MATHEMATICAL REASONING

Mathematical reasoning is a part of verbal reasoning. For UGC-NET mathematical reasoning we have to read only

1. Series Completion
2. Coding and Decoding
3. Classification (Odd Man Out)
4. Analogical Relationship

The word verbal is defined as pertaining to words rather than things. Verbal reasoning tests use word, letter and numbers, and require logical reasoning and a reasonable knowledge of the English language. It is also necessary to be familiar with simple manipulations with figures, like addition, subtractions, division and multiplication. The problems of number in test of reasoning will not require any advanced knowledge of math's instead, they will test how logical you are, that is how well you reason and think while carrying out simple arithmetic manipulations. Verbal reasoning includes four broad categories, namely series completion, classification (finding the odd man out), analogical relationships and coding in addition to other types of logical and reasoning questions.

SERIES COMPLETIONS

In series, letters or digits are given in a specific sequence/order and you have to find out the next word, letter or digit to complete the given series. There may be questions in which you have to identify the last one or two letters or digits to continue the series or to find a missing letter or digit in between the given letters and numbers to continue the sequence followed in the question. As it is, there is no set pattern and each question may follow with a different pattern or sequential arrangement of letters or digits, which you have to detect using your common sense and reasoning ability at the quickest of your speed.

There are mainly three types of verbal series completion questions, namely:

1. Letter Series
2. Number Series
3. Letter and Number Mixed Series

Generally UGC ask questions based only on number series and letter series.

LETTER SERIES

In the letter series, some letters are given that follow a particular sequence or order. You have to detect the pattern from the given letters and find the missing letter or the next letter to continue the pattern.

Hints to Solve the Letter Series

There are no set rules. In each case you have to discover the pattern adopted. There can be omission of letters in an order, for example, one each time.

The easiest way to tackle letter series questions is to be varying of the position of the alphabet and its position number in both forward and backward sequences.

For instances,

A	B	C	D	.....and so on.
1	2	3	4	(forward)
26	25	24	23	(backward)

Also remember that to continue the series after Z, we again begin with A. In other words, the sequence is kept in a circular order. There may be several similar patterns in letter series.

Some skipping patterns are described below.

(i) **Regular order:** The number of letters skipped remains the same.

(ii) **Increasing order:** Each time the number of letters skipped increases in a given pattern. For example,

A C F J O ?

Answer: U

Here, each time the number of letters skipped increases by one.

(iii) **Decreasing order:** Each time the number of letters skipped decreases in a

given pattern. For example,

A G L P S ?

Answer: U

Here the number of letters skipped decreases by one each time, that is, first 5, then 4, then 3, and so on.

(iv) **Interlinked series:** For example

A D F J M R ?

Answer: V

Here, there are two interlinked series.

(v) Sometimes there may be repetition of letter in set order e.g. in aab,bbc,...., one letter is repeated twice, next set could be cdd.

(vi) Sometimes a number of letters are arranged in a series. In this series some letters are left out and the candidate are required to fill up the blanks by picking out appropriate letters from the given alternatives. For example: Find the missing letters of the series d_bdd_ _d_ebd_e_d.

Answer: eebddb

In this series, three alphabets b, d, e have been arranged in a pattern, which have been repeated. The pattern is to be discovered by trying sequences. Only eebddb is the correct answer because when inserted in sequence, it make the pattern of repeating debd.

NUMBER SERIES

In the number series, some numbers are arranged in a particular sequence. All the numbers form a series and change in a certain order. Sometimes, one or more numbers are wrongly put in the number series. One is required to observe the trend in which the numbers change in the series and find out which number/numbers misfit into the series that number/numbers is the ODD NUMBER of the series. The other pattern is to findout the missing or last number of a series.

Following are some of the important rules or order on which the number series can be made.

Pure series

In this type of number series, the number itself obeys certain order so that the character of the series can be found out.

It may be:

- Perfect square
- Perfect cube
- Prime
- Combination

Difference series

Under this category, the change in order for the difference between each consecutive number of the series is found out

Change in order for the Difference series

1. Difference between consecutive numbers is same.
2. Differences between consecutive numbers are in arithmetic progression (A.P).
3. Difference between consecutive numbers is a perfect number.
4. Differences between consecutive numbers are multiples of a number.
5. Differences between consecutive numbers are prime numbers.
6. Difference between consecutive numbers is a perfect cube.
7. Difference between consecutive numbers is in geometric progression (G.P.).

Ratio series

Under this category, the change in order for the ratios between each consecutive number of the series is found out.

Mixed series

Here, the numbers obeying various orders of two or more different types of series are arranged alternately in a single number series.

Change in order for the Ratio series

1. Ratio between each consecutive number is the same.
2. Ratio between each consecutive numbers is in arithmetic progression (A.P).
3. Ratio between consecutive numbers is perfect square number.

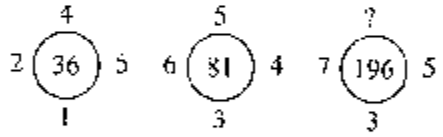
4. Ratio between consecutive numbers is the multiple of a number.
5. Ratio between consecutive numbers is a prime number.
6. Ratio between consecutive numbers is a perfect cube number.
7. Ratios between consecutive numbers are in geometric progression (G.P.).

OTHER FORMATS

Sometimes the numbers are arranged in a fig. such as square, cube or circle and we have to find out either the missing number or the wrong one.

Directions: *In the question given below, a definite relationship exists in the numbers written inside/outside the geometrical figures. Determine the missing number represented by a question mark (?).*

(1)



(a) 9 (b) 5
(c) 7 (d) 1

Sol. **(c) 7**

$(5 \times 2) \quad (4 \times 1) = 6, \ 6^2 = 36$

$(6 \times 4) - (5 \times 3) = 9, \ 9^2 = 81$

$(7 \times 5) - (3 \times 7) = 14, \ 14^2 = 196 \Rightarrow ? = 7$

MISSING TERMS

Directions: *Find the missing number in each of the following questions.*

1.

18	27	75
41	60	19
45	45	?

(a) 20 (b) 30
(c) 15 (d) 35

2.

91	64	73
64	76	61
45	60	?

(a) 71 (b) 66
(c) 68 (d) 69

Answers

1. (b) Sum of all horizontal rows is equal to 120.
2. (a) Sum of all vertical columns is equal to 200.

VERBAL CLASSIFICATION (ODD MAN OUT)

In this type of questions four, five or six terms are given in such a way that one is different from the other. The term, which does not belong to that group, is called an odd term. Candidates have to select this odd term.

It usually comprises

(1) Letter classification
(2) Number classification
(3) Word/item classification.

LETTER CLASSIFICATION

A group of alphabets or individual letters are given, and you have to find the set or individual which does not belong to that group. We can derive relationships on the following basis

(a) Position of letters
(b) Small and capital letters
(c) Vowels and consonents
(d) Repetition and skipping pattern
(e) Letter formation

NUMBER CLASSIFICATION

In this type of questions numbers or group of numbers replaces the letters. One group or individual number is different from the rest. We can derive relationship on the following basis:

(a) Even, odd or prime numbers
(b) Integers, rational, irrational numbers
(c) Multiple of a number
(d) Submultiple of a number
(e) Factor of a number
(f) Squares of numbers
(g) Cubes of numbers
(h) Sum of the numbers
(i) Difference of the numbers
(j) Position of the numbers in given group.

WORD/ITEM CLASSIFICATION

In these questions a group of four, five or six word/items are given, one of which doesnot

belong to the group. You have to identify the odd one.

There are several basic relationships that could exist between words

Some of them are:

(a) Relationship based on meaning
(b) Inter-relationship of words
(c) Word consistency relationship
(d) Word formation relationship
(e) Functional relationship

You have to determine the relationship between the given terms and then identify the odd term.

Some other type of analogical relationships are:

(a) Antonymous relationship: Opposite in meaning
(b) Synonymous relationship: Same in meaning
(c) Classification relationship: Biological/ Botanical/Physical/Chemical classification or Scientific or Historical classification.
(d) Article purpose relationship
(e) Time sequence relationship
(f) Cause and effect relationship
(g) Worker article relationship
(h) Tool-object relationship
(i) Whole part or part whole relationship
(j) Degree of difference relationship: Same meaning but different in degree only
(k) Worker tool relationship
(l) Sex relationship
(m) Family relationship (Blood Relationship)
(n) Final product and raw material relationship
(o) Symbolic relationship
(p) Place relationship
(q) Association relationship
(r) Numerical relationship
(s) Specialist and subject relationship
(t) Phobias and there cause
(u) Age relationship
(v) Comparative relationship
(w) Habit relationship
(x) Qualitative or quantitative relationship
(y) Utility relationship

As for example: Carpenter, blacksmith, goldsmith, sailor, and tailor.

Sol.: Carpenter, blacksmith, goldsmith and tailor form a group because these four change the form of the object by applying their skill. However, a sailor does not belong to this group. So 'sailor' is the odd man out. Thus, 'sailor' is the answer.

SOLVED EXAMPLES

TYPE-I

In this type of questions, four alternatives are given, of which three are similar to one another while the fourth one is different. So you are required to pick out the item which does not belong to that group.

Ex. 1. Find the ODD one out
(a) Different (b) Separate
(c) Distinct (d) Similar

Sol. Except (d), all others are synonyms. Hence, the answer is (d).

Ex. 2. Four of the following five are alike in a certain way and so form a group. The one, which does not belong to that group is
(a) Tiger (b) Lion
(c) Cat (d) Horse

Sol. Except (d), all others are carnivorous animal, while horse is a herbivorous animal. Hence, the answer is (d)

TYPE-II

In this type of questions, four numbers or words are given, out of which three are alike in some manner while one is different and this number/word is to be chosen as the answer.

Ex. 3. Which one is different from the other three?
(a) ZYXW (b) MNOP
(c) HGFE (d) DCBA

Sol. Only in (b) the letters are in sequence.

Ex. 4. Find the ODD one out.
(a) PQR (b) MNO
(c) BDC (d) TUV

Sol. Except (c), in all others, the three letters are in sequence. Hence, the answer is (c).

TYPE-III

In this type of questions, four or five numbers are given of which three or four are alike in some way, while one is different. Therefore, this odd number is the required answer.

Ex. 5. Four of the following five are alike in a certain way and so form a group. Which is one that does not belong to the group?
(a) 13 (b) 26
(c) 39 (d) 51

Sol. Except (d), all others are divisible by 13.

Ex. 6. Find the ODD one out.
(a) 426 (b) 427
(c) 279 (d) 167

Sol. Except (b), in other numbers, the middle digit is the difference of the other two.

TYPE-IV

In this type of questions, some pair of words are given, out of which the words in all pairs excepts one bear certain relationship. Therefore, candidates are asked to decipher this relationship and choose the pair in which the words are differently related. Thus, the odd one is the answer.

Ex. 7. (a) Leg : Lame (b) Tongue : Taste
(c) Ear : Deaf (e) Eye : Blind

Sol. Except (b), in all other groups, a part of the body is infected with a disability. Hence, the answer is (b)

Ex. 8. (a) Mahavira : Jainism
(b) Chandragupta : Maurya
(c) Kanishka : Kushan
(d) Babar : Mughal

Sol. Except (a), in all other groups, a ruler had founded his dynasty. Hence, the answer is (a)

CODING DECODING

In this type of questions letter or numbers are allotted certain values or represent certain other letter, word or number according to specific rules which are generally mentioned in the questions in the form of examples. Students are required to find the code or they have to decode the given coded word.

Example1: If CEJQ is coded as XVQJ then find the code for BDIP.

Answer: YWRK

Explanation: Here the first 13 letters of the alphabet are coded by 13 letters of alphabet in reverse.

A B C D E F G H I J K L M (First 13 Letters)
Z Y X W V U T S R Q P O N (Last 13 Letters)

It is obvious from the above that coding scheme is

B = Y, D = W, I = R, P = K.

There are various types of coding.

ANALOGICAL LETTER CODING

These codes are based on the analogy given in the question itself.

Example: If VITAMIN is coded as WXSBCXL then what is the code for MINA?

Answer: CXLB. This follows according to the rule that MINA is made from VITAMIN. So its code will also be made from the code of VITAMIN.

CODING WITH SPECIFIC PATTERN

Here letter are allotted certain values but with specific pattern.

For Example: If FIRE is coded for a secret massage to be EHQD, how is DONE can be coded?

Answer: Here according to the pattern the preciding letter is taken for coding as E for F, H for I and so on. Therefore, the code will be C for D, N for O, M for N and D for E. So the code will be CNMD.

CODING BY REVERSING OR INTERCHANGING POSITIONS OF LETTERS

Example: If YOUNG and AKASH are coded as GNUOY and HSAKA then what will be the code of ALOK?

Answer: KOLA. Here the code is the reverse of the given word.

CODING WITH NUMBERS

Here the letters are allotted certain numerical values.

For Example: If YOUNG is coded as 5, ALOK as 4 then what will be the code of EDUCATION?

Answer: 9, count the number of letters in the given word.

OTHER FORMATS

Some sentences are coded below

Akash is going	Mis letis jonta
Anu is working	Nin jonta pick
Atul was going	Kin minto letis
Akash and Atul are friend	Mis kin kik sen kul

According to the above pattern what is the code for going?

Answer: Letis.

For these type of questions you have to read the coded words and their codes very carefully.

Careful analysis of the above format gives us Akash = Mis, Atul = Kin, Is – jonta , going = letis. Working = pick or nin, was = minto

FAMILY BLOOD RELATIONSHIP

There are various relationship between family members. In this type of question you are asked to find the right blood or family relationship between two persons.

The important relationships are: .

The following relations would prove immensely beneficial to you for solving such questions:

Mother's or Father's son : Brother
Mother's or Father's daughter : Sister
Mother's or Father's brother : Uncle
Mother's or Father's sister : Aunt
Mother's or Father's mother : Grandmother
Mother's or Father's father : Grandfather
Son's wife: Daughter-in-law
Husband's or wife's sister: Sister-in-law
Husband's or wife's brother: Brother-in-law
Brother's son: Nephew
Brother's daughter: Niece
Uncle or aunt's son or daughter: cousin
Sister's husband: Brother-in-law
Brother's wife: Sister-in-law
Grandfather's only son: Father
Grandmother's only son : Father
Garndfather's son : Father or uncle
Grandmother's son: Father or uncle
Grandfather's only daughter-in-law: Mother
Grandmother's only daughter-in-law: Mother

Directions (Q 1-5): *Read the following information carefully and answer the questions below:*

A family consists of six members P,Q,R,S, T and U. There are two married couples. Q is an engineer and the father of T. U is the grandfather of R and is a contracter. S is the grandmother of T and is a housewife. There is one doctor, one contracter, one nurse, one housewife and two students in the family.

