1.5
21. A card is drawn from a pack of 52 cards. What is the probability of getting a queen card?
    A. 1/26 B. 1/52 C. 3/13 D. 1/13
22. What will be the probability of an impossible event?
    A. 0 B. 1 C. infinity D. 2
23. Which of the following can be the probability of an event?
    A. -1.3 B. 004 C. 3/8 D. 10/7
24. If three coins are tossed simultaneously, what is the probability of getting two heads together?

    A. 3/8 B. 1/8 C. 5/8 D. 7/8
25. The probability of winning the first prize in a lottery of a girl is 8/100. If the total of 6000 tickets are sold, then how many tickets the girl purchased?
    A. 480 B. 750 C. 280 D. 481

NUMBER AND LETTER SERIES
WORKSHEET – IV

Please Tick Appropriate answers with PEN Only **25× 1 = 25**

1. RQP, ONM, _, IHG, FED, find the missing letters.

   A.CDE B. LKI C. LKJ D. BAC

2. CKDL, EKFL, GKHL, _, KKLL, find the missing letters.

   A.IJKL B. IKJL C. MNOP D. MNPQ

3. Find the missing letters in the series, GAH, IBJ, KCL, MDN, _.

   A.OEG B.OEP C.OEB D.OEA

4. Find the missing letters in the series, E_3FG, _, E_5FG, E_6FG, E_7FG.

   A.EF_4G B. E_3F_4G C. E_4FG D. EF_3G_4

5. Find the missing letters in the series, BKK, DMM, FOO, _, JSS.

   A.HLL B.HBB C. HTT D. HQQ

6. What is the missing letter in the series, U, O, I, _, A?

   A. E B. K C. F D. E

7. Which letter should come next in the series F, G, H, J, K, L, M, N, P, _?

   A.Q B.R C.T D.O

8. Which number should come next in the series, 48, 24, 12,?

   A. 8 B .6 C.4 D.2

9. Look at the series, 46, 44, 40, 38, 34, _, which number should come next?

   A.30 B.36 C.32 D.31

10. Which number would fill the empty space in the series; 4, 7, 12, 19, _, 39?

A.28 B.26 C.24 D.22

11. Which number would replace the underline mark in the series 20, 40, 100, _, 820?

A.240 B.260 C.280 D.300

12. What are the missing numbers in this series, 15, 20, 24, 15, 28, 32 15, _, _, 15?

A.37, 41 B.36, 40 C.38, 42 D.40, 44

13. Look at the series, 77, 70, 63, 56, 49, _, which number should come next?

A.42 B.46 C.44 D.48

14. Look at the series; 41, 39, 35, 33, 29, _, which number should come next?

A.23 B.24 C.25 D.27

15. Look at the series, 12, 24, 14, 28, 18, 36, __, which number should come next?

A.24 B.25 C.26 D.28

16. Look at the series, 1536, 384, 96, _, which number should come next?

A.24 B.28 C.18 D.16

17. Find the missing number in the series; 1, 2, 3, 10 _.

A .89 B .99 C. 79 D .69

18. JAF, JEF, JIF, JOF,?
A. PIG B. PET C.JUF D.POT

19. SAB, ?, QCD, PDD, OEF, NFF
A.CBT B.ABR C.BCT D.RBB

20. BAZ, DBY, FCX,?
A.FXW B.EFX C. FEY D.HDW

21. Find the missing numbers in the series, 4, 20, 7, 14, 10, 8, 13, _, _.

A.2, 18 B.2, 14 C.2, 16 D.2, 15

22. Find the wrong number in the series, 2, 6, 15, 31, 56, 93.

A.93 B.15 C.31 D.56

23. 12 12, 24 24, 36 36, 48, _, _?

A.48 58 B.48 60 C.48 62 D.48 64

24. Find the next two numbers in the series 5, 12, 15, 22, 25, 32, _, _.

A.35, 42 B.39, 42 C.42, 35 D.34, 39

25. Find the next number in the series 13, 17, 19, 23, 29, _.

A.33 B.35 C.31 D.37

NUMBER SYSTEM

Worksheet -V

Please Tick Appropriate answers with PEN Only **25**× 1 = 25

1. Every rational number is
   A. Whole number B. Real number
   C. Natural number D. Rational Number

2. Between any two numbers, there are –
   A. Two rational numbers B. No rational number
   C .Infinite rational numbers D. One Rational Number

3. What will be the value of $x^3 + y^3 + z^3$, if x + y + z = 0?
   A. 3xyz B.2xyz C .xyz D. xyz (xy + yz + zx)

4. Digit 1 is occurring 136 times on writing all of the page numbers of a book.
   What will be the number of pages in the book?
   A.194 B.195 C. 200 D. 295

5. Which of the following is the unit digit in the product of 853 x 452 x 226 x 1346?
   A. 2 B. 5 C. 6 D. 7

6. The sum of odd numbers up to 240 is -
   A. 11400 B.12400 C.13400 D.14400

7. Which of the following number is divisible by 9?
   A. 56785 B. 45678 C. 65889 D. 67578

8. What smallest number should be subtracted from 9805 so that it is divisible by 8?
   A .6 B. 7 C. 5 D .8

9. Which of the following is completely divisible by 45?
   A. 331145 B. 306990 C. 181660 D. 191660

10. If the two-third of three - fourth of a number is 34, what will be the 20% of that number?

A. 13.4 B. 13.6 C. 13.7 D. 14

11. 7X2 is a three-digit number in which X is a missing digit. If the number is digit number that can be exactly divisible by 66?

A. 9987 B. 9912 C. 9913 D. 9966

12. What will be the remainder when 6^{36} is Divisible by 6, the missing digit is -

A. 4 B. 3 C. 7 D. 5

13. Which is the largest 4- divided by 215?

A. 3 B. 2 C. 1 D. 10

14. Which of the following is the least number which will leave the remainder 5, When divided by 8, 12, 16, and 20?

A. 245 B. 255 C. 265 D. 275

15. If the sum of two numbers is considered as 'a' and their product is considered as 'b', then what will be the sum of their reciprocals?

A. a/b B. 1/b + 1/b C. b/a D. ab

16. From the list of below options, which of the fraction is the smallest?

A. 14/33 B. 7/13 C. 11/13 D. 8/15

17. If the number A381 is divisible by 11, then what is the value of A?

A. 7 B. 3 C. 1 D. 8

18. Suppose there is a number 'n'. When 'n' is divided by 5, the remainder will be 2. What will be the remainder when n2 is divided by 5?

A. 6 B. 4 C. 1 D. 8

19. If the difference between three times and seven times of a number is equal to 36,

What will be the number?

