Comprehensive Theory
with
Examples
and
Solved Questions
of
GATE Examination.

Thoroughly Revised & Updated

Reasoning, Aptitude and Data Interpretation

Also Useful for

- GATE • ESE
- UPSC (C-SAT)
- SSC • Bank P.O.
- Railways
- Various Public Sector Units
- Other Competitive Exams.

ENGINEERS ACADEMY®
Your GATEway to Professional Excellence
IES • GATE • PSUs • JTO • IAS • NET

www.eapublications.org

Publisher

Engineers Academy Publications

100-102, Ram Nagar, Bambala Puliya, Toll Tax,
Tonk Road, Pratap Nagar, Jaipur (Rajasthan)-302033
E-Mail : engineers.academy.india@gmail.com

ISBN : 978-81-952208-9-2

First Edition : 2014
Second Edition : 2015
Third Edition : 2016
Fourth Edition : 2017
Fifth Edition : 2018
Sixth Edition : 2019
Seventh Edition : 2020
Eighth Edition : 2021

Price : ₹ 1000.00

CONTENTS

☒☒☒

Theory & Objective

SECTION - I

Analytical and Logical Reasoning

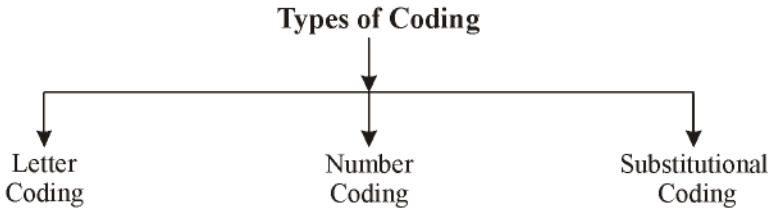
ENGINEERS ACADEMY®
Your GATEway to Professional Excellence
IES • GATE • PSUs • JTO • IAS • NET

www.eapublications.org

Unit II Coding and Decoding

A code means arrangement of symbols.

Therefore coding is a method of transforming any instruction from the given form to the required form.



1. LETTER CODING

In these type of questions code values are given to a word in terms of letters.

In this type of Questions we have to analyze the pattern of the example and follow that pattern to find the answer.

(i) Take the given pair

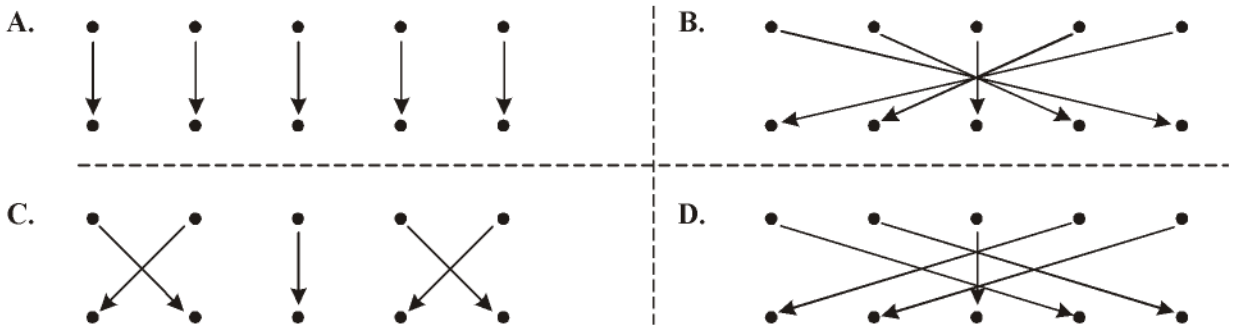
(ii) Write the postion of all letters in given pair

(iii) Try to find the relation between the letters of both part of pair.

(iv) Relation may be related to forward or backward order.

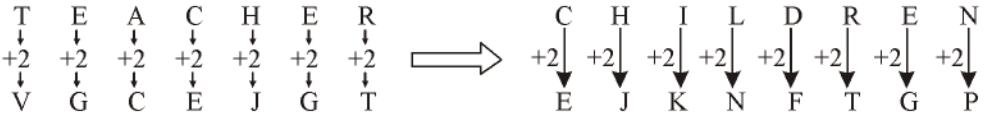
(v) Implement the same relation on the given word for required answer.