1. Who is the husband of P?
   (a) R (b) U
   (c) Q (d) S
   (e) T
2. Who is the sister of T?
   (a) R
   (b) U
   (c) T
   (d) Information insufficient
   (e) None of these
3. Which of the following can be P's profession?
   (a) Doctor (b) Nurse
   (c) Doctor or Nurse (d) Housewife
   (e) None of these
4. Which of the following are two married couples?
   (a) US, QT (b) US, QP
   (c) PS, RU (d) US, RP
   (e) None of these
5. Which of the following is definitely a group of male members?
   (a) QU (b) QUT
   (c) QUP (d) UT
   (e) None of these

Ans. Q , the Doctor, is the father of T. S the Housewife, is the grandmother of T and hence the mother of Q. Since there are only two married couples - one being that of Q-, the grandfather of R, i.e. U, must be married to S. Thus, R and T will be both children of Q and these must be the students. So, P, who remains, shall be the wife of Q and she alone can be the nurse. Thus, U must be the contractor.

1.(c) The husband of P will be Q.

2.(a) Clearly , R and T are children of the same parents. So R will be the sister of T.

3. (b) P is the nurse.

4. (b) The two married couples are Q, P and U, S.

5. (a) Clearly, for certain the males are Q, the father, and U, the grandfather.

QUESTIONS

Type IA

Directions: *Complete the following series by choosing the best from among the alternatives given below each question :*

1. BEH, DGJ, ?, EJO, GLQ, INS, ?
   (a) FLR (b) FIS
   (c) FKO (d) FIL
2. APZLT, CQYNR, ERXPP, GSWRN, ?
   (a) KVJUJ (b) JUUVK
   (c) ITVTL (d) KUUVJ
3. RAP, MAP, HOT PUK, ?
   (a) LINE (b) PGI
   (c) STN (d) CAT
4. ZBAY, JRQI, OMLN, YCBX, ?
   (a) CYXB (b) XCBY
   (c) VDEW (d) FUVE
5. CWE, FQH, RDT, ?
   (a) XBZ (b) TGU
   (c) MCO (d) PUT
6. J, F, M, A, M, ?
   (a) M (b) J
   (c) D (d) S
7. C, E, H, L, Q, ?
   (a) R (b) W
   (c) U (d) X
8. H, V, G, T, F, R, E, P, ?
   (a) K, L (b) D, N
   (c) C, D (d) L, K
9. EV, JQ, OL, ?
   (a) PH (b) TG
   (c) PI (d) US
10. pru ..... bdl, hjl, npr
    (a) uwy (b) vyn
    (c) vxz (d) axy
11. KPA, [illegible] MRC, NSD,
    (a) UOT (b) OVE
    (c) EOT (d) TOE
12. ADG, GJM .....
    (a) NQT (b) MOQ
    (c) MPS (d) WTO
13. G, H, J, M, ?, V
    (a) Q (b) T
    (c) O (d) R
14. A/2, B/4, C/6, D/8
    (a) E/12, F/14 (b) E/10, F/12
    (c) D/10, E/10 (d) E/8, F/10
15. ab - a b - a - bba
    (a) aanb (b) baba
    (c) abba (d) baab
16. ..... bc .... bb ..... aabc
    (a) abab (b) caab
    (c) aaab (d) acac
17. a ..... ca ..... bc ..... bcc ..... bca
    (a) bbab (b) baba
    (c) aabb (d) bbaa
18. AK, EO, IS, ?
    (a) MW (b) MV
    (c) XW (d) NX
19. BAS, ?, DCQ, DDP, FEO, ?
    (a) CBT (b) ABR
    (c) BCT (d) BBR
20. PAT, PEN, PIN, POT ?
    (a) PIG (b) PEP
    (c) PUT (d) POT
21. ABA, EDE, IFI, ?
    (a) UGU (b) OIO
    (c) OHO (d) OMS
22. BAZ, DCY, FEX, ?
    (a) FXW (b) EFX
    (c) FEY (d) GHW
23. DCXW, FEVU, GHTS, JIRQ, ?
    (a) LKPO (b) ABYZ
    (c) JIRQ (d) LMRS
24. Z, X, V, T, R, ?
    (a) OK (b) NM
    (c) KS (d) PN
25. C-3, E-6, G-12, I-24, K-48, ?
    (a) S-48 (b) M-96
    (c) L-96 (d) O-48
26. d-1, g-4, j-9, m-16, ?
    (a) n-49 (b) p-25
    (c) q-36 (d) r-18
27. NMO, RQS, VUW, ZYA, ?
    (a) DCE (b) BCD
    (c) ECD (d) FCD
28. eject, elect, epic, flower, fluent, ?
    (a) select (b) dirty
    (c) dummy (d) flush

29. cc - a - ca - b cc b - cca - c - ba
(a) cbaba (b) bcabc
(c) bacbc (d) None of these

30. BYW, DUX, FQY, ... ?
(a) HZM (b) HCZ
(c) HMZ (d) None of these

31. cba - cb - ccb - c -
(a) caac (b) cbca
(c) cbac (d) None of these

32. - aa - cb - aa - - bb a - ccb -
(a) cbccab (b) cabaac
(c) ababab (d) aaabca

33. KUZ, MOX, OIV, QET, ... ?
(a) SUR (b) SDR
(c) SMR (d) SAR

34. BXJ, ETL, HPN, KLP, ... ?
(a) NHR (b) NIR
(c) MHR (d) NHS

35. AZA, BYB, CXC ?
(a) DXD (b) DXM
(c) DWD (d) None of these

EXPLANATORY ANSWERS

1. (d): There are two series BEH, DGJ, FIL and EJO, GLQ, INS. The first letter in every group of the series comes after a gap of one letter, *i.e.*, B, D, F, and the second and third letters of each group have the same sequence, *i.e.*, EGI and HJL. Same is the case with the second series.

2. (c): The first letter in every group is ascending in the order of ACEGI. The second letter in every group is also ascending in the order of PQRST, the third letter in every group is descending in the order of ZYXWV, fourth letter in every group is ascending in the order of LNPRT and the last letter in every group is descending with a gap of one letter, *i.e.*, TRPNL.

3. (d): a, e, i, o, u are vowels and there is a vowel/consonant relationship in every group of the series.

4. (a): Assign the numerical value of ZBAY, as 1, 2, 3, 4 then complete the series in the sequence of 4132 in all the groups.

5. (c): Add the alphabetic numerical value of each letter in the group and then sum up the unit and tens which is equal to four everywhere, *i.e.*, CWE = 3 + 23 + 5 = 31 which is equal to 3 + 1 = 4, FQH = 6 + 17 + 8 = 31 (3 + 1) = 4 and so on.

6. (b): The series contains the first letter of the months of the year in continuity

7. (b): There is an increasing trend in the gaps of various letters in the series, *i.e.*, 1, 2, 3, 4, 5 etc. So Q + 5 = W.

8. (b): There are two series H, G, F, E, D, C and V, T, R, P, N, L. The first has no gap but the second has a gap of one letter in descending order.

9. (b): E is fifth from beginning of the alphabet and V is fifth from the end. Similarly J is tenth from the beginning and Q is 10th from the end and the same rule is followed in the other pairs of the series.

10. (c): There is a gap of one letter in every letter of the group. Moreover, every second group of the series starts after a gap of one letter, *i.e.*, after prt, we see vxz.

11. (b): The first letter of every group is in alphabetical order, *i.e.*, KLMNO. Same is the case with II and III letters of the group. Such as PQRST and ABCDE

12. (c): The first letter of every group is the last letter of the preceding group with a gap of two letters in every member of the group, *i.e.*, after ADG we see GJM.

13. (a): The gap between letters is increasing by an order of 0, 1, 2, 3, 4, 5 and 6.

14. (b): Letters are in alphabetical order with numerical difference order of 2, 4, 6, 8, 10, 12, 14 etc.

15. (b): The letters group abba is repeated three times.

16. (d): Various groups are in the series of abc, cab, bca, abc, cab, and so on. Moreover, the first letter in the groups is the last letter of the preceding ones.

17. (d): There are three groups in the series abcab, bcabc cabca.

18. (a): Take one letter from each group and see that there is a gap of 3 letters everywhere, i.e., A, E, I, M, and K, O, S, W

19. (d): Last letter in every group is falling down, i.e., SRQPO. The middle one is increasing, i.e., ABCDE and the first letter has two pairs, BB and DD.

20. (c): The middle letters which are vowels have an increasing trend of A, E, I, O, U etc.

21. (c): Consonant is in between two vowels who are also in increasing order and consonants are increasing in the order of B, D, F, H.

22. (d): The third, sixth and ninth letters are in the reverse order of the alphabet i.e., Z, Y, X, W. Ist, fourth and seventh letters are going up with a gap of one letters and II, V and 8th also have a gap of one letter.

23. (a): Start reading from CD, EF, GH, IJ, KL and then QR, ST, UV, WX, YZ and so on after splitting the groups.

24. (d): The alphabets are in the reverse order with a gap of one letter, i.e., Z, X, V, T, R, P, N

25. (b): There is a gap of one letter in all the alphabets and numbers are doubling.

26. (b): Every second letter in the series comes after a gap of two letters and numbers are being squared with consecutive increasing order. Such as $(1)^2$, $(2)^2$, $(3)^2$, $(4)^2$ etc.

27. (a): Every next term in the series starts with a gap of one letter along with some change in the sequence of letters such as, NMO, is for MNO, RQS, is for QRS and so on.

28. (d): These are meaningful words which are according to the order of the dictionary.

29. (b): The arrangement is ecba, ecab, ecba, ecab.

30. (c): Divide each member of series in this way

B D F H and so on one gap in ascending order.

Y U Q M and so on —three gap in descending order

W X Y Z and so on—no gap in ascending order

31. (a): The series is cbac, cbac, cbac, cbac.

32. (a): The letters are in the series of aacebb, aacebb, aacebb etc.

33. (d): K M O Q — S a gap of one.

U O I E - A a gap of 5, 5 and 3, 3

Z X V T — R a gap of 2 letters.

34. (a): B E H K — N a gap of two letters

X T P L — H a gap of three letters

J L N P — R a gap of one letter.

35. (c)

Type IB

Directions: *Study the numbers and complete the series by the suitable alternatives given against each questions*

1. 4, 6, 9, 13, ...

(a) 15 *(b)* 12

(c) 18 *(d)* 17

2. 0, 7, 26, 63 .....

(a) 124 *(b)* 125

(c) 93 *(d)* 103

3. 5, 8, 13, 21, ...

(a) 31 *(b)* 34

(c) 35 *(d)* 28

4. 7, 13, 17, 19, ...

(a) 21 *(b)* 29

(c) 23 *(d)* 31

5. 8, 20, 36, 56, ...

(a) 80 *(b)* 100

(c) 64 *(d)* 84

6. 3, 2, 7, 6, 11 .....

(a) 13 *(b)* 8

one of the following can be deemed, a reason for development?

(*a*) An increse in minor employment
(*b*) Increasing the pace of economic progress
(*c*) Improvement in literacy
(*d*) Improvement in health services

29. What is the objective of the author of writing this passage?

(*a*) Appraisal of the world events with a special emphasis on development nations
(*b*) To prove author's own prophecy
(*c*) To display the failure of policy makers
(*d*) Appraisal of the past with an objective of giving a constructive direction to the future

Directions (Qs. Nos. 30 to 33) : *Read the following passage very carefully and answer the questions that follow it.*

The idea of development (which is a successive change) was not a new one. The Greeks had pondered over it. The group of thinkers also included Erasmus, the father of Charles Darwin and Frenchman, Lemark. Thought creation is an entity: all of us can always guess and sometimes, the guess is correct. However, presentation of the truth of that thought is a different issue altogether. Darwin thought that proof of his was in his notebook. He observed that all the animals are struggling for survival. Those who were finely tuned to their environments, gave their good qualities to their posterity. This very fact is called "survival of the fittest." For example, in a cold climate, only that animal will survive who has hot hair on its body. Darwin opined that this very need of animals to deal with their respective environments explains the existence of numerous types of animals.

30. When Darwin arrived on the scene, the thought of development

(*a*) was not heard of
(*b*) had been proved without any doubt
(*c*) had been thought over but was not a proved one
(*d*) was not thought to be worthy of research

31. According to the vision of Darwin, the animal world has been marked by

(*a*) peaceful coexistence
(*b*) struggle for survival
(*c*) apathy for one another
(*d*) love and friendship

32. The expression "survival of the fittest" means that

(*a*) the powerful shall live and the weak shall die
(*b*) the powerful as well as the weak shall live peacefully
(*c*) the powerful shall help the weak in the process of survival
(*d*) both the powerful and the weak shall live

33. In cold climate

(*a*) all the animals can live
(*b*) none of the animals can survive
(*c*) only those animals can survive who have hair
(*d*) animals are found with difficulty

Directions (Qs. Nos. 34 to 36) : *Study the following table very carefully and answer the questions that follow it.*

The Number of candidates appearing and passing in competitive examination from various places in the given years.

	Rural		*Semi-urban*		*Capital of State*		*Metropolis*	
Year	*Appeared*	*Passed*	*Appeared*	*Passed*	*Appeared*	*Passed*	*Appeared*	*Passed*
1990	1,652	208	7,894	2,513	5,054	1,468	9,581	3,214
1991	1,839	317	8,562	2,933	7,164	3,248	10,158	4,018
1992	2,153	932	8,139	2,468	8,258	3,159	9,695	3,038
1993	5,032	1,798	9,432	3,528	8,529	3,628	11,247	5,158
1994	4,915	1,658	9,784	4,015	9,015	4,311	12,518	6,328
1995	5,628	2,392	9,969	4,263	1,725	4,526	13,624	6,419

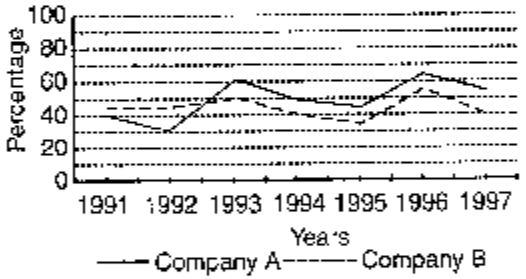
percentage of the candidates included from semi-urban areas the lowest one?

(a) 1991 (b) 1993
(c) 1990 (d) 1992

36. From 1991 to 1992, what was the nearest percentage of reduction in the number of semi-urban candidates who appeared in the examination (to the nearest value)?

(a) 5 (b) 10
(c) 15 (d) 8
(e) 12

Directions (Qs. Nos. 37-38) : *Study the following graph very carefully and answer the questions that follow it.*



37. If the total income of company B in 1992 was Rs 140 crore, then what was its expenditure in that year?

(a) Rs 100 crore (b) Rs 110 crore
(c) Rs 98 crore (d) Insufficient data
(e) None of these

38. If the total combined expenditure of company B was Rs 270 crore in 1993 and 1994, then what was its total income in these two years

(a) Rs 121.5 crore (b) Rs 135 crore
(c) Rs 140 crore (d) Insufficient data
(e) None of these

Directions (Qs. Nos. 39-40) : *These questions are*

39. How many women graduates are self-employed?

(a) 12 (b) 13
(c) 20 (d) 15

40. How many non-graduate women are self-employed?

(a) 11 (b) 9
(c) 12 (d) 21

41. AK, EO, IS, ?, QA, UE

(a) LV (b) MW
(c) NX (d) LW

42. If → means 'add', ← means 'subtract' ↑ means 'divide', ↓ means 'multiply' and ↗ means 'equals' then, which one of the following choice is correct?