A. 9 B. 4 C. 1 D. 8

20. What will be the value of x, if $5^{(x + 3)} = 25^{(3x - 4)}$?

A. 11/5 B. 11/6 C. 5/11 D. 6/11

21. If the sum of two numbers is 12 and their product is 35, then what will be the sum of their reciprocals?

A. 12/35 B. 1/5 C. 2/3 D. 21/35

22. What will be the value of $a^3 - 3a^2 + 3a + 3b + 3b^2 + b^3$, if a = -4, and b = -2?

A. 126 B. -125 C. -126 D. 125

23. If the ratio of two positive numbers is 7 : 9 and their product is 1575, then the greatest number is -

A. 45 B. 15 C. 35 D. 55

24. The sum of two numbers is equal to the thrice of their difference. What will be the ratio between them?

A. 1: 3 B. 3: 1 C. 1: 2 D. 2: 1

25. Which of the following is equal to x^3?

A. x^6x^3 B. $x^6 + x^3$ C. x^6 / x^3 D. $(x^6)^3$

CUBES
WORKSHEET – VI

Please Tick Appropriate Answers with PEN Only 25× 1 = 25

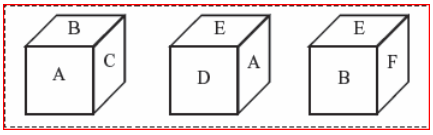
Directions for questions 1 to 4: ***Read the passage below and solve the questions based on it.***

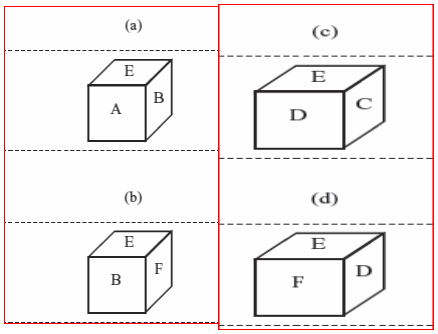
A large cube is dipped into a tub filled with colour. Now the cube is taken out and it was observed that all its sides are painted. This large cube is now cut into 125 small but identical cubes.

1. How many of the smaller cubes have no face painted all?
   A. 27 B. 64 C. 8 D. 10

2. How many of the smaller cubes have exactly one face painted?
   A. 9 B. 4 C. 6 D. 8
3. How many of the smaller cubes have exactly two faces painted?
   A. 25 B. 16 C. 36 D. 46
4. How many of the smaller cubes have exactly three faces painted?
   A. 4 B. 8 C. 9 D. 7

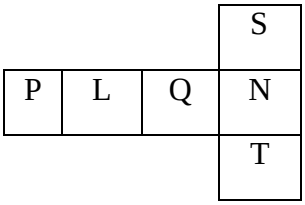
5. In this question, three views of a cube are given. If the same cube is rotated in a particular way, it will give rise to different views. Four such views are given in the options. However, out of the four options given, one of the options does not confirm to the original cube. Mark that option as your answer. (The letters used are only to mark the different faces of the cube.)





A. OPTION A B. OPTION B C. OPTION C D. OPTION D

6. If the following figure is folded to form a cube, what would be the letter on the face opposite to the face marked 'L'?



A. Q B. N C. T D. S

Directions for questions 7 to 10: **These questions are based on the following information.**

A cube is painted in such a way that a pair of adjacent faces is painted in green; a pair of opposite faces is painted in yellow and another pair of adjacent faces is painted in red. This cube is now cut into 125 small but identical cubes.

7. How many small cubes have exactly two faces painted in green?
   A. 10 B. 7 C. 5 D. 8
8. How many small cubes have at least two different colours on their faces?
   A. 30 B. 38 C. 36 D. 42

9. How many of the small cubes have exactly one colour on them?
   A.60 B. 45 C. 54 D. 15

10. How many of the small cubes do not have green colour but have yellow or red colours on them?

    A. 40 B. 75 C. 80 D. 53

11. How many small cubes have exactly two painted faces and have exactly two colours on them?

    A. 36 B. 30 C. 24 D. 34

Directions for questions 12 to 16: ***Read the passage below and solve the questions based on it.***

There is cube in which one pair of opposite faces is painted red; another pair of opposite faces is painted blue and the third pair of opposite faces is painted pink. This cube is now cut into 216 smaller but identical cubes.

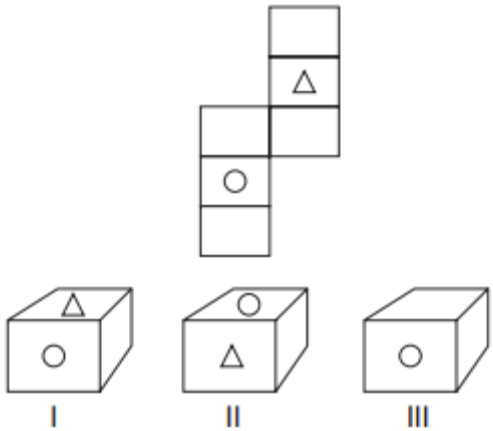
12. How many small cubes will be there with no red paint at all?
    A. 140 B. 164 C. 104 D. 144
13. How many small cubes will be there with at least two different colours on their faces?
    A. 56 B. 64 C. 44 D. 96
14. How many small cubes will be there without any face painted?
    A. 94 B. 64 C. 100 D. 144
15. How many small cubes will be there with only red and pink on their faces?
    A. 26 B. 16 C. 36 D. 46
16. How many small cubes will be there showing only pink or only blue on their faces?
    A. 64 B. 84 C. 94 D. 54

Directions for questions 17 to 21: ***Read the passage below and solve the questions based on it.***

There is cube in which one pair of adjacent faces is painted black; the second pair of adjacent faces is painted blue and third pair of adjacent faces is painted green. This cube is now cut into 216 smaller and identical cubes.

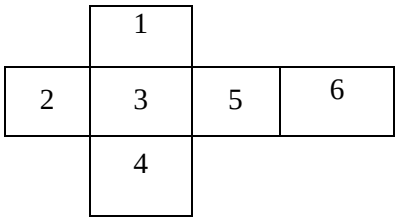
17. How many small cubes will be there with no black paint at all?
    A. 130 B. 184 C. 150 D. 134
18. How many small cubes will be there with at least two different colours on their faces?
    A. 36 B. 44 C. 94 D. 26
19. How many small cubes will be there with one face painted black?
    A. 40 B. 60 C. 50 D. 80

20. How many small cubes will be with both black and green on their faces?
    A. 26 B. 16 C. 36 D. 56
21. How many small cubes will be there showing only green or only blue on their faces?
    A. 74 B. 84 C. 94 D. 54
22. If the following figure is folded to form the box. Select from among the given alternatives, the box that can be formed by folding the figure.



A. Only I B. Only II C. Only I and II D. Only III

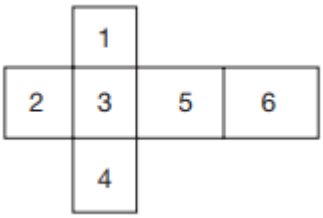
23. If the following figure is folded to form a cube, then what is the number on the face opposite to the face marked 3?



A. 6 B. 5 C. 1 D. 2

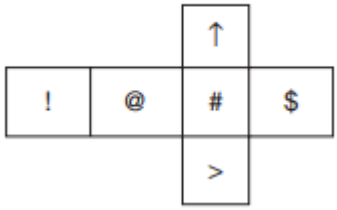
Directions for questions 24 to 25: Select the correct alternative from the given choices.

24. If the following figure is folded to form a cube, then what is the number on the face opposite to the face marked 3?



A. 6 B. 5 C. 1 D. 2

25. If the following figure is folded to form a cube, then what is the symbol on the face opposite to the face marked '@'?



A. ! B. ↑ C. > D. $

ALLEGATION AND MIXTURE
WORKSHEET – VII

Please Tick Appropriate answers with PEN Only **25**× 1 = 25

1. In what ratio must rice at Rs. 9.30 per kg be mixed with rice at Rs. 10.80 per kg so that the mixture be worth Rs. 10 per kg?
   A. 1:8 B. 1:7 C. 7:8 D. 8:7
2. In what ratio must water be mixed with milk to gain 20 % by selling the mixture at cost price?
   A. 1/6:5/6 B. 1:6 C. 5:6 D. 6/1:6/5
3. How many kgs. of wheat costing Rs. 8 per kg must be mixed with 86 kg of rice costing Rs. 6.40 per kg so that 20% gain may be obtained by selling the mixture at Rs. 7.20 per kg?
   A. 10.6 kg B. 10.8 kg C. 10.0 kg D. 10.1 kg
4. The milk and water in two vessels A and B are in the ratio 4:3 and 2:3 respectively. In what ratio, the liquids in both the vessels be mixed to obtain a new mixture in vessel C containing half milk and half water?
   A. 1:7 B. 1:5 C. 5:7 D. 7:5
5. How much water must be added to 60 litres of milk at 1 ½ litres for Rs. 2 So as to have a mixture worth Rs.10 2/3 a litre?
   A. 25 litre B. 10 litre C. 15 litre D. 20 litre
6. A grocer wishes to sell a mixture of two variety of pulses worth Rs.16 per kg. In what ratio must he mix the pulses to reach this selling price, when cost of one variety of pulses is Rs.14 per kg and the other is Rs.24 per kg?
   A. 2:5 B. 4:3 C. 2:1 D. 4:1 E. 7:6
7. Cost of two types of pulses is Rs.15 and Rs. 20 per kg, respectively. If both the pulses are mixed together in the ratio 2:3, then what should be the price of mixed variety of pulses per kg?
   A. Rs. 22 per kg B. Rs. 30 per kg C. Rs. 10 per kg D. Rs. 18 per kg
8. A dealer has 1000 kg sugar and he sells a part of it at 8% profit and the rest of it at 18% profit. The overall profit he earns is 14%. What is the quantity which is sold at 18% profit?
   A. 250 kg B. 600kg C. 620 kg D. 400 kg E. 450 kg
9. How much coffee of variety A, costing Rs. 5 a kg should be added to 20 kg of Type B coffee at Rs. 12 a kg so that the cost of the two coffee variety mixture be worth Rs. 7 a kg?
   A. 25 kg B. 34 kg C. 55 kg D. 52 kg E. 50 kg

10. A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?
    A. 1/3 B. 1/4 C. 1/5 D. 1/7
11. Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1: 1 :2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be?
    A. Rs. 169.50 B. Rs. 170 C. Rs. 175.50 D. Rs. 180
12. A can contains a mixture of two liquids A and B is the ratio 7:5. When 9 litres of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7:9. How many litres of liquid A was contained by the can initially?
    A. 10 B. 20 C. 21 D. 25
13. A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 litres of milk such that the ratio of water to milk is 3 : 5?
    A. 4 litres, 8 litres B. 6 litres, 6 litres
    C. 5 litres, 7 litres D. 7 litres, 5 litres
14. A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is?
    A. 4% B. $6\frac{1}{4}\%$ C. 20% D. 25%
15. A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?
    A. 26.34 litres B. 27.36 litres C. 28 litres D. 29.16 litres
16. A jar full of whisky contains 40% alcohol. A part of this whisky is replaced by another containing 19% alcohol and now the percentage of alcohol was found to be 26%. The quantity of whisky replaced is?
    A. 1/3 B. 2/3 C. 2/5 D. 3/5
17. The cost of Type 1 rice is Rs. 15 per kg and Type 2 rice is Rs. 20 per kg. If both Type 1 and Type 2 are mixed in the ratio of 2 : 3, then the price per kg of the mixed variety of rice is?
    A. Rs. 18 B. Rs. 18.50 C. Rs. 19 D. Rs. 19.50
18. 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of water is 16 : 65. How much wine did the cask hold originally?
    A. 18 litres B. 24 litres C. 32 litres D. 42 litres
19. 1 unit of x% milk is mixed with 3 units of y% milk to give 60% milk. If x > y, how many integer values can x take?
    A. 19 B. 20 C. 21 D. 13

20. A 60 litre mixture of milk and water contains 10% water. How much water must be added to make water 20% in the mixture?
    A. 8 litres B. 7.5 litres C. 7 litres D. 6.5 litres
21. A 20 litre mixture contains 30% alcohol and 70% water. If 5 litres of water is added to the mixture, what will be the percentage of alcohol in the new mixture?
    A. 22% B. 23% C. 24% D. 25%
22. 700 ml of a mixture contains water and milk in the ratio 2:8. How much water must be added to the mixture so that the ratio of water and milk becomes 3:8?
    A. 75 ml B. 65 ml C. 70 ml D. 60 ml

23. 1/2 and 1/4 parts of two bottles are filled with milk. The bottles are then filled completely with water and the content of bottles is poured into a container. Find the ratio of the milk and water in the container?
    A. 3/5 B. 3/4 C. 3/6 D. 4/6
24. An alloy has copper and zinc in the ratio of 6:3 and another alloy has copper and tin in the ratio of 8:6. The equal weights of both the alloys are melted to form a new alloy. What will be the weight of tin per kg of the new alloy?
    A. 4/14kg B. 3/14kg C. 3/12kg D. 2/10kg
25. Mixture of milk and water has been kept in two containers ratio of milk to water in one of the containers is 5:1 and that in the other container is 7:2. In what ratio the mixtures of these two containers should be added together so that quantity of milk in the new mixture may become 80%?
    A. 3:2 B. 2:3 C. 4:5 D. 5:9

SEATING ARRANGEMENTS

Worksheet-VIII

Please Tick Appropriate Answers with PEN Only 25× 1 = 25

1. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends. R is sitting to the left of A. Who is to the right of P?
   A. A
   B. X
   C. S
   D. Z

2. Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary. Who is sitting immediate right to Reeta?