(a) 2 ↓ 4 ← 6 → 2 ↗ 6
(b) 5 → 7 ← 4 ↑ 2 ↗ 4
(c) 3 ↓ 6 ↑ 2 → 3 ← 6 ↗ 6
(d) 7 ← 4 → 3 ↑ 6 ↓ 1 ↗ 4

43. If A means "not equal to" (≠), B means "greater than" (>), C means "not less then" (≤), D means "is equal to" (=), E means "is not greater than" (≯) and F means "is less than" (<), then according to the given basic statement (4x F5y) and (5y E 3s), which one of the following conclusions is correct?

(a) 4x B 3s (b) 4x D 3s
(c) 4x A 3s (d) 4x C 3s

44. Five students participated in an examination for getting scholarship. Sudha got more marks than Pooja. Kavita got less marks than Suma but more marks than Sudha. Mamta got marks in between the marks of Pooja and Sudha. Who got the least

and 5 – 1. Besides every next group start by 2 less than its previous one.

21. (a): Logic is $6 \times 2 \div 2 = 14$, $14 \times 2 + 4 = 32$, $32 \times 2 + 8 = 72$, $72 \times 2 + 16 = 160$.

22. (d): There are two series 60, 120, 240 and 30, 15, 7½, etc. The terms in the first series are doubling and in the IInd they are being halved.

23. (c): Second term is the power 4 of the first term and fourth term is also power 4 of the third one. So $4 \times 4 \times 4 \times 4 = 256$

24. (d): Every next terms is a cube of the preceding term ÷ 2, *i.e.*,
$(1)^3 + 2 = 1 + 2 = 3$
$(3)^3 \div 2 = 27 \div 2 = 29$
$(4)^3 = 64 - 2 = 66$ and
$(5)^3 + 2 = 125 - 2 = 127$ and so on.

25. (d): There are three groups in the series 6 – 24, 60 – 120 and 336 – 336 and ratios are 1 : 4, 1 : 2 and 1 : 1.

26. (d): IIIrd term is = Ist term × 4, *i.e.*, $6 \times 4 = 24$
IVth term is = IInd term × 5, *i.e.*, $5 \times 5 = 25$
Vth term is = IIIrd term × 6, *i.e.*, $24 \times 6 = 144$
VIth term is = IVth term × 7, *i.e.*, $25 \times 7 = 175$
Multipliers are in the increasing order of 4, 5, 6, 7, etc.

27. (c): Divide all terms by 25 and you will get quotient in the order of 1, 4, 9, 16, and 25. *i.e.*, the difference between quotients are increasing as 3, 5, 7, 9.

28. (d): The difference between seventh and sixth is 42, between sixth and fifth is 36, between fifth and fourth is 30, between IVth and IIIrd is 24, between IIIrd and second is 18. It means the differences are in the increasing order of 12, 18, 24, 30, 36 and so on and the first term will be 19 – 12 = 7.

29. (d): 32 – 12 = 20, 72 – 32 = 40, 152 – 72 = 80, and so on. It means differences are doubling as 20, 40, 80, 160, 320 etc. It otherwise means the required number will be 152 + 160 = 312 and 312 + 320 = 632.

30. (d): There are two series 3, 6, 12 and 15, 30, 60 and the logic is $3 \times 2 = 6$, $6 \times 2 = 12$, $15 \times 2 = 30$, $30 \times 2 = 60$.

31. (a): Each next number is half of the preceding one.

32. (d): There are two series, 78, 75, 72 and 65, 62, 59.

33. (c): Every second number is the reverse of the first. *e.g.*, 41 – 14, 58 – 85 and 73 – 37

34. (d): $4 \times 3 = 12$, $9 \times 2 = 18$ and $3 \times 7 = 21$.

35. (b): There are two series 9, 18, 27, 36, and 35, 28, 21, 14.

36. (b): First is the square of the second in every pair such as $(9)^2 = 81$, $(8)^2 = 64$ and $(12)^2 = 144$.

37. (a): First is the half of the second number in every pair.

38. (b): The difference is being doubled at every number, *i.e.*, 5, 10, 20, 40, 80 etc.

39. (c): 5 + 3 = 8, 11 + 19 = 30 etc.

40. (d): 1, 2, 3, 1^2, 2^2, 3^2, 1^3, 2^3 3^3

41. (d): Sum of unit and tens is equal to 9 in all numbers except in 38 which is 3 + 8 = 11

42. (a): $(11)^2 = 121$, $(13)^2 = 169$, $(17)^2 = 289$ and $(19)^2 = 361$ but 81 is the square of 9 which is not a prime number.

43. (d): 5 – 3 = 2, 6 – 4 = 2, 3 – 1 = 2, 4 – 2 = 2 but 7 – 3 is not equal to 2

44. (c): Calculate the mean of unit and tens, *i.e.*, $(8 + 2) \div 2 = 5$,
$(6 + 4) \div 2 = 5$
$(1 + 9) \div 2 = 5$
$(3 + 7) \div 2 = 5$
but $(3 + 6) \div 2 \neq 5$

45. (d): $(2)^3 = 8$, $(3)^3 = 27$, $(11)^3 = 1331$ and $(5)^3 = 125$ but $(3)^4 = 81$. Thus 3 does not have a power 4.

Type IC

Directions: *Two objects, events or concepts are related in some way, you have to establish the same relationship with the other two objects, events or concepts on the basis of the alternatives given below each question?*

1. Light : Sun : : Heat : ?
(a) Electricity (b) Moon
(c) Fire (d) Star

2. Parrot : Cage : Man : ?
(a) Home (b) Motor Car
(c) Prison (d) Forest

3. Disease : Health : : Freedom : ?
(a) Slavery (b) Pleasure
(c) Plight (d) Beauty

4. Ocean : Pond : : Deep : ?
(a) River (b) Canal
(c) Shallow (d) Filthy

5. Butter : Milk : : Oil : ?
(a) Cow (b) Seeds
(c) Curd (d) Grains

6. Crime : Punishment : : Deed : ?
(a) Pleasure (b) Hatred
(c) Sin (d) Prize

7. Soldier : Gun : : Blacksmith : ?
(a) Wood (b) Sword
(c) Iron (d) Hammer

8. Monday : April : : Friday : ?
(a) July (b) Saturday
(c) August (d) Tuesday

9. Disease : Pathology : : Planet : ?
(a) Sun (b) Stars
(c) Astrology (d) Astronomy

10. Fruits : Apple : : Monument : ?
(a) Tajmahal (b) Students
(c) Knowledge (d) College

11. Doctor : Medicine : : Teacher : ?
(a) Class (b) Students
(c) Knowledge (d) Grapes

12. Motor Bike : Petrol : : Buses : ?
(a) Kerosene Oil (b) Deisel
(c) Electricity (d) Coal

13. Angry : Night : : ? : Day
(a) Helpful (b) Pleased
(c) Cruel (d) Loving

14. Handsome : Beautiful : Husband : ?
(a) Women (b) Wife
(c) Girl (d) She

15. Waiting : Boredom : : Education : ?
(a) Class (b) Enlightenment
(c) Schooling (d) Cunning

16. ABC : ZYX : : CBA : ?
(a) ZXY (b) BCA
(c) XYZ (d) XZY

17. ADE : FGJ : : KNO : ?
(a) PQT (b) PQR
(c) STQ (d) PRS

18. UTS : FDC : : WVU : ?
(a) YWV (b) WXY
(c) UVW (d) HGF

19. NUMBER : LNBMRE : : GHOST : ?
(a) HGSOT (b) TSOGH
(c) OGHST (d) SOTGH

20. EGIK : FILO : : FHJL : ?
(a) GJMP (b) GJPM
(c) HGMN (d) GMJO

21. 1/4 : 1/8 : : 2/3 : ?
(a) 1/4 (b) 1/3
(c) 1/2 (d) 1

22. 12 : 35 : : 16 : ?
(a) 63 (b) 32
(c) 28 (d) 55

23. 17 : 19 : : 47 : ?
(a) 53 (b) 59
(c) 41 (d) 34

24. 12 : 56 : : 110 : ?
(a) 132 (b) 136
(c) 18 (d) 140

25. 3 : 10 : : 8 : ?
(a) 10 (b) 13
(c) 17 (d) 14

26. *(i)* 28 : 126 : : 126 : ?
(a) 127 (b) 28
(c) 56 (d) 81

26. *(ii)* 1 : 1 : : 25 : ?
(a) 27 (b) 29
(c) 50 (d) 625

27. 8 : 9 : : 64 : ?
(a) 16 (b) 36
(c) 25 (d) 20

28. $X^2 - 4 : (X - 2) : : ? : X^2 + 4$
(a) $(X + 2)$ (b) $(X - 2)$
(c) $(X^2 - 2)$ (d) None of these

29. $X^2 : 8X^3 : : 4X^3 : ?$
(a) $16X^3$ (b) $32X^2$
(c) $64X^3$ (d) $64X^2$

30. 1 : 64 : : 5 : ?
(a) 25 (b) 125
(c) 66 (d) 625

Directions: *Two objects or events are related in some way. You have to pick out only that option which has the same type of relationship as stated in each question?*

31. Machines and Pullies
(a) Knife and Fruits
(b) Car and Wheels
(c) Bread and Butter
(d) Iron and Doors

32. Chemistry and Science
(a) Painting and Arts
(b) Medicine and Surgery
(c) Geography and History
(d) Law and Culture

33. Carpenter and Wood
(a) Goldsmith and Gold
(b) Blacksmith and Iron
(c) Engineer and Machines
(d) All of these

34. Class and Teacher
(a) College and Principal
(b) Books and Librarian
(c) Workshop and Foreman
(d) All of these

35. Writer and Poet
(a) Poems and Songs
(b) Prose and Poetry
(c) Books and Lessons
(d) Letters and Words

36. House and Rent
(a) Labour and Wages
(b) Capital and Interest
(c) Trains and Fairs
(d) All of these

37. Tree and Forest
(a) Ocean and Ships
(b) Books and Letters
(c) Books and Library
(d) Boys and Teacher

38. Failure and slowth
(a) Day and Night
(b) Success and Hard work
(c) Match and Victory
(d) None of these

39. Car and Garage
(a) Horse and Stable
(b) Lion and Den
(c) Cows and Porch
(d) All of these

40. Hands and Fingers
(a) Head and Hair (b) Feet and Toes
(c) Skin and Colour (d) Both (a) and (b)

41. Resignation and Office
(a) Competition and Victory
(b) Abdication and Thrown
(c) Kidnapping and Dislodging
(d) (b) and (c)

42. Supervisor and Worker
(a) Teacher and Superintendent
(b) Officer and Clerk
(c) Debtor and Creditor
(d) Inferior and Superior

43. Malaria and Mosquito
(a) Cholera and Water
(b) Typhoid and Typhus
(c) Tuberculosis and TB Bacteria
(d) All of these

44. Cold and Hot
(a) Day and Hour
(b) January and June
(c) January and February
(d) None of the above

45. Pulp and Paper
(a) Yarn and Fabric
(b) Iron and Wood
(c) Wood and Furniture
(d) (a) and (c)

Directions: *Two terms are related in some way. You have to establish the same type of relationship between the IIrd and IVth terms, choosing the best alternative given below:*

46. Obey : Defy : : Work : ?
(a) Rest (b) Life

(c) Challenge (d) Idle

47. Sickness : Health : : Happiness : ?
(a) Comfort (b) Misery
(c) Sorrow (d) Beauty

48. Soft : Sponge : : Sharp : ?
(a) Knife (b) Cut
(c) Quick (d) Hard

49. Entrance : Exist : : Loyalty : ?
(a) Dishonesty (b) Hatred
(c) Treachery (d) Trait

50. Ankle : Knee : : Wrist : ?
(a) Hand (b) Elbow
(c) Finger (d) Thumb

51. Metre : ? : Litre : Volume
(a) Weight (b) Length
(c) Square (d) Area

52. Ornithologist : Bird : : Anthropologist :
(a) Insects (b) Mammals
(c) Mankind (d) None of these

53. ? : Bee : : Fang : Snake
(a) Humming (b) Honey
(c) Poison (d) Sting

54. ? : Light : : Dusk : Dawn
(a) Electricity (b) Morning
(c) Day (d) Heavy

55. House : Window : : Man : ?
(a) Hearing (b) Eyes
(c) Earth (d) Floor

56. ? : Coal : : Ebony : Soot
(a) Blush (b) Rust
(c) Ash (d) Dust

57. ? : Daisy : : Pansy : Rose
(a) Red (b) Yellow
(c) White (d) Violet

58. ? : Yellow : : Orange : Green
(a) Plant (b) Ultra violet
(c) Purple (d) Forest

59. Sword : Gun : : Pistol : ?
(a) Bow (b) Bullet
(c) Rifle (d) War

60. Skirmish : War : : Disease : ?
(a) Infection (b) Doctor
(c) Medicine (d) Epidemic

61. Poster is related to wall and photography is related to
(a) Camera (b) Frame
(c) People (d) Beauty

62. Heart : Blood : : Lung : ?
(a) Water (b) TB
(c) Oxygen (d) None of these

63. Face : Expression : : Hand : ?
(a) Gesture (b) Waving
(c) Pointing (d) None of these

64. 85 : 42 : : 139 : ?
(a) 68 (b) 69
(c) 70 (d) None of these

65. Revolution - Change
(a) Treaty - Peace (b) Happy - Job
(c) Work - Health (d) None of these

66. Red - Colour
(a) Shirt - Garment (b) Rose - Smell
(c) Boy - School (d) None of these

67. Bird - Wing : : Fish : ?
(a) Fin (b) Gill
(c) Whale (d) Tail

68. Hillock : Mountain : : Bush : ?
(a) Jungle (b) Plant
(c) Ground (d) Tree

69. Principle : Rule : : Principal : ?
(a) Student (b) School
(c) Chief (d) None of these

70. Moon : Silver : : ? : Gold.
(a) Sun (b) Earth
(c) Planet (d) Star

71. Lotus - water have the same relationship with
(a) Lion - Forest (b) Germs - Garbage
(c) Book - Shelf (d) All of these

72. Pitcher - water have the same relationship with
(a) Candle - light
(b) Stove - cooking
(c) Book - letters
(d) Thermometer - mercury

73. Player : Team : : Ship : ?
(a) Harbour (b) Seaport
(c) Fleet (d) None of these

74. Man : Child : : Flower : ?
(a) Bud (b) Fruit
(c) Branch (d) Plant

75. Election : Votes : : Selection : ?
(a) Interview (b) Application
(c) Discussion (d) None of these

EXPLANATORY ANSWERS

1. (c): Sun gives light. In the same way Fire gives heat.

2. (c): Parrot is kept into Cage. Similarly Man is kept into Prison after trial.

3. (a): Disease is the antonym of Health and the antonym of Freedom will be Slavery.