   A. Bindu
   B. Rani
   C. Mary
   D. Seema

   Directions (3, 4): Six friends are sitting in a circle and are facing the centre of the circle. Deepa is between Prakash and Pankaj. Priti is between Mukesh and Lalit. Prakash and Mukesh are opposite to each other.

3. Who are the neighbours of Mukesh ?
   A. Prakash and Deepa
   B. Deepa and Priti
   C. Priti and Pankaj
   D. Lalit and Priti

4. Who is sitting right to Prakash?
   A. Mukesh B. Deepa C. Pankaj D. Lalit

Directions (5, 6): Six friends P, Q, R, S, T and U are sitting around the hexagonal table each at one corner and are facing the centre of the hexagonal. P is second to the left of U. Q is neighbour of R and S. T is second to the left of S.

5. Who is the fourth person to the left of Q?

   A. P B. U C. R D. Data inadequate

6. Who is the fourth person to the left of Q?

   A. P B. U C. R D. Data inadequate

7. Six girls are sitting in a circle facing to the centre of the circle. They are P, Q, R, S, T and V. T is not between Q and S but some other one. P is next to the left of V. R is 4^{th} to the right of P.

   What is the position of T?

   A. Just next to the right of Q
   B. Second to the left of P
   C. Between Q and R
   D. To the immediate right of V

8. Five persons are standing in one line. One of the two persons at extreme end is a professor and the other is a businessman. An advocate is to right of a student. An author is to the left of the businessman. What is the position of advocate from the left?

   A. 2nd
   B. 3rd
   C. 4th
   D. 1st

9. 8 persons E, F, G, H, I, J, K and L are seated around a square table - two on each side. There are 3 ladies who are not seated next to each other.J is between L and F.G is between I and F. H, a lady member is second to the left of J.F, a male member is seated opposite to E, a lady member. There is a lady member between F and I.

   Who among the following are three lady members?

   A. E, H and J
   B. E, F and G
   C. E, H and G
   D. C, H and J

10. In a class there are seven students (including boys and girls) A, B, C, D, E, F and G. They sit on three benches I, II and III. Such that at least two students on each bench and at least one girl on each bench. C who is a girl student, does not sit with A, E and D. F the boy student sits with only B. A sits on the bench I with his best friends. G sits on the bench III. E is the brother of C.
Which of the following is the group of girls?

A. BAC
B. BFC
C. BCD
D. CDF

11. (i) A, B, C, D, E, F and G are sitting in a row facing North :
(ii) F is to the immediate right of E.
(iii) E is 4^{th} to the right of G.
(iv) C is the neighbour of B and D.
(v) Person who is third to the left of D is at one of ends.

Who are to the left of C?

A. only B
B. G, B and D
C. G and B
D. D, E, F and A.

Directions(12, 13) :

Eight friends A, B, C, D, E, F, G and H sits around a circular table in such a way that four of them face opposite to the center while rest face towards the center.
G and C face same direction but opposite to D and B. D sits third to the left of H who sits third to the right of B. G sits third to the right of F. A sits opposite to D. E sits opposite to C who is not an immediate neighbor of B. F doesn't face outside. D is not an immediate neighbor of F. A faces towards the center. Not more than two persons sit together facing same direction.

12. How many people sit between H and D when counted from the right of H?

A. None B. Four C. One D. Three

13. What is the position of C with respect to G?

A. Second to the left B. Third to the left
C. Second to the right D. Fifth to the right

Directions (14, 15):

Eight persons are sitting around a circular table. Some of them are facing inside the center while some are facing outside the center. F sits third to the left of L. G sits third to the right of M who is facing inside the centre. E sits second to the left of G. Both K and H sits immediate left to each other. Only two persons sit between E and I. F faces same direction as H but opposite to L. K sits second to the left of E. K and I facing same direction but opposite to G.

14. Who among the following person sit immediate right of K?

A. G B. H C. M D. F

15. How many persons sit between I and K, when counted left of I?

A. Three B. One C. Four D. Two

Directions (16, 17):

Eleven friends M, N, O, P, Q, R, S, T, U, V and W are sitting in the first row of the stadium watching a cricket match.
T is to the immediate left of P and third to the right of U.
V is the immediate neighbour of M and N and third to the left of S.
M is the second to the right of Q, who is at one of the ends.
R is sitting next to the right of P and P is second to the right of O.

16. Who is sitting in the center of the row?

A. N B. O C. S D. U

17. If Q and P, O and N, M and T, and W and R interchange their positions then which of the following pairs of friends is sitting at the ends?
A. P and Q B. Q and R C. P and W D. W and R

18. Which of the following has the pair with the second person sitting to the immediate right of the first person?
A. QU B. VU C. TR D. PT

19. A, B, C, D, E, F and G are sitting in a circle facing at the centre and playing cards.
E is neighbour of A and D, who is sitting 3rd to the right of B.
G is not between F and C, if seen in anticlockwise direction starting from F.
F is to the immediate right of A.
Who are the neighbours of B?

A. A and F B. C and D C. F and C D. Data inadequate

20. P, Q, R, S, T, V, W and Z are sitting around a circle facing the center. T is 2nd to the right of R who is 3rd to the right of P. S is 2nd to the left of P and 4th to the right of Q. Z is 3rd to the right of V who is not an immediate neighbour of P.
What is P's position with respect to S?

A. 4th to the left B. 4th to the right C. 5th to the left D. 6th to the left

21. A, B, C, D, E, F, G, H and K are sitting around a circle facing the center. F is 4th to the right of A who is 3rd to the right of B. K is 4th to the left of B and 3rd to the right of D. C is 2nd to the right of H, who is immediate neighbor of A. E is 2nd to the left of G.
Who is to the immediate right of F?

A. B B. G C. E D. Data inadequate

22. Eight people J, K, L, M, N, O, P and Q are sitting around a circular table, facing the centre, not necessarily in the same order. O is sitting third to the right of M. There is only one person sitting between M and J. There are only three people between J and K. P is an immediate neighbor of J. There are only three people between P and L. N is second to the right of P. Who is sitting second to the left of the one who is sitting second to the left of Q?

A. M B. K C. N D. L

23. M, D, K, R, T, H, W and A are sitting around a circle, facing the centre. D is second to the right of M who is fifth to left of T. K is third to the right of R who is second to the right of D. H is second to the right of W. Who is second to the right of A?

A. M B. D C. K D. Data inadequate

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24. Twelve people were seated around a triangular table facing inwards such that three people were seated on each edge and one person on each corner.

Only five people sit between J and I and neither J nor I sits at corners. E who sits at one of the corner is third to the right of I. F, who is second to left of I, is immediate left of D. Only two people sit between F and G, who is immediate neighbour of J. A, B and C were seated in the middle of each edge. Two people sit between K and A, who doesn't sit near I. E is an immediate neighbour to both L and H, who is an immediate neighbour to B.

Who among the following sit at the corner?

A. F B. K C. H D. D

25. Eight persons- Janu, Prem, Risi, Sonu, Sasi, Vasu, Yuva, and Yogi are sitting at the circular table facing the center but not necessarily in the same order.
Yogi sits immediate left of Janu. Two persons are seated between Janu and Risi. One person sits between Janu and Vasu. Sonu neither sits adjacent to Risi nor Janu. Sonu sits second to the right of Yuva. The number of persons sits between Janu and Sasi is the same as the number of persons sits between Sasi and Prem. Sasi and Risi are not immediate neighbours. What is the position of Vasu with respect to Yogi?

A. Immediate left B. Immediate right C. Second to the right D. Third to the right

DIRECTION SENSE TEST

Worksheet- IX

Please Tick Appropriate answers with PEN Only **25×1=25**

1. One morning Udai and Vishal were talking to each other face to face at a crossing. If Vishal's shadow was exactly to the left of Udai, which direction was Udai facing?
   A. East B .West C. North D. South

2. Y is in the East of X which is in the North of Z. If P is in the South of Z, then in which direction of Y, is P?
   A .North B .South C. South-East D. None of these

3. If South-East becomes North, North-East becomes West and so on. What will West become?
   A. North-East B .North-West C. South-East D. South-West

4. A man walks 5 km toward south and then turns to the right. After walking 3 km he turns to the left and walks 5 km. Now in which direction is he from the starting place?
   A. West B. South C. North-East D. South-West

5. Rahul put his timepiece on the table in such a way that at 6 P.M. hour hand points to North. In which direction the minute hand will point at 9.15 P.M.?
   A. South-East B. South C. North D. West

6. Rasik walked 20 m towards north. Then he turned right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Finally he turns left and walks 15 m. In which direction and how many meters is he from the starting position?
   A.15 m West B.30 m East C.30 m West D.45 m East

7. Two cars start from the opposite places of a main road, 150 km apart. First car runs for 25 km and takes a right turn and then runs 15 km. It then turns left and then runs for another 25 km and then takes the direction back to reach the main road. In the meantime, due to minor break down the other car has run only 35 km along the main road. What would be the distance between two cars at this point?
   A.65 km B.75 km C.80 km D.85 km

8. Starting from the point X, Jayant walked 15 m towards west. He turned left and walked 20 m. He then turned left and walked 15 m. After this he turned to his right and walked 12 m. How far and in which directions is now Jayant from X?
   A.32 m, South B. 47 m, East C. 42 m, North D. 27 m, South

9. One evening before sunset Rekha and Hema were talking to each other face to face. If Hema's shadow was exactly to the right of Hema, which direction was Rekha facing?
   A. North B. South C. East D. Data is inadequate

10. A boy rode his bicycle northward, then turned left and rode 1 km and again turned left and rode 2 km. He found himself 1 km west of his starting point. How far did he ride northward initially?
   A.1 km B.2 km C.3 km D.5 km

11. K is 40 m South-West of L. If M is 40 m South-East of L, then M is in which direction of K?
   A. East B. West C. North-East D. South

12. A man walks 2 km towards North. Then he turns to East and walks 10 km. After this he turns to North and walks 3 km. Again he turns towards East and walks 2 km. How far is he from the starting point?
   A.10 km B.13 km C.15 km D .None of these

13. The length and breadth of a room are 8 m and 6 m respectively. A cat runs along all the four walls and finally along a diagonal order to catch a rat. How much total distance is covered by the cat?
   A. 10 B.14 C.38 D .48

14. One morning sujata started to walk towards the Sun. After covering some distance she turned to right then again to the right and after covering some distance she again turns to the right. Now in which direction is she facing?
   A. North B. South C. North-East D. South-West

15. Some boys are sitting in three rows all facing North such that A is in the middle row. P is just to the right of A but in the same row. Q is just behind of P while R is in the North of A. In which direction of R is Q?
   A. South B. South-West C. North-East D. South-East

16. One morning after sunrise, Vimal started to walk. During this walking he met Stephen who was coming from opposite direction. Vimal watch that the shadow of Stephen to the right of him (Vimal). To which direction Vimal was facing?
   A .East B. West C. South D. Data inadequate

17. Golu started from his house towards North. After covering a distance of 8 km. he turned towards left and covered a distance of 6 km. What is the shortest distance now from his house?
   A.10 km. B.16 km. C.14 km D. 2 km.

18. P started from his house towards west. After walking a distance of 25 m. He turned to the right and walked 10 m. He then again turned to the right and walked 15 m. After this he is to turn right at 135o and to cover 30 m. In which direction should he go?
A. West B. South C. South-West D. South-East

19. X started to walk straight towards south. After walking 5 m he turned to the left and walked 3 m. After this he turned to the right and walked 5 m now to which direction X is facing?
A. North-East B. South C. North D. South-West

20. Hemant in order to go to university started from his house in the east and came to a crossing. The road to the left ends in a theatre, straight ahead is the hospital. In which direction is the university?
A .North B. South C. East D .West

21. After walking 6 km, I turned to the right and then walked 2 km. After then I turned to the left and walked 10 km. In the end, I was moving towards the North. From which direction did I start my journey?
A .North B. South C. East D. West

22. Ravi left home and cycled 10 km towards South, then turned right and cycled 5 km and then again turned right and cycled 10 km. After this he turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight?
A.10 km B.15 km C.20 km D.25 km

23. Reena walked from A to B in the East 10 feet. Then she turned to the right and walked 3 feet. Again she turned to the right and walked 14 feet. How far is she from A?
A. 4 feet B.5 feet C.24 feet D.27 feet