4. (c): Deep is the quality of Ocean and the quality of Pond will be Shallow.

5. (b): Butter is obtained from Milk and Oil is obtained from Seeds.

6. (d): Punishment is the result of Crime. In the same way Prize is the result of Deeds.

7. (d): Soldier uses Gun and Blacksmith uses Hammer.

8. (c): Fridays comes three days after Monday so three month after April will be August.

9. (d): Diseases are studied in Pathology and planets are studied in Astronomy.

10. (a): Apple is a Fruit and Tajmahal is a Monument.

11. (c): Doctors prescribe Medicines and Teachers impart knowledge.

12. (b): Motor bikes uses Petrol and Buses uses Deisel for moving.

13. (b): First terms is the opposite of the IIIrd term as is the case with IInd and IVth terms.

14. (b): Handsome is related to Husband and Beautiful is related to Wife.

15. (b): Waiting leads to Boredom and Education leads to Enlightenment.

16. (c): Here A has been used in place of Z, B for Y and C for X everywhere.

17. (a): The first term has a gap of two letters between A and D, the second term starts just after E, i.e., gap of two letters is there between G and J. The third and fourth terms also come in a continuous series under the same rule.

18. (d): 1st term is related to IIIrd term when read in reverse order as STU - UVW. Same is the case with IInd and IVth terms as CDF - FGH.

19. (a): Every pair of letters in the terms are in reverse order as NU UN, MB = BM , and ER = RE.

20. (a): There is a gap of one letter everywhere in the first term and gap of two letters in the second terms. The same is case with IIIrd and IVth terms.

21. (b): IInd term is half of the Ist term. So in order to get the IVth term divide the IIIrd term by 2. Thus IVth term is half of the IIIrd one.

22. (a): $6 \times 2 = 12$, $6^2 - 1 = 35$, $8 \times 2 = 16$, $8^2 - 1 = 63$.

23. (a): Second term is the next prime number after 17. So the next prime number after 47 is 53.

24. (a): First term $= 6^2 + 10 = 42$
Second term $= 7^2 + 7 = 56$
Third term $= 10^2 + 10 = 110$
Fourth term $= 11^2 + 11 = 132$

25. (c): Ist term $= 2^2 - 1 = 4 - 1 = 3$
IInd term $= 3^2 + 1 = 9 + 1 = 10$
IIIrd term $= 3^2 - 1 = 9 - 1 = 8$
IVth term $= 4^2 + 1 = 16 + 1 = 17$

26. *(i)* (b): IInd and IIIrd terms are equal. So Ist and IVth terms should also be equal.

26. *(ii)* (d): The second is the square of the first.

27. (c): $2^3 = 8$
$3^2 = 9$
$4^3 = 64$
$5^2 = 25$

28. (d): $X^2 - 4 = (X - 2)(X + 2)$ but $X^2 + 4$ can not be factorized.

29. (c): $(X)^2 : (2X)^3 :: (2X)^3 : (4X)^3$. It means the second term is the double of the first term excluding power. Similarly fourth term is twice of the third term excluding power.

30. (b): The second term is the cube of the first term and fourth term is the cube of the third term.

31. (b): Pulles make the machines in order when they are fitted. In the same way wheels make the car in order when they are attached with.

32. (a): Chemistry is a branch of Science and Painting is a branch of Arts.

33. (d): Functions of various professionals have been given here.

34. (d): All are various professionals using their places of work.

35. (b): Prose is written by writers and Poetry is composed by poets.

36. (d): Rent is taken on house. In the same way interest is paid on capital, fair is paid on using train etc.

37. (c): Forests have trees and libraries have books.

38. (b): Slowth causes failure and Hardwork leads to success.

39. (d): Car is kept in Garage. In the same way Lion lives in den. Cows in porch, Horse in stable, etc.

40. (d): Hands have fingers, feet have toes and heads have hairs.

41. (d): In resignation the office is to be quit. In the same way when abdication is done thrown is to be left. Moreover kidnapping causes dislodging.

42. (b): Supervisor supervises workers and so is the case of officer and clerk.

43. (d): Diseases and their origin are given here.

44. (b): Cold is related to January and Hot is related to June.

45. (d): Pulp is used as a raw material for making papers. Wood and yarn are used as raw materials for furniture and fabric respectively.

46. (a): Obey is the opposite of Defy and work is the opposite of Rest.

47. (c): The terms are related as antonyms of each other.

48. (a): Softness is the characteristic of sponge and sharpness is the characteristic of knife.

49. (c): Terms are opposite to each other.

50. (b): As ankle is the lower part of knee so is the wrist with elbow.

51. (b): Length is the unit of metre. In the same way the unit of litre is volume.

52. (c): Ornithologist studies about bird and anthropologist studies about mankind (and culture).

53. (d): Snakes use fang and Bees use sting when attack.

54. (d): Terms are opposite to each other.

55. (b): As windows are to see outside from the house so is the case with eyes and man.

56. (c): These are the forms of carbon.

57. (a): These are the types of flowers.

58. (c): These are different colours.

59. (a): One primitive weapon is paired with a modern weapon.

60. (d): Skirmishes lead to war and diseases may lead to epidemic.

61. (b): Poster is pasted on the wall and photographs framed.

62. (c): Heart pumps blood while lungs pumps oxygen to different parts of the body.

63. (a):

64. (a): First is the double − 1 of the second number. Same pattern is there in IIIrd and IVth numbers.

65. (a): Revolution causes Change and Treaty causes Peace.

66. (a): Red is a colour and shirt is a garment.

67. (a): Bird uses wings to fly while fish uses Fins to swim in the water.

68. (a):

69. (c):

70. (a): The light of the moon is of silver colour while that of sun is of golden colour.

71. (a): One grows on the other.

72. (d): First contains the second as a material object.

73. (c): Group of Players is called team and group of Ships is called fleet.

74. (a): Child grows into man and bud grows into flowers.

75. (a)

Type II

Direction: *Following questions are based on matrix. Find the value of x or ? in each matrix from the choices given below each question.*

1.

4	10	18
25	32	39
46	×	60

(a) 56 (b) 53
(c) 63 (d) 51

2.

79	90	102
115	×	144
160	177	195

(a) 157 (b) 131
(c) 129 (d) 133

3.

110	150	70
70	110	30
×	70	-10

(a) 20 (b) 30
(c) 40 (d) 70

4.

701	722	764
501	522	564
×	376	418

(a) 352 (b) 353
(c) 361 (d) 355

5.

×	GI	IK
BD	DF	FH
CE	EG	GI

(a) CC (b) CO
(c) FI (d) EG

6.

15	35	20
35	×	15
20	15	35

(a) 20 (b) 25
(c) 15 (d) 35

7.

AZ	DW	GT
BY	EV	HS
CX	×	IR

(a) FV (b) FG
(c) FR (d) FU

8.

352	342	327
382	372	×
432	302	387

(a) 377 (b) 376
(c) 357 (d) 387

9.

710	730	760
690	×	740
x_2	680	710

(a) 710 and 660 (b) 700 and 680
(c) 780 and 690 (d) 660 and 700

10.

6	9	54
11	×	110
17	11	187

(a) 9 (b) 10
(c) 12 (d) 17

11.

12	36	144
15	60	300
18	×	540

(a) 80 (b) 72
(c) 90 (d) 110

12.

336	42	6
×	30	5
330	55	4

(a) 150 (b) 210
(c) 330 (d) None of these

13.

1	4	9
4	9	16
×	16	25

(a) 7 (b) 11
(c) 8 (d) 9

14.

9	16	25
36	×	×
144	256	400

(a) 64, 100 (b) 84, 144
(c) 210, 110 (d) None of these

15.

0	3	8
15	24	35
48	×	80

(a) 64 (b) 63
(c) 66 (d) 84

16.

CA	FE	II
LM	?	RU
UY	XC	AG

(a) OQ (b) QR
(c) QM (d) LM

17.

AH	IL	MN
?	MR	SU
AP	QX	YB

(a) AL (b) XL
(c) ML (d) KM

18.

A	D	I
I	P	Y
?	I	P

(a) I (b) D
(c) E (d) Y

19.

6	8	9
14	2	7
3	?	7

(a) 13 (b) 11
(c) 17 (d) 7

20. Insert the missing figure in

15	225	80
7	70	20
3	?	8

(a) 12 (b) 16
(c) 24 (d) 70

21.

4	32	?
7	56	8
3	24	8

(a) 8 (b) 9
(c) 5 (d) None of these

22.

5	9	?	13
8	3	1	10
12	11	5	18

(a) 1 (b) 3
(c) 4 (d) None of these

23.

15	10	7
7	?	7
150	80	70

(a) 11 (b) 7
(c) 8 (d) 6

24.

20	7	15
2	3	10
80	42	?

(a) 250 (b) 300
(c) 200 (d) 150

25.

2	4	16	256
3	9	81	6561
4	16	256	65536
5	25	625	?

(a) 390600 (b) 390625
(c) 1265 (d) None of these

EXPLANATORY ANSWERS

1. (b): Number from 4 to 60 are increasing with an equal interval of 7.

2. (c): 79 + 11 = 90, 90 + 12 = 102, 102 + 13 = 115, 115 + 14 = 129
129 + 15 = 144, 144 + 16 = 160 and so on.

3. (b): Add + 40 and subtract 40 in columns, *i.e.*, 110 + 40 = 150, 110 – 40 = 70, 70 + 40 = 110, 70 – 40 = 30 and so on. Moreover subtract 40 from each row which is equal to the next row.

4. (d): II column = I column + 21,
III column = II column + 42.
Required number
= 418 – 42 = 376 – 21 = 355.

5. (d): There is a gap of one letters in columns, *i.e.*,
I – 1 = G, G – 1 = E and K – 1 = J, J – 1 = G

6. (a): 35 = 15 + 20 in each column and row.

7. (d): First letter in rows are in increasing order and its pair is in decreasing order vertically.

8. (c): –10 and then –15 in rows.

9. (a): +20, +30, in columns and –20, –30 in rows respectively, *i.e.*, 710 – 20 = 730 + 30 = 760, 710 – 20 = 690.

10. (b): Third column = First × Second column.

11. (c): 12 × 3 = 36 × 4 = 144
(Multipliers are in increasing order of 3, 4, 5, and 4, 5, 6)
15 × 4 = 60 × 5 = 300
18 × 5 = 90 × 6 = 540

12. (b): First row = 336/12 = 8 – 2 = 6
Third row = 330/55 = 6 – 2 = 4
Second row = 5 + 2 = 7 × 30 = 210

13. (d): I row = $(1)^2$, $(2)^2$, $(3)^2$
II row = $(2)^2$, $(2)^2$, $(3)^2$
III row = $(3)^2$, $(4)^2$, $(5)^2$

14. (a): I row = 9 × 4 = 36 × 4 = 144
II row = 16 × 4 = 64 × 4 = 256
III row = 25 × 4 = 100 × 4 = 400

15. (b): I row = $1^2 - 1 = 0$, $2^2 - 1 = 3$, $3^2 - 1 = 8$
II row = $4^2 - 1 = 15$, $5^2 - 1 = 24$, $6^2 - 1 = 35$
III row = $7^2 - 1 = 48$ and so on.

16. (a): One letter has a gap of 2 letters, *i.e.*, C, F, I, L, ... and the second letter has a gap of three letters, *i.e.*, A, E, I ..... and so on.

17. (a): Distance columnwise is 7, 11, 15, 3, 5, 7, and 1, 2, 3.

18. (b): Row-wise distance squares increase by one.

19. (a): Sum total of each row and column is 23.

20. (a): 15 (30/2) = 225, 7 × (20/2) = 70
3 × (8/2) = 12

21. (a): 7 × 8 = 56, 3 × 8 = 24, 4 × 8 = 32

22. (a): Add the first two numbers row-wise and then deduct the third number and you will get fourth number *i.e.* (9 + 5) – 1 = 13, (8 + 3) – 1 = 10 and (12 + 11) – 5 = 18

23. (d): 15 × 2 × (7 – 2) = 150
10 × 2 × (6 – 2) = 80
7 × 2 × (7 – 2) = 70

24. (b): 20 × 2 × 2 = 80, 7 × 3 × 2 = 42, 15 × 10 × 2 = 300

25. (b): Numbers are being squared from left to right.

Type IIIA

1. Pointing out to a girl a man said "My uncle is the uncle of this girl's uncle". How is the man related with that girl ?
(a) Brother *(b)* Father
(c) Father in law *(d)* Cousin

2. Ravi said to Seeta, "Your mother is the daughter of my grandmother". How are Ravi and Seeta related ?
(a) Uncle - Niece
(b) Father - Daughter

(c) Cousin (d) None of these

3. A is the mother of B and C. If C is the wife of D, then establish the relationship between A and D?
(a) Mother (b) Mother-in-law
(c) Grand mother (d) None of these

4. Introducing a lady Ahmad said, "Her mother is the only daughter of my mother in law". How is Ahmad related with that lady?
(a) Brother (b) Uncle
(c) Husband (d) Father

5. If S is the brother of N, the sister of N is M, the brother of P is J and the daughter of S is P then who is the uncle of J?
(a) S (b) M
(c) P (d) N

6. Ravi said to a lady, "The son of your only brother is the brother of my wife". How is the lady related with Ravi ?
(a) Mother
(b) Sister
(c) Paternal mother-in-law
(d) Aunt

7. F is the brother of A, C is the daughter of A, the sister of F is K and the brother of C is J. Then who is the uncle of J ?
(a) F (b) A
(c) K (d) C

8. A is the son of Q, C and Q are sisters, R is the mother of Q. If A is the father of P then which of the following options is correct ?
(a) R is the maternal grand mother of A
(b) P is the Maternal uncle of A
(c) P & A are cousins
(d) All of the above

9. "Your father is the maternal uncle of my father" said Ravi to Seeta. How are they related?
(a) Cousins
(b) Nephew and Aunt
(c) Real brother and sister
(d) None of the above

10. A is the father of B, C is the brother of A, F is the sister of B if M is the father of A, then establish relationship between F and C?
(a) Daughter and Father
(b) Husband and Wife
(c) Brother and Sister
(d) Niece and Uncle

11. A and B are young ones of C. If C is the father of A but B is not the son of C. How are B and C related
(a) Daughter and Father
(b) Niece and Uncle
(c) Newphew and Uncle
(d) None of these

12. A woman going with a boy is asked by another woman about the relationship between them. The woman replied, "My maternal uncle and the uncle of his maternal uncle is the same. How is the lady related with that boy ?
(a) Aunt and Nephew
(b) Mother and Son
(c) Grandson and Grandmother
(d) None of these

13. A is the mother of B and C. If D is the husband of C. What A is to D.
(a) Mother (b) Sister
(c) Mother-in-law (d) Aunt

14. A man said to a lady, "The son of your only brother is the brother of my wife" How is the lady related with the man.
(a) Mother
(b) Sister
(c) Mother-in-law
(d) Sister of father-in-law

15. A is the brother of B and K. D is the mother of B and E is the father of A. Which of the following statement is not definitely true?
(a) B is the brother of K
(b) A is the father of K
(c) A is the son of D
(d) A is the son of E