24. One morning after sunrise, Suresh was standing facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing?
A. East B .South C. West D. Data is inadequate

25. If A x B means A is to the south of B; A + B means A is to the north of B; A % B means A is to the east of B; A - B means A is to the west of B; then in P % Q + R - S, S is in which direction with respect to Q?
A. South-West B. South-East C. North-East D. North-West

Day Sequence/Calendars

WORKSHEET – X

Please Tick Appropriate Answers with PEN Only 25× 1 = 25

1. It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?
   A. Sunday B. Saturday C. Friday D. Wednesday
2. What was the day of the week on 28th May, 2006?
   A. Thursday B. Friday C. Saturday D. Sunday
3. What was the day of the week on 17th June, 1998?
   A. Monday B. Tuesday C. Wednesday D. Thursday
4. The calendar for the year 2007 will be the same for the year:
   A. 2014 B. 2016 C. 2017 D. 2018
5. Which of the following is not a leap year?
   A. 700 B.800 C.1200 D.2000
6. January 1, 2008 is Tuesday. What day of the week lies on Jan 1, 2009?

   A. Monday B. Wednesday C. Thursday D. Sunday

7. Find the day of the week on 16 January, 1969?

   A. Thursday B. Friday C. Saturday D. Sunday
8. On 8th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004?

   A. Tuesday B. Monday C. Sunday D. Wednesday
9. January 1, 2007 was Monday. What day of the week lies on Jan. 1, 2008?

   A. Monday B. Tuesday C. Wednesday D. Sunday

10. Which of the following is a leap year?

    A. 2800 B. 1800 C. 2600 D. 3000

11. The day on 18.09.1977 was Sunday. A couple was married on this date. How many marriage anniversaries would fall on Sunday in the next 15 yrs?
    A. 1 B. 2 C.5 D. 9
12. How many Monday's are there in a particular month of a particular year if the month ends on Wednesday?

    A. 4 B. 5. C. 3 D. cannot be specified

13. In a month of 31 days, third Thursday falls on 16th, then what will be the last day of the month?
    A. 5th Friday B. 4th Saturday C. 5th Wednesday D. 5th Thursday
14. For a certain month, the dates of three of the Sundays are even numbers. Then, the 15th of that month falls on
    A. Thursday B. Friday C. Saturday D. Sunday
15. The year next to 1990 will have the same calendar as that of the year 1990.
    A. 1995 B. 1997 C. 1996 D. 1992
16. What was the day of the week on 1st April 1901?
    A. Sunday B. Monday C. Wednesday D. Saturday
17. What was the day of the week on 30th June 1980?
    A. Friday B. Wednesday C. Monday D. Saturday
18. What day of the week was on 15th August 1949?
    A. Monday B. Tuesday C. Thursday D. Saturday
19. On which day of the week does 18th September 1991 fall?
    A. Wednesday B. Tuesday C. Friday D. Saturday
20. Ashu was born on August 19, 1992, what day of the week was the born?
    A. Sunday B. Monday C. Tuesday D. Wednesday
21. On which dates of April 2012 will a Sunday come?
    A. 5, 12, 19, 26 B. 1, 8, 15, 22, 29 C. 3, 10, 17, 24 D. 7, 14, 21, 28
22. What was the day of the week on 28th May 2006?
    A. Thursday B. Friday C. Saturday D. Sunday
23. What was the day of the on 17th June, 1998?
    A. Monday B. Tuesday C. Wednesday D. Thursday
24. On what dates of April 2001 did Wednesday fall?

    A. 1st, 8th, 15th, 22nd, 29th B. 2nd, 9th, 16th, 23rd, 30th

    C. 3rd, 10th, 17th, 24th D. 4th, 11th, 18th, 25th

25. What day of the week was on 1st January 2001?

    A. Monday B. Wednesday C. Tuesday D. Friday

Data Sufficiency

WORKSHEET – XI

Please Tick Appropriate Answers with PEN Only **25× 1 = 25**

In each of the following questions, a few statements have been given. Analyse the given statements and answer whether the data given in the statements are sufficient to answer the question or not.

1. Six Professors have been assigned to take up lectures in a week, starting from Monday till Saturday. The six Professors are Mandeep, Nitin, Ondrilla, Pankhuri, Yukti and Rati. How many Professors conduct lectures before Ondrilla?

   Statement I: Pankhuri conducts her lecture atleast before three people. Mandeep gave the lecture conducted on Philosophy on Tuesday.
   Statement II: Yukti is given the lecture before at least one of the other lecturers. Ondrilla conducted her Physics lecture immediately on the next day as Pankhuri's lecture.
   Statement III: A minimum of four lectures were conducted after Nitin's lecture
   A. If data in Statement I alone is sufficient
   B. If data in all Statement I, II & III is sufficient
   C. If data in only Statement II & III is sufficient
   D. If data in only Statement III is sufficient
   E. If data in only Statement I & II is sufficient

2. Who among the five friends viz. A, B, C, D & E is the tallest?
   Statement I: B is only taller than D
   Statement II: A is shorter than E but taller than C
   Statement II: B is not the shortest
   A. If statement II alone is sufficient
   B. If statement I & II together are sufficient
   C. If statement I, II & III together are not sufficient
   D. If statement I & III are sufficient
   E. None of the above

3. Who is the wife of Z?
   Statement I: H is the only daughter of X. K is the paternal uncle of X.
   Statement II: K is the brother-in-law of X
   Statement III: K and Z are brothers
   A. If statement I, II & III together are sufficient
   B. If only statement II & III are sufficient
   C. If only statement I is sufficient
   D. If only statement I & II are sufficient
   E. None of the above

4. How is M related to N?
   Statement I: N's sister F has married H's brother G.
   Statement II: M is the only daughter of G and F.
   A. If statement I alone is sufficient
   B. If statement II alone is sufficient
   C. If both statements I and II together are sufficient
   D. If either statement I or II is sufficient
   E. If neither statement I and II is sufficient

5. What is the code for 'sky' in the code language?
   Statement I: In the code language, 'get set jet' means 'kite flying sky'.
   Statement II: In the same code language, 'jet ket pet' means 'sky is blue'.
   A. If statement I alone is sufficient
   B. If statement II alone is sufficient
   C. If statement I and II together are sufficient
   D. If neither statement I nor II is sufficient
   E. If either statement I or II is sufficient

6. Who among Mukund, Karan, Ajay and Sanjay is the youngest?

   Statement I: Mukund is elder than Karan. Sanjayis younger than Karan
   Statement II: Ajay is younger than Karan and elder than Sanjay
   A. If only statement I is sufficient
   B. If both statements I and II are sufficient
   C. If only statement II is sufficient
   D. If neither statement I nor II is sufficient
   E. If either statement I or II is sufficient

7. What will be the code for "big"?
   Statement I: In a certain code language, "butterfly is beautiful" is written as "es je ik"
   Statement II: In the same code language, "box is big" is written as "ik ej ze" and "blow the big balloon" is written as "ze ak xo il"
   A. I statement I alone is sufficient
   B. If both statements I and II are sufficient
   C. If neither statement I nor II is sufficient
   D. If either statement I or II is sufficient
   E. If only statement II is sufficient

8. Five lectures are to be conducted between Monday to Friday. On which day will the history lecture be conducted?

   Statement I: The English Literature lecture is conducted on Thursday, immediately after the Philosophy lecture

   Statement II: Physics lecture is not scheduled for the last day and three lectures are conducted after the Chemistry lecture

   A. If statement I alone is sufficient
   B. If both statements I and II are sufficient
   C. If neither statement I nor II is sufficient
   D. If either statement I or II is sufficient
   E. If only statement II is sufficient

9. Six friends Agrima, Barkha, Charu, Dhriti, Elina and Faiza are sitting around a circular table, facing the centre. Who sits exactly in between Charu and Dhriti?

   Statement I: Barkha sits second to the left of Dhriti and only one person sits between Charu and Barkha

   Statement II: Agrima sits to the immediate right of Barkha and there are two people sitting between Elina and Dhriti

   A. If statement I alone is sufficient
   B. If both statements I and II are sufficient
   C. If both statements I and II together are not sufficient
   D. If either statement I or II is sufficient
   E. If only statement II is sufficient

10. What will be the code for “song”?

    Statement I: In a certain code language, “listening to music” is written as “se je ke” and “music is peace” is written as “ze ke xe”

    Statement II: In the same code language, “dance to music” is written as “ke de me” and “unmute the song” is written as “ne pe re”

    A. If statement I alone is sufficient
    B. If both statements I and II are sufficient
    C. If both statements I and II together are not sufficient
    D. If either statement I or II is sufficient
    E. If only statement II is sufficient

11. Out of five friends, A, B, C, D & E, which one is the heaviest?

    Statement I: C is heavier than E and lighter than A. Only one person is heavier than B

    Statement II: Two people are heavier than A and E is the lightest. C is not the heaviest and only oneperson is heavier than B

    A. If statement I alone is sufficient
    B. If both statements I and II are sufficient
    C. If both statements I and II together are not sufficient
    D. If either statement I or II is sufficient
    E. If only statement II is sufficient

12. Seven people are sitting in a straight line viz. Gautam, Palak, Varun, Diya, Krishi, Rudra and Lalit. Who among these is sitting exactly in the centre of the line?

    Statement I: Gautam is sitting at one of the ends of the line. Varun is sitting third to the right of Gautam **Statement II:** Rudra is sitting third to the left of Palak. Lalit is sitting second from the right end of the line

    Statement III: Three people sit between Krishi and Palak. Gautam is sitting at one of the ends of the line

    A. Only statement I is sufficient
    B. Only statement II is sufficient
    C. Only statement III is sufficient
    D. All statements I, II & III are sufficient
    E. None of the above

13. What will be the code for "Rainbow"?
    Statement I: "Sky has rainbow" is coded as "@ # *"
    Statement II: "rainbow has seven colours" is coded as "# @ + ?"
    Statement III: "blue is one colour of rainbow" is coded as "@ $ & < ^"

    A. Only statement I is sufficient
    B. Only statement II is sufficient
    C. Only statement III is sufficient
    D. All statements I, II & III are sufficient
    E. None of the above

14. Which word has been coded as "xz"?
    Statement I: "trees are green" is coded as "es le gk"

    Statement II: "shrubs are growing" is coded as "gk ae lk" and "plants shrubs trees" is coded as "es lk xz"

    A. If statement I alone is sufficient
    B. If both statements I and II are sufficient
    C. If both statements I and II together are not sufficient
    D. If either statement I or II is sufficient
    E. If only statement II is sufficient

15. 5 friends - Ankita, Anita, Arpita, Arunima and Amita are sitting around a circular table, facing outside the circle. Who sits on the immediate right of Arpita?

    [ ]

    Statement I: Arpita sits in between Anita and Arunima
    Statement II: Only one person is sitting between Arunima and Ankita

    A. If statement I alone is sufficient
    B. If both statements I and II are sufficient
    C. If both statements I and II together are not sufficient
    D. If either statement I or II is sufficient
    E. If only statement II is sufficient

16. Five people are sitting in a straight line: A, B, X, Y and Z. Who is sitting at the right end of the line?

Statement I: Two people are sitting between X and Y. X is sitting at one of the ends of the line
Statement II: Z sits to the immediate right of Y and B is on the immediate left of Y
Statement III: A is sitting exactly in between X and B

A. If only statement I is sufficient
B. If both statement II and III are sufficient
C. If both statements I and III are sufficient
D. If all the three statements I, II & III are sufficient
E. If all statement I, II & III together are also not sufficient

17. There are six people in a family, 2 couples and 2 children. How is Z related to M?

Statement I: Y is the only sister of A and A is married to C.
Statement II: M is the only niece of C
Statement III: N is the cousin of M

A. If only statement III is sufficient
B. If both statements I and II are sufficient
C. If both statements I and III are sufficient
D. If all the three statements I, II & III are sufficient
E. If all statement I, II & III together

18. In which direction is Sumit when he reached the final destination?

Statement I: Sumit starts walking north from his house and then takes a right turn and Abhijeet joins him there

Statement II: Sumit's school is 1km away from his house and is in the south-west direction from his house

A. Both statements I and II together are sufficient
B. Only statement I is sufficient
C. Only statement II is sufficient
D. Neither statement I nor II is sufficient
E. Either statement I or II is sufficient

19. What will be the code for "pen"?

Statement I: "pen is of black colour" is coded as "es kj lk mn ok" and "black colour bird" is coded as "zx kj ok"
Statement II: "bird sings beautifully" is coded as "zx cv nb"

A. Both statements I and II together are sufficient
B. Only statement I is sufficient
C. Only statement II is sufficient
D. Neither statement I nor II is sufficient
E. Either statement I or II is sufficient

20. 6 people are sitting in a straight line: O, M, G, J, X and Y. Who is sitting second to the right of J?
Statement I: M is sitting at the right end of the line and G is to the immediate left of M. X is sitting third from the left end of the line and to the immediate left of J

Statement II: Y is sitting at the left end of the line and J is second to its right. G is on the immediate right of J and M is on the other end of the line

A. Both statements I and II together are sufficient
B. Only statement I is sufficient
C. Only statement II is sufficient
D. Neither statement I nor II is sufficient
E. Either statement I or II is sufficient

Directions for data sufficiency questions (21-30):

A. If data in the statement I alone is sufficient to answer the question.

B .If data in the statement II alone is sufficient to answer the question.