16. ABCDE and F are members of a club. There are two married couples in the goup. A is the brother of D's Husband. C is the president of Women's Association. F is a Sitar Player, and Bachelor. B's wife is not a member of the Club. Four of them

belong to the same family. B and F are colleagues in the club. How is F related to B?
(a) Husband
(b) Wife
(c) Father
(d) It is not possible to determine

17. On the basis of the information given in Question No. 16 if B's mother was A's mother's daughter how was A related to B ?
(a) Father (b) Sister
(c) Brother (d) Maternal Uncle

18. Leela, who is Sohan's daughter says to Lalita, "Your mother Alka is the younger sister of my father, who is the third child of Raja". Establish the relationship between Raja and Lalita?
(a) Father
(b) Uncle
(c) Maternal grand father
(d) None of these

19. (The information given in Q. No. 18) Establish the relationship between Leela and Lalita?
(a) Sister (b) Cousins
(c) Sister in Law (d) None of these

20. Six members of a family ABCDE and F are travelling together. B is the son of C but C is not the mother of B. A and C are married couple. E is the brother of C. D is the daughter of A. F is the brother of B. How many male members are there in the family ?
(a) 1 (b) 2
(c) 3 (d) 4

21. The information given in Q. No. 20, clarifies that
(a) A is the mother of F, B and D
(b) F, B and D are three children of C
(c) E is the uncle of F
(d) All of these

22. On the basis of the given data in Q. No. 20 establish that who is the wife of E ?
(a) F
(b) B
(c) Cannot be determined
(d) A

23. A told B that C is his father's nephew. D is A's cousin but not the brother of C. What relationship is there between D and C?
(a) Father (b) Sisters
(c) Mother (d) Aunt

24. F is the brother of A, C is the daughter of A, K is the sister of F, G is the brother of C. Who is the uncle of G?
(a) F (b) K
(c) C (d) None of these

25. Pointing to Sudha Ranjan said "Her mother's only daughter is my mother". How is Ranjan related to Sudha ?
(a) Son (b) Nephew
(c) Brother (d) None of these

26. F is the brother of A, C is the daughter of A, K is the sister of F and G is the brother of C then who is the uncle of G?
(a) F (b) K
(c) C (d) None of these

EXPLANATORY ANSWERS

1. (b): The man's uncle and the uncle of girls uncle is the same person. So he may be the father or uncle of the girl.

2. (c): Grandmother – Grandmother-mother – Sita's mother-Daughter
Ravi – Sita

3. (b): C is the daughter of A but C is also the wife of D so A is the mother-in-law of D.

4. (d): Ahmad's mother-in-law has the only daughter so her daughter must be the wife of Ahmad and the lady is the daughter of Ahmad.

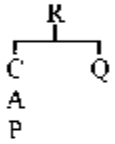
5. (d): As J and P are real brothers and their father is S whose brother is N, so N is the uncle of J and P.

6. (c): Lady's brother has a son and that lady

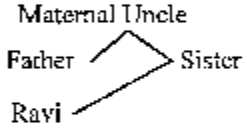
is the paternal aunt of that son. The son has a sister who is the wife of Ravi. So lady is the paternal mother in law of Ravi.

7. (a): C and J are children of A and F is the brother of A so F is the uncle of C and J.

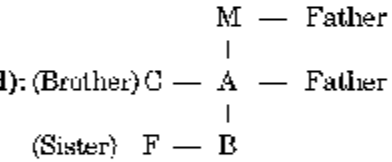
8. (a): R = Mother. It mean R has two daughters C and Q and A is son of C.



9. (b):



10. (d):



Here M is the father of A and A is the father of B.

11. (a): C has two children A and B, if A is his son, B must be his daughter according to the question.

12. (b): The maternal uncle of the woman and the uncle of the maternal uncle of the boy is the same person and boy's maternal uncle will be the brother of the woman.

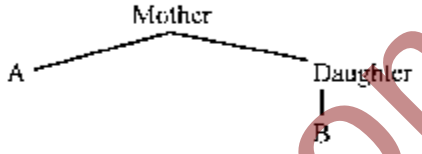
13. (c): A is the mother of C and C is the wife of D so A is the mother-in-law of D, or D is the son-in-law of A.

14. (d): Lady's brother
Son - brother - wife - man
Son is the brother-in-law of man, and his father will be the father-in-law of man and lady is the sister of his father-in-law.

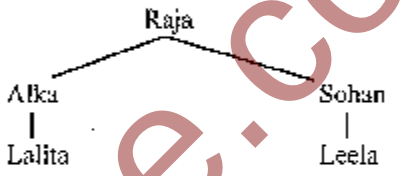
15. (b): A, B and K are brothers and sisters. E and D may be husband and wife, so A is the son of E and D both.

16. (d): According to the data there are two female members D and C of the club and data is not sufficient regarding B and F

17. (d): A and his mother's daughter are brother and sister. So the son of A's sister will be his maternal nephew.



18. (c):



Alka is the sister of Sohan and their father is Raja. So Raja is the grandfather of Leela and maternal grandfather of Lalita.

19. (b):

20. (d): E (Brother) C (Husband) A (Wife)
F and B (Sons) D (Daughter)
In the question A is the wife of C and their daughter is D. The ramaining members are male members.

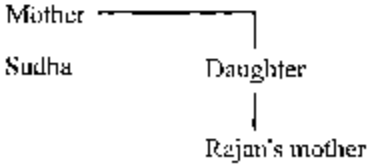
21. (d):

22. (c): E has no wife which is definitely clear from the data.

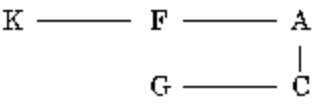
23. (b): A has two cousins C and D. Since C is male so D must be female (according to the data) and both are the nephew and niece of A's father.

24. (a): K (Sister) F is the brother A
G (brother) Daughter (C)

25. (a):



26. (a):



Type IIIB

1. In a military code CAUTION is coded as UACITNO. How will you write MISUNDERSTAND?
   (a) SIMUNEDSRTAND
   (b) SIMNUEDSRATDN
   (c) SMIUNDERSTAND
   (d) None of the above
2. CALANDER is coded in a code as C L A N A E D R. Find the code for CIRCULAR under the same rule.
   (a) LACANDER (b) CRICCALR
   (c) CLANADER (d) None of these
3. In a certain code language, CUL, WAP, DIR means red little box, SUT, MAD BIX, means well arranged pile, BIX, FAC, DIR means pile of boxes. The code for 'of' here is ?
   (a) FAC (b) SUT
   (c) DIR (d) BIX
4. If STUDYING is written as RUTEXJMH. How will OTHER be written ?
   (a) TOHRE (b) ROHTE
   (c) NUGFQ (d) None of these
5. In a code sign DRIAL is coded as 62014314. Play with CAMEL in the same way ?
   (a) 5315714 (b) 35729310
   (c) 5313613 (d) None of these
6. In a code language 256 means 'you are good', 637 means 'we are bad', 358 means 'good and bad'. Find the code for 'and'.
   (a) 2 (b) 5
   (c) 8 (d) 3
7. If ÷ means ×, × means +, + means – and – means ÷. Find the value of $16 \times 3 + 5 - 2 \div 4$.
   (a) 19 (b) 10
   (c) 9 (d) None of these
8. In a code language 35796 is written as 44887. Find the code for 46823.
   (a) 55914 (b) 57194
   (c) 55934 (d) 55745
9. If GUN is coded as HVO. find the code for PEN.
   (a) QFO (b) CDP
   (c) RST (d) NOT
10. If TOUR is written as 1234, CLEAR is written as 56784 and SPARE is written as 90847, find the code for CARE
    (a) 1247 (b) 4847
    (c) 5247 (d) 5847
11. METAPHER is coded as EMATHPRE. How will you code NORMAL.
    (a) ORMLAN (b) ORNMLA
    (c) ONMRLA (d) None of these
12. If LICHT is coded as CILTH, find the code for RAINY.
    (a) IARYN (b) ARINY
    (c) NAIRY (d) RINAY
13. KNOWLEDGE is coded as 256535475. How can GENERAL be coded
    (a) 7549993 (b) 7559913
    (c) 755591 (d) 7555913
14. In a certain code language BEAT is coded as GIDV. What is the code for SOUP?
    (a) XSXR (b) XSSR
    (c) XXXR (d) WXYR
15. If TOM = 48 and DICK = 27. Find the value of CATTLE ?
    (a) 93 (b) 61
    (c) 91 (d) 65
16. If BOY is coded as ACNPXZ. What will be the code for LIFE?
    (a) KMHJEGDF (b) LMGHEGDF
    (c) LMHJGEFD (d) None of these
17. If SKEW means POCY what do you mean by JYQV?
    (a) MSUT (b) MUTS
    (c) SUTM (d) HCOX
18. If LONDON is coded as MPOEPO. What code is needed for DELHI ?
    (a) DEHLI (b) EFIMJ
    (c) HLDEI (d) EFMLJ
19. If SISTER is coded as 535301, UNCLE is coded as 84670 and BOY is coded as 129. Find the code word for SON ?
    (a) 524 (b) 923
    (c) 872 (d) 361

20. If HARD means 1357 and SOFT means 2468, what does 21448 stand, for

(a) SCHOOL (b) SHOOT
(c) SHOOP (d) None of these

21. In a certain language if A is written as 2, B as 4 and C as 6 what do the figure 12, 10, 10, 8 stands for?

(a) DEEP (b) DOOR
(c) DEER (d) FEED

22. Fill in the blank with suitable figures.

S	16	10	V
L	28	20	P
F	—	—	J

(a) 30, 38 (b) 38, 40
(c) 38, 30 (d) 40, 32

23. If DUST is called AIR, AIR is called FIRE, FIRE is called WATER. WATER is called COLOUR, COLOUR is called RAIN and RAIN is called DUST then where do fish live?

(a) COLOUR (b) DUST
(c) WATER (d) FIRE

24. In a certain code language

1. Chip, Din, Chunk means students attend class
2. Din Sunk Dink means Arjun is student
3. Jump Mink Sink means Schools are good
4. Dink Mup Chimp means Teacher is teaching

The code which is used for Arjun is ?

(a) Sunk (b) Din
(c) Dink (d) Chunk

25. In a certain code Language
134 means good and tasty
478 means see good picture
729 means picture are faint
Which number has been used here for faint?

(a) 9
(b) 2
(c) data are inadequate
(d) 7

26. Certain metals are given in Column A and their properties in Column B. But they are not organized in the same order of the metals. Find the property of Metal A on the basis of columns.

Column A	Column B
SOUND	abi
ADDRESS	ejnav
CRUX	ikmop
NET	ijktv
CROWN	jkgotv
CROWDY	bloppr

(a) b (b) l
(c) v (d) None of these

27. Find the property of metal C.

(a) : (b) k
(c) : (d) None of these

28. Find the property of metal D

(a) k (b) l
(c) m (d) None of these

29. Find the property of metal N

(a) i (b) j
(c) k (d) None of these

30. Find the property of metal T

(a) a (b) b
(c) e (d) None of these

31. In a code language COME is coded as XUNV. Find the code for CAT ?

(a) XZG (b) CMW
(c) YMN (d) XWG

32. In a certain code PAN = 31 and PAR = 35. What code do you suggest for CAR?

(a) 21 (b) 22
(c) 24 (d) 35

33. If a ▭ is called a circle, circle is called a point, a point is called A and Δ is called a square what will be the shape of a wheel?

(a) Δ (b) ○
(c) point (d) ▭

34. If ANOTHER is coded as 7309521, then THORN will be coded as:

(a) 95103 (b) 95313
(c) 95013 (d) 95113

35. If HIM means 936, and CAM means 39 what will be the code for MAP ?

(a) 98 (b) 114
(c) 40 (d) 208

EXPLANATORY ANSWERS

1. (b): CAU TI ON = MIS UN DE RS TA ND
UAC IT NO = SIM NU ED SR AT DN
It means in the first group three letters are reversed then each pair is being reversed.

2. (b): C AL AN DE R = C IR CU LA R
C LA NA ED R = C RI UC AL R
Here first and last letters are not disposi-tioned but other pairs are being reversed.

3. (a):

CUR	WAP	DIR	.....(1)
red	little	boxes	
BIX	FAC	DIR	.....(2)
pile	of	boxes.	

So DIR = boxes

BIX	FAC	DIR	.....(2)
pile	of	boxes	
SUT	MAD	BIX	.....(3)
wel	arrange	pile	

So BIX = pile
Thus of = FAC

4. (c): ST UD YI NG = OT HE R
RU TE XJ MH = NU GF Q
In the first pair S is coded as R meaning thereby a letter before S. next letter T is coded as U, means a letter after T, *i.e.*, RSTU, TUDE etc. are turning sequences.

5. (a): Add two in the serial number of letters as :

D = 4th + 2 = 6	C = 3 + 2 = 5
R = 18th + 2 = 20	A = 1 + 2 = 3
L = 12th + 2 = 14	M = 13 + 2 = 15
A = 1st + 2 = 3	E = 5 + 2 = 7
L = 12th + 2 = 14	L = 12 + 2 = 14

6. (c): You are good = 256 ....(1)
We are bad = 637 ....(2)
Are = 6
We are bad = 637 ....(2)
Good and bad = 358 ....(3)
bad = 3
you are good = 256
good and bad = 358
good = 5 so and = 8

7. (c): $16 \times 3 = 5 - 2 \div 4$
In such type of questions apply the rule of BODMAS
B = Bracket O = of
D = Division M = Multiply
A = Adding S = Subtraction
$16 + 3 \quad 5 \div 2 \times 4$
$16 + 3 - 5 \times \frac{1}{2} \times 4$
$19 - 10 = 9$

8. (a): 3 + 1 = 4 of the code
5 1 = 4 of the code
7 + 1 = 8 of the code
9 – 1 = 8 of the code
6 + 1 = 7 of the code
as

	3	5	7	9	6
	+1	–1	+1	–1	+1
	4	4	8	8	8
So	4	6	8	2	3
	+1	–1	+1	–1	+1
	5	5	9	1	4

9. (a): Every letter in the code is one letter ahead such as
C = H U = V N = O Thus P = Q
E = P N = O

10. (d): R is in every group of letter and 4 is in every group of numbers so R = 4
C L E A R = 5 6 7 8 4 ..... *(i)*
S P A R E = 9 0 8 4 7 ..... *(ii)*
Here 847 are common
So CL = 56 and SP = 90
Thus C A R E = 5 8 4 7

11. (c): Make pairs and then reverse each pair, *i.e.*,
ME TA PH ER NO RM AL
EM AT HP RE ON MR LA

12. (a): There are two groups LIG and IIT each being reversed
LIG HT RAI, NY
GIL TH IAR, YN

13. (d): Add unit and tens of numerical value of letters such as

(i) (ii)

K = 11 = 1 + 1 = 2 So,
N = 14 = 1 + 4 = 5 G = 7
O = 15 = 1 + 5 = 6 E = 5
W = 23 = 2 + 3 = 5 N = 5
L = 12 = 1 + 2 = 3 E = 5
E = 5 = 5 + 0 = 5 R = 18 = 1 + 8 = 9
D = 4 = 4 + 0 = 4 A = 1
G = 7 = 7 + 0 = 7 L = 12 = 1 + 2 = 3
E = 5th = 5 + 0

14. (a): Coded letters are ahead from their original letters in the order of 4, 3, 2, and 1, *i.e.*,

B	E	A	T	Difference	S	O	U	P
4	3	2	1		4	3	2	1
G	I	D	V		X	S	X	R

15. (b): TOM DICK
20 + 15 + 13 = 48 4 + 9 + 3 + 11 = 27
CATTLE
3 + 1 + 20 + 20 + 12 + 5 = 61

16. (a): B = AC It means original letters can be inserted in
O = NP between the two coded letters
Y = XZ So L = KM, I = HJ, F = EG and E = DF

17. (d):

S	K	E	W	The difference	J	Y	Q	V
−2	+3	−1	+1	is in the series	−2	+3	−1	+1
P	O	C	Y	2, 3, 1, 1	H	C	O	X

18. (d):

L	O	N	D	O	N		D	E	L	H	I
+1	1	1	1	1	1		−1	1	1	1	1
M	P	O	E	P	O		E	F	M	I	J

19. (a):

S	I	S	T	E	R		U	N	C	L	E
5	3	5	3	0	2		8	4	6	7	0
B	O	Y					S	O	N		
1	2	9					5	2	4		

20. (b): *i.e.*, 2 = S, 1 = H, 4 = Q and 8 = T

21. (d):

12	10	10	8
F	E	E	D

22. (c): The difference between S and L is
6 × 2 = 12 + 16 = 28
The difference between L and F is
5 × 2 = 10 + 28 = 38
The difference between V and P is
5 × 2 = 10 + 10 = 20
and the difference between P and J is also 5 × 2 = 10 + 20 = 30

23. (a): Colour stands for WATER so the FISH lives in COLOUR.

24. (a): On the basis of Ist and IInd equations "students" – DIN
On the basis of IInd and IVth equations "is" = DINK
So Putting these two values into equation IInd we get the code for Arjun as SUNK.

25. (c): 4 = good 7 = Picture and 2 and 9 = are and faint respectively.

26. (b): By comparing the two columns we get code for NET = ubi, code for CRUX is cjmv, code for SOUND is ihmop, CRONY is ijktu, CROWDY is ikgotv ADDRESS is bloopp. By further comparing we get code for E = b, N = i, T = a, C = j, R = v, U = m, X = c, S = P, O = k, D = o, Y = t, W = g and A = l.

27. (a):

28. (d):

29. (a):

30. (a):

31. (a):

X	V		N	L
I	I		I	I

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

It means C = X or third from left and III from right and O = L or 15th from left and 15th from right, M = N or 13th from left and 13th from right, E = V or Vth from left and Vth from right.

32. (b): 16 + 1 + 14 = 31 and 16 + 1 + 18 = 35 so 3 + 1 + 18 = 22

33. (c): Wheel means circle which is equal to point.

34. (b): The letters are coded by numbers and to find the answer select the respective numbers, *i.e.*,

A N O T H E R	→	letters
7 3 0 9 5 2 1	→	code
So, T H O R N	→	letters
9 5 0 1 3	→	code

35. (d): H I M = 8 × 9 × 13 = 936
CAM = 3 × 1 × 13 = 39
then MAP = 13 × 1 × 16 = 208

Type IIIC

Directions : *Certain words/terms are given below in each question. All are similar in nature except one which is different. Pick out the odd one.*

1. Mango, guava, grapes, potato, pineapple
   (a) Guava (b) Pineapple
   (c) Potato (d) Grapes
2. Cock and Hen, Horse and Mare, Peacock and Peahen, Dog and Bich, Cow and Goat
   (a) Cow and goat
   (b) Horse and Mare
   (c) Peacock and Peahen
   (d) Cock and Hen
3. Lion and Den, Cow and Porch, Pig and Pen, Hen and Farm, Horse and Stable
   (a) Lion and Den (b) Cow and Porch
   (c) Pig and Pen (d) Hen and Farm
4. 64, 36, 9, 49, 125, 81
   (a) 81 (b) 125
   (c) 9 (d) 36
5. 14, 42, 49, 44, 63, 77
   (a) 44 (b) 49
   (c) 63 (d) 77
6. J I H G F, O N M L K, U T S R Q, X W V U T, C D E F G
   (a) CDEFG (b) ONMLK
   (c) JIHGF (d) UTSRQ
7. Teacher, Principal, Student, Reader, Professor
   (a) Student (b) Professor
   (c) Principal (d) Reader
8. Crow, Pigeon, Sparrow, Bird, Kite
   (a) Pigeon (b) Kite
   (c) Crow (d) Bird
9. Whale, Crocodile, Tiger, Fish, Tortoise
   (a) Tiger (b) Whale
   (c) Tortoise (d) Fish
10. Sparrow, Engle, Crow, Ostrich, Kite
    (a) Ostrich (b) Eagle
    (c) Kite (d) Sparrow
11. Bowl, Plate, Bucket, Cup, Pan
    (a) Bowl (b) Bucket
    (c) Cup (d) Pan
12. London, Washington, Reyadh, New Delhi, Allahabad
    (a) Washington (b) Reyadh
    (c) New Delhi (d) Allahabad
13. Red, Blue, Purple, Rose, Orange,
    (a) Blue (b) Orange
    (c) Rose (d) Red
14. Eye, Ear, Nose, Finger, Tongue,
    (a) Eye (b) Nose
    (c) Tongue (d) Finger
15. Milk, Curd, Wine, Cheese, Butter
    (a) Milk (b) Wine
    (c) Butter (d) Curd
16. Iron, Sodium, Mercury, Potassium, Gold
    (a) Iron (b) Mercury
    (c) Sodium (d) Gold
17. Rifle, Pistol, Cannon, Missile, Sword
    (a) Pistol, (b) Cannon
    (c) Missile (d) Sword
18. Lizard, Snake, Fox, Tortoise, Chameleon
    (a) Chameleon (b) Fox
    (c) Tortoise (d) Snake
19. Sun, Jupiter, Moon, Horizon Cloud
    (a) Cloud (b) Horizon
    (c) Sun (d) Moon
20. February, April, December, July, January
    (a) April (b) July
    (c) January (d) February
21. He Goat, Bull, Horse, Lion, Cow
    (a) Bull (b) Cow
    (c) Horse (d) Lion
22. Festive, Cheerful, Jovial, Lively, Voc
    (a) Voc (b) Festive
    (c) Jovial (d) None of these
23. Magazine, Journal, Novel, Dictionary, Article
    (a) Article (b) Novel
    (c) Dictionary (d) Journal
24. Weaver, Tailor, Carpenter, Clerk, Blacksmith
    (a) Weaver (b) Tailor
    (c) Clerk (d) Carpenter
25. Circle, Cone, Area, Triangle, Cylinder
    (a) Circle (b) Cone
    (c) Cylinder (d) Area
26. Stems, Roots, Fruits, Plants, Leaf
    (a) Plants (b) Roots
    (c) Leaf (d) Stems

27. Air and Oxygen, Mathematics and Geometry, Flower and Petal, Teacher and Students, Books & Sentences
(a) Teacher and Students
(b) Books and Sentences
(c) Flower and Petal
(d) Air and Oxygen

28. Lion and Roar, Elephant and Trumpet, Snake and Hiss, Dogs and Cook, Birds and Chirp
(a) Birds and Chirp (b) Dogs and Cook
(c) Snake and Hiss (d) Lion and Roar

29. Shirt and Tailor, Tea and Coffee, Pen and Pencil, Sword and Armour, Books and Stationaries
(a) Shirt and Tailor
(b) Pen and Pencil
(c) Books and Stationaries
(d) Sword and Armour

30. Black and White, In and Out, Pros and Cons, Fish and Water, Day and Night
(a) Pros and Cons (b) Fish and Water
(c) In and Out (d) Day and Night

31. Oil and Lamp, Water and Ice, Wood and Table, Silk and Pant, Flour and Bread
(a) Oil and Lamp (b) Water and Ice
(c) Wood and Table (d) Silk and Pant

32. Beautiful and Handsome, Bother and Worry, Cold and Chilly, Avoid and Punish, Hobby and Recreation
(a) Avoid and Punish
(b) Hobby and Recreation
(c) Beautiful and Handsome
(d) Bother and Worry

33. Bulb and Light, Sun and Heat, Clock and Time, River and Pond, Chimney and Smoke
(a) Chimney and Smoke
(b) Sun and Heat
(c) Clock and time
(d) River and Pond

34. Industry and Workers, Hospital and Patients, Market and Buyers, Disease and Malaria, Class and Students
(a) Disease and Malaria
(b) Class and Students
(c) Industry and Workers
(d) Hospital and Patients

35. Crime and Punishment, Exercise and Health, Judgement and Advocacy, Hardwork and Success, Slowth and Failure
(a) Slowth and failure
(b) Hardwork and Success
(c) Judgement and Advocacy
(d) Exercise and Health

36. College and Principal, Navy and Commander, Industry and Director, Playground and player, Post office and Postmaster
(a) College and Principal
(b) Navy and Commander
(c) Playground and Player
(d) None of the above

37. Uncle and Niece, Father and Daughter, Brother and Sister, Father-in-law and Son-in-law
(a) Uncle and Niece
(b) Father and Daughter
(c) Brother and Sister
(d) Father-in-law and Son-in-law

38. RQS, BAC, NMO, KLM, YXZ
(a) RQS, (b) KLM
(c) YXZ (d) NMO

39. EFGH, WYZA, YZAB, PQRS, MNOP
(a) WYZA (b) EFGH
(c) MNOP (d) YZAB

40. CEAR, TEAR, FEAR, WEAR, BEAR
(a) CEAR (b) TEAR
(c) FEAR (d) BEAR

41. A, O, U, I, Q
(a) A (b) U
(c) Q (d) O

42. BOC, MIN, TOV, WAY, POQ
(a) MIN (b) TOV
(c) WAY (d) POQ

43. 9, 28, 65, 126, 129
(a) 129 (b) 65
(c) 126 (d) 9

44. 1756, 2354, 6372, 8865, 4673
(a) 8865 (b) 1756
(c) 6372 (d) 4673

45. 24, 36, 48, 39, 12
(a) 12 (b) 36
(c) 39 (d) 24

46. 169, 625, 196, 141, 144
(a) 141 (b) 169
(c) 144 (d) 625

47. 212, 323, 848, 411, 121
(a) 411 (b) 323
(c) 121 (d) 212

48. 506, 408, 350, 483, 760
(a) 483 (b) 350
(c) 760 (d) 506

49. 23, 43, 8, 29, 31
(a) 23 (b) 43
(c) 29 (d) 8

50. READING, WRITING, BREATHING, JUMPING, SWIMMING
(a) BREATHING (b) JUMPING
(c) WRITING (d) READING

51. Mars, Sky, Jupiter, Moon, Sun
(a) Sun (b) Mars
(c) Moon (d) Sky

52. Sahara, Arabia, Thar, Goli, Sundarban
(a) Sundarban (b) Arabia
(c) Thar (d) None of these

53. Alpha, Beta, Meta, Theta, Gamma
(a) Alpha (b) Beta
(c) Gamma (d) Meta

54. Geeta, Quran, Bible, Taurat, Panchsheel
(a) Panchsheel (b) Quran
(c) Geeta (d) None of these

55. Invester, Financier, Landlord, Entrepreneure, Producer
(a) Producer (b) Financier
(c) Landlord (d) None of these

56. Horse, Cow, Dog, Deer, Rabbit, Goat
(a) Goat (b) Dog
(c) Rabbit (d) None of these

57. France, Turkey, Greek, Italy, Finland
(a) Finland (b) France
(c) Italy (d) Turkey

58. Harbour, Island, Peninsula, Coast, Oasis
(a) Harbour (b) Oasis
(c) Island (d) None of these

59. Premchand, Kalidas, J.B. Shaw, Shakespeare, Marlowe
(a) Premchand (b) J B Shaw
(c) Kalidas (d) None of these

60. Manganese, Rubber, Salt, Stone, Petrol, Gold
(a) Rubber (b) Gold
(c) Salt (d) Petrol

EXPLANATORY ANSWERS

1. (c): Potato is a vegetable and the rests are fruits.

2. (a): Except this all the rests are pairs, *i.e.*, one masculine and one feminine.

3. (d): Lion lives in dens. Same is the case with other animals except hen which lives in boxes not at farms.

4. (b): All are squares except 125 which is a cube of 5.

5. (a): 44 is the only digit which is not divisible by seven.

6. (a): All are in reverse alphabetical order except this option.

7. (a): Except student all are teaching professionals.

8. (d): Barring this option all the rests are names of birds.

9. (a): It is the only animal that lives on land.

10. (a): It is the only bird that can not fly while other can fly.

11. (b): All are utensils except this.

12. (d): All are the capitals of various countries except Allahabad which is a city of India.

13. (c): Rose is a flower and all the rests are colours.

14. (c): Barring Tongue all are the external organs of the body.

15. (b): Except wine all belong to the milk category.

16. (b): It is the only metal which is found in liquid form.

17. (d): Except Sword all are fire arms.

18. (b): Fox is a hunting animal and the rests are reptiles.

19. (a): Except cloud all the terms are used in astronomy.

20. (d): February has two possibilities of 28 and 29 days.

21. (b): It is the only female animal in the group.

22. (a): Except this all are the signs of pleasure and happiness.

23. (c): Dictionary is the collection of words in alphabetical order.

24. (c): It is the only professional involved in white collar jobs.

25. (d): Except this all are geometrical figures while area is a unit.

26. (a): All are the parts and parcel of plants.

27. (a): Teacher and Students. In every pair the second word originates from the first word.

28. (b): Here animals and their voice of crying are paired and dogs bark not cook.

29. (a): Except this option all pairs are used as phrases.

30. (b): Except this terms used in all the pairs are opposite of each other.

31. (a): Oil and lamps are two different things while in other cases the second word is the changed form of the first word, *i.e.*, ice is made of water, table is made of wood and so on.

32. (a): Except this all the pairs are synonyms of each other.

33. (d): Second word is the cause of the first word but this pair is not related in this way.

34. (a): The second word in every pair relates to the first word, *i.e.*, workers go to the industry, patients go the hospital, buyers go to the market and so on.

35. (c): Second word is the result of the first word but judgement is not the result of advocacy.

36. (c): Institutions and their heads are paired here.

37. (c): Brother and sister are of the same rank.

38. (b): It is the only group that is in alphabetical order and the rests start from middle then first and then last.

39. (a): All the rests are in alphabetical series.

40. (a): It is the only option that does not have any meaning.

41. (c): Q is the only consonant in the group.

42. (c): All the groups are surrounded by consonants in alphabetical order except this. It is a meaningful word also.