C. If data either in the statement I alone or statement II alone are sufficient to answer the question.

D. If data given in both I & II together are not sufficient to answer the question.

E. If data in both statements I & II together are necessary to answer the question.

21. Who is taller among P, Q, R, S & T?

Statement I: S is shorter than Q. P is shorter than only T.

Statement II: Q is taller than only S. T is taller than P and R.

22. What is the distance between point P and point Q?

Statement I:Point R is 10 m west of point P and point S is 10 m north of point P.

Statement II: Point Q is 10 m south-east of point R. Point S is 20 m north-west of point Q.

23. How is Shubham related to Shivani?

Statement I:Shubham is brother of Meenal. Shivani is niece of Pooja.

Statement II: Neeraj is Meenal's uncle and Preeti's brother

24. How is PRODUCT written in that code language?

Statement I:In a certain code language, AIEEE is written as BJFFF.

Statement II: In a certain code language, GYPSY is written as FXORX

25. How is ‘face’ written in that code language?

Statement I:In a certain code language, ‘no one with face’ is coded as ‘fo to om sop’ and ‘no one has face’ is coded as ‘om sit fo sop’

Statement II: In a certain code language, ‘face of no light’ is coded as ‘om mot fo kiz’ and ‘no one is smart’ is coded as ‘sop fo sip lik’.

CLOCKS

Worksheet – XII

Please Tick Appropriate Answers with PEN Only **25× 1 = 25**

1. An accurate clock shows 8 o'clock in the morning. Through how may Degrees will the hour hand rotate when the clock shows 2 o'clock In the afternoon?

   A. 144° B. 150° C. 168° D. 180°

2. The reflex angle between the hands of a clock at 10.25 is:

   A.180° B. $(192\frac{1}{2})^{\circ}$ C. 195° D. $(197\frac{1}{2})^{\circ}$

3. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:

   A.145° B. 150° C. 155° D. 160°

4. A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is:

   A. $59\frac{7}{12}$min. past 3 B. 4 p.m.

   C. $58\frac{7}{11}$min. past 3 D. $2\frac{3}{11}$min. past 4

5. How much does a watch lose per day, if its hands coincide every 64 minutes?

   A. $\left(32\frac{8}{11}\right)$min. B. $\left(36\frac{5}{11}\right)$min C. 90 min. D. 96 min.

6. At what time between 7 and 8 o'clock will the hands of a clock be in the same straight line but, not together?

   A. 5 min. past 7 B. $\left(5\frac{2}{11}\right)$ min. past 7

   C. $\left(5\frac{3}{11}\right)$ min. past 7 D. $\left(5\frac{5}{11}\right)$ min. past 7

7. At what time between 5.30 and 6 will the hands of a clock be at right angles?

   A. $\left(43\ \frac{5}{11}\right)$ min. past 5 B. $\left(43\ \frac{7}{11}\right)$ min. past 5

   C. 40 min. past 5 D. 45 min. past 5

8. The angle between the minute hand and the hour hand of a clock when the time is 4.20, is:

   A. 0° B. 10° C. 5° D. 20°

9. At what angle the hands of a clock are inclined at 15 minutes past 5?

   A. $\left(58\ \frac{1}{2}\right)^{\circ}$ B. 64° C. $\left(67\ \frac{1}{2}\right)^{\circ}$ D. $\left(72\ \frac{1}{2}\right)^{\circ}$

10. At 3:40, the hour hand and the minute hand of a clock form an angle of:

    A. 120° B. 125° C. 130° D. 135°

11. How many times are the hands of a clock at right angle in a day?

    A.22 B. 24 C. 44 D. 48

12. The angle between the minute hand and the hour hand of a clock

    When the time is 8.30, is:
    A. 80° B. 75° C. 60° D. 105°

13. How many times in a day, are the hands of a clock in straight line but Opposite in direction?
    A. 20 B. 22 C. 24 D. 48

14. At what time between 4 and 5 o'clock will the hands of a watch point in opposite directions?

    A. 45 min. past 4 B. 40 min. past 4

    C. $\left(50\ \frac{4}{11}\right)$ min. past 4 D. $\left(54\ \frac{6}{11}\right)$ min. past 4

15. At what time between 9 and 10 o'clock will the hands of a watch be together?

A. 45 min. past 9 B. 50 min. past 9

C. $\left(49\ \frac{1}{11}\right)$ min. past 9 D. $\left(48\ \frac{2}{11}\right)$ min. past 9

16. At what time, in minutes, between 3 o'clock and 4 o'clock, both the needles will coincide each other?

A. $\left(5\ \frac{1}{11}\right)''$ B. $\left(12\ \frac{4}{11}\right)''$

C. $\left(13\ \frac{4}{11}\right)''$ D. $\left(16\ \frac{4}{11}\right)''$

17. How many times do the hands of a clock coincide in a day?

A. 20 B. 21 C. 22 D. 24

18. How many times in a day, the hands of a clock are straight?

A. 22 B. 24 C. 44 D. 48

19. A watch which gains uniformly is 2 minutes low at noon on Monday and is 4 min. 48 sec fast at 2 p.m. on the following Monday. When was it correct?

A. 2 p.m. on Tuesday B. 2 p.m. on Wednesday

B. 3 p.m. on Thursday D. 1 p.m. on Friday

20. When the time is 5:40, then what is the angle between the hour hand and the minute hand of a clock?

A. 70° B. 60° C. 74° D. 80°

21. At what time between 2 and 3 o'clock will the hands of a clock be together?

A. 10(10/11) min. past 2 B. 10 min. past 2

C. 20(10/11) min. past 2 D. 12 min. past 2

22. What when the time is 6:32, then what is the angle between the hour hand & the minute hand of a clock?

A. 2 B. 4° C. 8° D. 12°

23. How many times do the hands of a clock coincide in a day?

A. 20 B. 21 C. 22 D.

24. At what time between 1 and 2 o' clock will the hands of a watch makes an angle of 180°?

A. 35(5/11) min. past 1 B. 40 min. past 1
C. 50(4/11) min. past D. 38(2/11) min. past 1

25. At what time between 6 and 7 are the hands of a clock 8 minutes apart?

A. 24 min past 6 B. 21 min past 6
C. 18min past 6 D. 20 min past 6