43. (a): All the rests are cubes + 1, *i.e.*, $(2)^3 + 1 = 9$, $(3)^3 + 1 = 28$, $(4)^3 + 1 = 65$ and so on.

44. (a): Reasoning No. 1—8 is the only digit which is repeated in this group and no repetition of a digit is there in any other group.
Reasoning No. 2—All the four digits in every group are in increasing order in different ways.

45. (c): Unit is twice of the tens in every group but here it is three times.

46. (a): All the rests are squares of certain numbers except this.

47. (a): In all the other numbers first and third digits are the same.

48. (a): No zero is used in 483.

49. (d): Except 8 all are prime numbers.

50. (a): It is the only automatic natural action performed by living organisms.

51. (d): All the others are heavenly bodies.

52. (a): Sundarban is a delta while the others are deserts.

53. (d): All the rests are Greek symbols used especially in mathematics.

54. (a): All the rests are religious books except Panchsheel.

55. (c): It is commonly used in farm business while the others are related to finance and business.

56. (b): All the others are vegetarians.

57. (d): It is the only Asian country in the group.

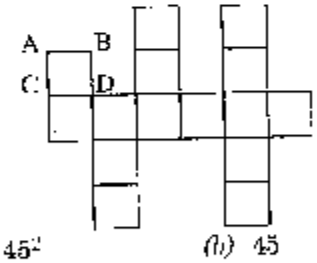
58. (b): All the others are near sea while Oasis is seen in the deserts.

59. (a): Premchand was a novelist while the others are dramatists.

60. (a): It is the only material that is obtained from trees.

Type IVA

1. Ravi has an annual income of Rs. 2500. He spends 10% on education. 20% of the remaining income is spent on housing. The remaining 15% is deposited in saving schemes and the rest income is spend on food and cloths. How much percentage of income does he spend on food and cloth ?
   (a) 65% *(b)* 61.2%
   (c) 60% *(d)* 55%
2. A car goes 35 km in 1 hour, next 270 km in 3 hrs. and next 80 km in 2½ hrs. Find the average speed of the car ?
   (a) 59. 23 km/h. *(b)* 61.5 km/h
   (c) 80 km/h *(d)* None of the above
3. Mohan is younger than his father by 20 yrs. 5 years ago his father was 3 times than him. Find the age of his father at present ?
   (a) 30 yrs *(b)* 25 yrs.
   (c) 35 yrs *(d)* None of the above
4. A train runs for 2 hrs at the speed of 35 km/h. It runs for 3½ hrs at the speed of 60 km/h and then runs for 2½ hrs. at the speed of 70 km/h. Find the average speed of the train ?
   (a) 50 km/h *(b)* 55 km/h
   (c) 80 km/h *(d)* 56.87 km/h.
5. Toffees are distributed among A, B. C, D and E in such a way that A gets one less than B, C gets 5 more than D and E gets 3 more than B. If B and D's share are equal who got the maximum number of toffees ?
   (a) A *(b)* B
   (c) D *(d)* C
6. If the number of two digits are reversed it becomes 18 greater than the number. Find the number if the sum of the digits is equal to 4 ?
   (a) 31 *(b)* 13
   (c) 22 *(d)* 40
7. Raja said to Kabir, "If you give me Rs. 2. I shall be double to you and you will become tripple to Aisha. How much money does Aisha have?
   (a) Rs 5 *(b)* Rs. 8
   (c) Rs. 2 *(d)* Rs. 3
8. A number which when divided by 4, 8, 16 leaves a remainder 3. If that number is divisible by 7 find the number ?
   (a) 49 *(b)* 77
   (c) 147 *(d)* 99
9. Mohan purchased a bike for Rs.800 including sales tax of 20%. Find the selling price of the bike
   (a) Rs. 666.66 *(b)* Rs. 600
   (c) Rs. 1000 *(d)* Rs. 900
10. My father distributed Rs. 280 in such a way that each girl received Rs. 20 and each boy Rs. 10. If the number of boys is less than that of girls by 2 find the number of boys ?
    (a) 8 *(b)* 15
    (c) 10 *(d)* 7
11. A student was asked to add 16 and subtract 10 from a number. He by mistake subtracted 16 and added 10 and found the answer 14. What is the right answer.
    (a) 20 *(b)* 26
    (c) 30 *(d)* 32
12. A student attempted 108 questions in an examination. In this examination every wrong answer was given 1/3 minus mark and right answer was given 1 mark. If the student scored zero marks how many wrong questions were done by him ?
    (a) 85 *(b)* 81
    (c) 89 *(d)* None of these
13. If the area of a given square ABCD is 3 find the total area of the entire figure?



    (a) 45 *(b)* 45
    (c) 48 *(d)* 31
14. A spider climbs 10 metres of a pole in 20 minutes and slips down 2 metres at the

very moment. If it takes 3 hrs to climb on its top find the length of the pole ?

(a) 74 metres (b) 72 metres
(c) 80 metres (d) 90 metres

15. A class started at 3.00 p.m. and lasted till 3.52 p.m. In this duration 4 regular periods are held and 4 minutes were also given to go from one class to another to attend the class. What is the exact duration of each period ?

(a) 41 m (b) 43 m
(c) 62 m (d) 40 m

16. If 15 apples and 20 organes cost as much as 20 apples and 15 oranges which of the following conclusions is correct ?

(a) Orange and apple have identical prices
(b) Orange's price is double that of apple
(c) No conclusion can be drawn
(d) Apple is cheaper than orange

17. Anil sold a commodity in Rs. 450 at the loss of 10%. At what price did he purchase it.

(a) Rs. 495 (b) Rs. 500
(c) Rs. 405 (d) None of these

18. A wagon has the capacity of 12 adults or 20 children. How many adults can be boarded with 15 children ?

(a) 3 adults (b) 5 adults
(c) 6 adults (d) None of these

19. If the following series of numbers is written in the reverse order which number will be the seventh to the right of the fourth number from the left.

1, 8, 3, 9, 7, 4, 10, 6, 2, 11, 13, 5, 14, 16

(a) 3 (b) 9
(c) 13 (d) 2

20. In a row of children Perveen is 7th form the left, Babloo is fourth from the right. When each of them exchanges their positions Perveen will be 15th from the left. Find the total number of children.

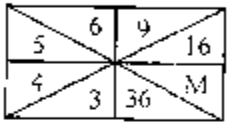
(a) 18 girls (b) 20 girls
(c) 21 girls (d) 19 girls

21. Supply the missing figure in the matrix?

4	8	20
9	3	13
6	6	?

(a) 29 (b) 13
(c) 18 (d) 20

22. Find the value of M in the following figure.



(a) 25 (b) 36
(c) 49 (d) 42

23. A garden has as many flower bearing trees as fruit bearing trees. 3/4 trees are old and ½ are grafted. Which of the following interferences are definitely true?

(a) All flower bearing trees are grafted
(b) Only fruit bearing trees are grafted
(c) At least one half of the flower bearing trees are old
(d) All of these

24. On a six point scale if a student get grade E in English, grade O in Maths, grade B in Science, grade C in Social Science and grade B in PT. Find out his over all grade.

(a) A (b) O
(c) C (d) B

25. In a group of students 600 of them passed in all five subjects. 200 failed in all the subjects, 100 in English only and 150 in Science only. Find the percentage of results of the school.

(a) 57.1% (b) 61%
(c) 80% (d) None of these

26. In a class, Ravi's rank is 15th from the top and 21st from the bottom. How many students are there in the class ?

(a) 31 (b) 36
(c) 35 (d) None of these

27. The ratio of boys and girls in a school is 4 : 3. If there are 480 boys in the school, find the number of girls ?

(a) 360 (b) 320
(c) 315 (d) None of these

28. A car needs 12 litre of petrol to cover a distance of 153 kms. How much petrol is needed to cover a distance of 204 kms.

(a) 15.3 litre (b) 16 litre
(c) 18 litre (d) 11 litre

29. A contractor undertook to finish a work in 62. He employed 60 men for this. After 32 days he found that 2/3 of the work has been completed. How many workers should be reduced to finish the work just in time ?
(a) 30 (b) 20
(c) 28 (d) 36

30. What percentage of 180.50 is 36.1 ?
(a) 20% (b) 25%
(c) 22·50% (d) None of these

31. A number is as much greater than 17 as it is less than 57. Find the number.
(a) 36 (b) 37
(c) 40 (d) 44

32. Mohan's salary is 25% above Raja. Then how much percentage Raja's salary is less than Mohan.
(a) 20% (b) 25
(c) 24 (1/6%) (d) None of these

33. A reduction of 20% in the price of apples enables a buyer to get one dozen more for Rs. 50. Find the reduced price per dozen of apples?
(a) Rs. 8 (b) Rs. 12
(c) Rs. 10 (d) None of these

34. A dealer sold a mixer for Rs. 540 lossing 10%. At what price should he have sold to earn a 10% profit ?
(a) Rs. 660 (b) Rs. 650
(c) Rs. 600 (d) None of these

35. The difference in selling price of a radio at gains of 10% and 15% is Rs. 30. Find the price of the radio ?
(a) 660 (b) 670
(c) 680 (d) 600

36. A sum of money becomes 7/5 of itself in 3 years at certain rate of interest. Find the rate.
(a) 5% (b) 7½%
(c) 8% (d) 12%

37. The difference between simple and compound rate of interest on a certain sum of money for 2 years at 5% rate of interest is Rs. 25. Find the sum.
(a) Rs. 15000 (b) Rs. 12000
(c) Rs. 10000 (d) Rs. 1500

38. An article is listed Rs. 150 with a discount of 20%. What additional discount should be given to buyers to bring the net price to Rs. 108.
(a) 10% (b) 12%
(c) 9% (d) None of these

39. What will be the speed of the water if a boat going at 9 km/hr in still water and 12 kms/hr in downstream and comes back in total three hours.
(a) 1 km/h (b) 5 km/h
(c) 4.5 km/h (d) 3 km/h

40. A man saves 25% of his salary. If due to price rise he increase his montly expenses by 25% and he is able to save only Rs. 25 per month. Find his monthly salary.
(a) Rs. 400 (b) Rs. 500
(c) Rs. 600 (d) Rs. 650

41. The volume of a wall is 16128 cubic metre. Its height is 6 times to its breadth and length is 7 times to its height. Find the breadth ?
(a) 4 m (b) 4.5 m
(c) 3.5 m (d) None of these

42. A vessel contains 100 litres of milk 50% of it is taken out every day and equal amount of water is added to. How much quantity of milk will remain after 3 days?
(a) 12 litre (b) 15 litre
(c) 12¾ litre (d) 12½ litre

43. One fifth of a number exceeds its one seventh by 154. Find the number ?
(a) 2695 (b) 2606
(c) 2700 (d) 350

44. If 20/X = X/45 then X = ?
(a) 25 (b) 27
(c) 45 (d) 30

45. A man sold 10 eggs for one rupee and thus gained 20% profit. How many eggs did he buys for Re. 1?
(a) 12 (b) 14
(c) 10 (d) 15

46. A and B invested Rs. 3000 and Rs. 2000 respectively in a partnership business in which A was sleeping partner. At the end of one month both received Rs. 150 each as profit. Find B's remuneration for his work?
(a) Rs. 50 (b) Rs. 30
(c) Rs. 60 (d) None of these

47. In an examination 40% students fail in Maths, 30% in English and 15% in both.

Find the pass percentage ?

(a) 50% (b) 65%

(c) 80% (d) 45%

48. The sum of age of a man and his son is 100 yrs. 30 yrs ago the man was three times as old as his son. Find the age of his son at present ?

(a) 35 (b) 40

(c) 50 (d) None of these

49. If 3 apples and 4 oranges cost 40 paisa and 4 apples and 3 oranges cost 37 paisa. Find the cost of an orange ?

(a) 3.5 paisa (b) 3 paisa

(c) 6 paisa (d) 7 paisa

50. Average age of 24 students is 15. If teacher's age is included the average age increases by 1. Find the age of the teacher?

(a) 40 yrs (b) 45 yrs

(c) 24 yrs (d) 18 yrs.

EXPLANATORY ANSWERS

1. (b): 10 of 2500 = 250, Rs. 2500 – 250 = 2250

$$20\% \text{ of } 2250 = \frac{20 \times 2250}{100} = \text{Rs. } 450$$

Rs. 2250 – 450 = Rs. 1800

$$15\% \text{ of } 1800 = \frac{15 \times 1800}{100} = \text{Rs. } 270$$

Rs. 1800 – 270 = Rs. 1530

Percentage of expenditure on food and cloth $= \frac{1530 \times 100}{2500} = 61.2\%$

2. (a): Total distance covered

= 35 + 270 + 80 = 385 km.

Total time taken = 1 + 3 + 2½ hrs.

= 13/2 hrs.

Average Speed = D/T $= \frac{385 \times 2}{13}$

= 59.23 km/hr.

3. (c): $X - Y = 20$ ... (1)

$(X - 5) = 3(Y - 5)$

$X - 5 = 3Y - 15$

$X - 3Y = -15 + 5$ ... (2)

Now $X - Y = 20$

$X - 3Y = -10$

$2Y = 30 \quad Y = 15$

$X = 15 + 20 = 35$

4. (d): Total distance = 2 × 35 = 70 km.

= 7/2 × 60 = 210

= 5/2 × 70 = 175 km

Total distance = 455 km.

Total time = 2 + 7/2 + 5/2 = 8 hrs.

Speed = 455/8 = 56.87 km/h

5. (d): A = 1, B = 1 + 1 = 2, D = 2, C = 5 + 2 = 7,

E = 2 + 3 = 5

6. (b): $a + y = 4$ ...(1)

$a + 10y + 18 = 10a + y$

$-9a + 9y = -18$ ...(2)

$9a + 8y = 36$

[Eq. 1 is multiplied by 9]

$18y = 54$

$y = 3$

$a = 4 - 3 = 1$

Number = 13

7. (c): Suppose Kabir has Rs. X

$2(X - 2) = (X + 2)$

$2X - 4 = X + 2$

$X = 6$

1/3 of 6 is = 2

8. (c): LCM of 4, 12, 16

= 48 + 3 = 51 not divisible by 7

48 × 2 + 3 = 99 not divisible by 7

48 × 3 + 3 = 147 divisible by 7

9. (a): $\frac{800 \times 100}{120} = \frac{2000}{3} = \text{Rs. } 666.60$

10. (a): Boys = x, Girls = $x + 2$

$10x + 20(x + 2) = 280$

$10x + 20x + 40 = 280$

$30x = 240$

$x = 8$

11. (b): $X - 16 + 10 = 14$

$X = 20$

$X + 16 - 10 = 26$

12. (b): Suppose his wrong answers were X

Numbers of right answers = 108 – X

$(108 - X)\ 4/3X = 0$

$-4/3X = -108$

$X = 108 \times 3/4$

$X = 81$

13. (b): Count the number of squares in the

figure and multiply it by 3.

14. (a): In 20 minutes it climbs 8 metre.

In 180 minutes it climbs = $\frac{8\times180}{20}$

= 72 metres

It slips down 2 metres in every 20 minutes. So its last reach to the top of the pole excludes this problem. So total length of the pole = 72 + 2 = 74 m

15. (d): 3.52 – 1.00 = 2.52 is total duration.

Adjustment time = 4 × 3 minutes = 12m

2.52 – 0.12 = 2.40 hours

120 + 40 = 160 minutes

Duration of each period = 160/4 = 40 minutes

16. (a): 15 apples + 20 Orange = 20 apples + 15 orange

20 O – 15 O = 20 A – 15A

5 O = 5 A So orange = Apple

17. (b): $\frac{100\times450}{90}$ = 500

18. (a): 20 – 15 = 5 children

20 children = 12 adults

5 children = 3 adults

19. (b): The number is being reversed. It means the right side would be considered left.

20. (a): Babloo Perveen

right – 4th 7th – left

Exchange 7th – 4th = 3

15th + 4th position of Babloo

= 15 + 3 = 18 girls

21. (c): First row = 4 + (8 × 2) = 20

Second row = 9 + (3 × 2) = 15

Third row = 6 + (6 × 2) = 18

22. (a): Numbers are given on the left side and their squares on the right side.

23. (c): Old trees are 3/4

1/2 of the flower bearing trees = 1/4 = old

3/4 – 1/4 = 1/2 remain left

Fruit bearing trees are 1/2 of the total.

If all of them are old it means 1/2 = 1/2 are old

1/4 + 1/2 = 3/4 are old in total.

24. (d): O A B C D E is a six point scale

6, 5, 4, 3, 2, 1 are numerical values

Subject =	Grade	Numerical value
English	E	1
Maths	O	6
Science	B	4
P.T.	B	4
Social Science	C	3
Over all grade		18/5

3.6 = 4 = B grade

25. (a): Total students

= 600 + 200 + 100 + 150 = 1050

%age = $\frac{100\times600}{1050} = \frac{400}{7}$ = 57.1%

26. (c): 20 | 15 = 35

27. (a): 4 : 3 : : 480. ?

4/3 = 480/X = X = $\frac{480\times3}{4}$ = 360

28. (b): (12 × 204)/153 = 16 litre

29. (c): 62 – 32 = 30 days

1 – 2/3 = 1/3 work

∴ 2/3 work is done in 32 days by 60 workers

∴ 1 work is done in 32 days by $\frac{60\times3\times32}{2}$

∴ 1/3 work is done in 30 days by

(60 × 3 × 32)/(2 × 3 × 30) = 32 workers

Reduction = 60 – 32 = 28 workers

30. (a): (36.10×100)/180.50 = $\frac{3610\times100}{18050}$ = 20%

31. (b): $\frac{17+57}{2}$ = 74/2 = 37

32. (a): 100 + 25 = 125

%age = $\frac{25\times100}{125}$ = 20%

33. (c): 20% of Rs. 50 = Rs. 10

He gets one dozen in Rs. 10

34. (a): CP before loss = $\frac{540\times100}{90}$ – 600

10% of 600 = 60

SP = 600 + 60 = 660

35. (d): 15 – 10 = 5% = 30 then 100%

$\frac{100\times30}{5}$ = 600

36. (a): 7/5 × 100 = 140 – 100 = Rs. 40 increase

Rs. 40 increases in 8 yrs. Rate = 40/8 = 5%

37. (c): Compound Interest on Rs. 100

$$= \frac{100 \times 21 \times 21}{20 \times 20} - 100$$

$$= 441/4 - 100 = 41/4$$

Simple interest on Rs. 100

$$= 6 \times 2 \times 100/100 = 10$$

Difference = 41/4 – 10 = 1/4

1/4 = 25

100 = 25 × 4 × 100 = Rs. 10000

38. (a): 20% of 150 = 30

150 – 30 = Rs. 120

120 – 108 = Rs. 12 as discount

Discount %age = 12 × 100/120 = 10%

39. (c): Let the speed of the water = X

Speed of the boat down stream = 9 + X

Speed of the boat upstream = 9 – X

Distance covered = 12 km

Time = Distance Covered/speed

$$3/1 = \frac{12}{9+X} + \frac{12}{9-X}$$

$[3(9 + X) – (9 – X) = 108 \quad 12X + 108 + 12X]/(9 + X)(9 – X)$

$3(9 + X)(9 – X) = 216$

$(9 + X)(9 – X) = 72$

$81 \quad X^2 = 72$

$X^2 = -81 + 72$

$X^2 = 9, X = 3$

40. (a): Expenses before price rise = 100 – 25 = 75

25% increase in expenses = 100 + 25 = Rs. 125.

$$\text{Monthly expenses} = \frac{75 \times 125}{100} = \frac{375}{4}$$

$$\text{Saving} = 100 - \frac{375}{4} = \frac{25}{4}$$

If saving is 25/4 then salary = 100

If saving is 25 then salary = $\frac{100 \times 25 \times 4}{25}$

= Rs. 400

41. (a): Let the breadth be X

Height = 6X

Length = 7 × 6X = 42

16128 $252X^3$, $X^3 = \frac{16128}{252}$

$X^3 = 64$

$X = 4$

42. (d): 100 – 50 = 50 = First day

50 – 25 = 25 = second day

25 – 12½ = 12½ = Third day

43. (a): 1/5 – 1/7 = 154

2/35 = 154

$$1 = \frac{154 \times 35}{2}$$

= 77 × 35 = 2695

44. (d): $X^2 = 20 \times 45$, $X = \sqrt{(900)} = 30$

45. (a): C.P. of 10 eggs = $\frac{100 \times 100}{120}$

= 250/3 paise

C.P. of 1 egg = 250/3 × 1/10 = 25/3 paise

How many in 100 paise = $\frac{100 \times 3}{25} = 12$

46. (a): Ratio of A and B 3:2 or 60% and 40% profit.

Let the profit of A = 3X and B = 2X

B is less than A by X in ratio

3X + 2X + X = 300. So X = 50

47. (d): 40% – 15% = 25% + 30% = 55%

100 – 55 = 45%

48. (b): a + b = 100 ...(1)

a – 30 = 3 (b – 30)

a – 30 = 3b – 90

a – 3b = – 60

a + b = 100

– 4b = – 160

b = 40

49. (d): 3 Apples + 4 oranges = 40 paise

4 Apple + 3 orange = 37 paise

3a + 4b = 40

4a + 3b = 37

12a + 16b = 160

12a + 9b = 111

7b = 49

b = 7 paise

50. (a): Total age of boys = 15 × 24 = 360 yrs.

Total age of boys including teacher

= 16 × 25

= 400

Teacher's age = 400 – 360 = 40 years.

Type IVB

1. If $84 \times 13 = 8$, $37 \times 13 = 6$, $26 \times 11 = 6$, then $56 \times 22 = ?$
   (a) 36 (b) 39
   (c) 7 (d) 11
2. If $1 = 3$, $2 = 5$, $3 = 7$, $4 = 9$, then $7 = ?$
   (a) 15 (b) 13
   (c) 17 (d) 11
3. If $1 = 1$, $2 = 4$, $3 = 10$ and $4 = 22$, then $5 = ?$
   (a) 39 (b) 34
   (c) 44 (d) 16
4. Insert the arithmatical signs in the following numerical figure.
   9 6 3 = 27
   (a) ÷, × (b) –, +
   (c) ÷, + (d) –, –
5. Insert the numerical signs in the following numerical figure. 8 8 2 1 = 14
   (a) –, ÷, · (b) –, –, ×
   (c) ×, ÷, – (d) +, –, ×
6. If $4 \times 24 = 6$, $2 \times 8 = 4$, $1 \times 3 = 5$, then find the value of 7×21 ?
   (a) 42 (b) 21
   (c) 3 (d) 63
7. If + means ×, – means +, ÷ means · and × means ÷ find the value of $4 + 6 - 2 \times 12 \div 4$.
   (a) $20\frac{1}{6}$ (b) 28
   (c) $24\frac{1}{4}$ (d) None of these

Directions for questions 8 and 9 :

If > stands for = < stands for ≠
× stands for > + stands for <
= stands for ≯ – stands for ≮

8. Find the value of $\alpha \times \beta > Y$
   (a) $\alpha - \beta = Y$ (b) $\alpha > \beta > Y$
   (c) $\alpha - \beta > Y$ (d) None of these
9. $a > b \times c$ means
   (a) $a \not< b \not< c$ (b) $a > b > c$
   (c) $a = b > c$ (d) All of these
10. If $3 \times 6 = 18$, $5 \times 3 = 16$, $8 \times 2 = 20$. Find the value of $4 \times 6 = ?$
    (a) 12 (b) 13
    (c) 33 (d) 20
11. If Δ means square the first number and then multiply it by the next number and ▭ means multiply the product with the second number and subtract the second number from the product of the two numbers then find the value of $2 \Delta 3 \square 5$?
    (a) 55 (b) 60
    (c) 7 (d) 24
12. On the basis of the question 11 find the value of $5 \square 3 \square 2 \Delta 2$?
    (a) 484 (b) 441
    (c) 968 (d) None of these
13. The ratio of boys and girls in a school is 3 : 2. 20% of boys and 25% of girls are scholarship holders. The percentage of students who are scholarship holders are ?
    (a) 45 (b) 35
    (c) 60 (d) 22
14. A bag contains an equal number of one rupee, 50 paisa and 25 paisa coins. If the value of money in the bag is Rs. 35, find the total number of coins of each type ?
    (a) 7 (b) 40
    (c) 30 (d) 20
15. If A ÷ B means A is the daughter of B, A × B means A is the son of B and A – B means A is the wife of B then P × Q – S means ?
    (a) S is the father of P
    (b) Q is the father of P
    (c) A is son of Q
    (d) None of these
16. Change the sign to find the equation $28 - (3 + 4) + (2 \times 2) = 0$
    (a) Change + into × (b) Change × into –
    (c) Change – into + (d) Change + into
17. If + means divide, × means minus, ÷ means multiply and – mens plus, then find the value of $9 + 3 \div 4 - 8 \times 2$?
    (a) 15 (b) 17
    (c) 17½ (d) 18
18. Which of the two signs should be changed

to make the equation correct.
(6 3) + (4 − 2 + 13) ÷ (7 × 2) = 21
(a) − − (b) × ÷
(c) : + (d) × −

19. If q means >, □ means < and Δ means = and if A □ B BqC and D Δ A, then which of the following is correct ?
(a) B > D (b) B = A
(c) C > D (d) None of these

20. How many pillars are needed to construct a bridge of 300 metre long, if pillars are at a distance of 12½ metres each.
(a) 22 (b) 24
(c) 25 (d) None of these

21. If 12 = 10 and 32 = 26, then 22 = ?
(a) 20 (b) 16
(c) 18 (d) 17

22. A man digs a trench in 3 days, another man can dig it in 5 days and third man can dig it in 6 days working alone. How much time will they take to dig it together ?
(a) 10/7 days (b) 30/13 days
(c) 19/30 days (d) None of these

23. What sign should be changed to make the equation 5 + 6 ÷ 3 − 12 × 2 = 17, correct?
(a) + ÷ (b) +
(c) + × (d) None of these

24. If 5 × 8 = 28, 3 × 7 = 12, 8 × 6 = 35 then find the value of 13 × 13?
(a) 169 (b) 130
(c) 140 (d) 144

25. If 56 × 11 = 9, 37 × 13 = 6, 42 × 12 = 3 then find the value of 87 × 77 = ?
(a) 1 (b) 3
(c) 4 (d) 5

EXPLANATORY ANSWERS

1. (c): (8 + 4) − (1 + 3) = 8, (3 + 7) − (1 + 3) = 6 and (5 + 6) − (2 + 2) = 7

2. (a): Assigned codes are increasing at an interval of 2.

3. (d): 1, 2, 3, 4, 5, (Digits)
1, 4, 10, 22, 46 (Code), Gap is being doubled at every digit.

4. (a): Always apply the rules of BODMAS in such type of problems. In this problem multiplication will be done first then comes the operation of addition and finally subtraction, *i.e.*, 9 + 6 × 3 = 27

5. (d): The explanation is in answer No. 4, *i.e.*, 8 + 8 − 2 × 1 = 14

6. (c): The first figure is divisor and the second one is dividend
24 ÷ 4 = 6, 8 ÷ 2 = 4, 3 ÷ 1 = 3

7. (a): 4 + 6 − 2 × 12 ÷ 4
× + ÷ −
4 × 6 + 2 ÷ 12 − 4
4 × 6 + 1/6 − 4
24 + 1/6 − 4

145/6 − 4 = 121/6 = $20\frac{1}{6}$

8. (d): $\alpha \times \beta > \gamma$
$\alpha > \beta = \gamma$ It means
$\alpha \neq \beta > \gamma$

9. (a): $a > b \times c$
$a = b > c$
$a > b = c$

10. (d): (3 + 6) × 2 = 18,
(5 + 3) × 2 = 16,
(8 + 2) × 2 = 20

11. (a): 2 Δ 3 □ 5
2 × 2 × 3 □ 5
12 □ 5
= 12 × 5 − 5 = 55

12. (c): 5 □ 3 □ 2 Δ 2 = (5 × 3 − 3 □ 2 Δ 2
= (1742 × 2 − 2) Δ 2
= (22 × 22) × 2 = 484 × 2 = 968

13. (d): 3 : 2 of 100 = 60 and 40, 20% of 60 = 12 and 25% of 40 = 10

14. (d): $\frac{X}{1}+\frac{X}{2}+\frac{X}{4} = 35$ or $\frac{7X}{4}$
= 35 or 7X
= 35 × 4 or X = 20

15. (a): P × Q = P is the son of Q and Q is wife of S. S is the father of P.

16. (a): $28 - (3 + 4) \times (2 \times 2) = 0$

17. (a): *(i)* $9 + 3 \div 4 - 8 \times 2$

(ii) $9 \div 3 \times 3 + 8 - 2$

(iii) $9 \times 1/3 \times 3 + 8 - 2$

(iv) $9 + 8 - 2 = 15$

18. (d):

19. (a): $A < B$ (1)

$B > C$ (2)

$D = A$ (3)

$B > C$, $B > A = D$

20. (c): $300 \div 25/2$ + one pillar = $300 \times 2/25$ + one pillar = 25

21. (c): Here 2 point decreases at every tens, *e.g.*, 12 = 10 and 32 = 26.

So the number which is between 21 – 32 should be 4 point less, *i.e.*, 22 = 18.

22. (a): $\frac{1}{3} + \frac{1}{5} + \frac{1}{6} = \frac{10+6+5}{30} = \frac{21}{30}$ or $\frac{10}{7}$ days.

23. (d): $5 \times 6 - 3 + 12 + 2 = 17$

24. (d): $(4 - 1)(8 - 1) = 28$

$(3 - 1)(7 - 1) = 12$

$(8 - 1)(6 - 1) = 35$

then $(13 - 1)(13 - 1) = 144$

25. (a): $(5 + 6) - (1 + 1) = 9$

$(3 + 7) - (1 + 3) = 6$

$(4 + 2) - (1 + 2) = 3$

then $(8 + 7) - (7 + 7) = 1$