Possible relations on the basis of position of alphabets in the given words may be as follows :



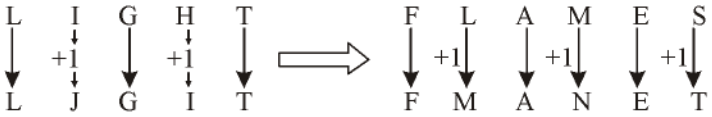
Example : In a certain language, TEACHER is written as VGCEJGT then how is CHILDREN, written in same language?

Solution: CHILDREN → EJKNFTGP



Example :If LIGHT is coded as LJGIT. How is FLAMES coded in that code?

Solution: FLAMES → FMANET



2. | NUMBER CODING

In these question, numerical code values are given to a word or vice-versa. The candidate is required to find the code depending upon the given coding pattern.

Example: In a certain code SISTER is coded as 535201, UNCLE is coded as 78960. How is NEER is coded is that code?

Solution: NEER → 8001

S I S T E R → 5 3 5 2 0 1
U N C L E → 7 8 9 6 0
N E E R → 8 0 0 1

Example: In a certain code, a number 13479 is written as AQFJL and 5268 is written as DMPN. How is 396824 written is that code?

Solution: 396824 → QLPNMF

1 3 4 7 9 → A Q F J L
5 2 6 8 → D M P N
3 9 6 8 2 4 → Q L P N M F

3. | SUBSTITUTIONAL CODING

In this type of questions, some particular names are given to certain objects.

Example: If 'EYE' is called 'HAND', 'HAND' is called 'MOUTH', 'MOUTH' is called 'EAR', 'EAR' is called 'NOSE', and 'NOSE' is called 'TONGUE'. With which of the following would a person hear?

Solution: NOSE

Example: If 'tee see pee' means 'drink fruit juice', 'see kee lee', means 'juice is sweet' and 'lee ree mee' means 'he is intelligent'. Which word is that language means 'sweet'?

Solution: So, Sweet → Kee

Tee See Pee → Drink Fruit Juice
See Kee Lee → Juice is Sweet
Lee Ree Mee → He is intelligent

KEY FACTORS :

- E J O T Y
  5 10 15 20 25
- C F I L O R U X
  3 6 9 12 15 18 21 24

❍❍❍

Objective Questions PRACTICE SHEET

1. In certain code TUBUJPO is written as VSDSLNQ. How is CSJOH written in that code?
   (a) EQLMJ (b) DQLMJ
   (c) EQMLJ (d) QELMJ

2. If DIAMOND is coded as VQYMKLV, then WEALTH is coded as :
   (a) CUYNFR (b) HTLAEW
   (c) YCONWJ (d) XFBMUI

3. If BEAUTY is coded as YVZFGB, then CHARM is coded as:
   (a) XSINZ (b) XSZIN
   (c) ZINSX (d) BGZQL

4. If in a certain code, 'TEARS' is written as 'UGDVX', then 'SMILE' would be written as :
   (a) TOLPJ (b) TOLNG
   (c) TOJPJ (d) TOKNH

5. In certain code, RITA is written as SJUB. How is CUBA written in that code?
   (a) DAVB (b) DVCB
   (c) CDQB (d) BCDQ

6. In a certain code language 35796 is written as 44887. How is 46823 written in that code?
   (a) 57914 (b) 55914
   (c) 55934 (d) 55714

7. If PALAM could be given the code number 43, what code number can be given to SANTACRUZ?
   (a) 75 (b) 85
   (c) 120 (d) 123

8. If Z = 52 and ACT = 48, then BAT will be equal to
   (a) 39 (b) 41
   (c) 44 (d) 46

9. If REASON is coded as 5 and BELIEVED as 7, what is the code number for GOVERNMENT?
   (a) 6 (b) 8
   (c) 9 (d) 10

10. If GO = 32, SHE = 49, then SOME will be equal to
    (a) 56 (b) 58
    (c) 62 (d) 64

11. In a certain code, MONKEY is written as XDJMNL. How is TIGER is written in that code?
    (a) QDFHS (b) DSOESPI
    (c) SHFDQ (d) UJHFS

12. If VICTORY is coded as YLFWRUB, SUCCESS will be written as :
    (a) VXEEIVV (b) VXFFHVV
    (c) VYEEHVV (d) VYEEIVV

13. If DELHI is coded as CCIDD, how is BOMBAY written in that code?
    (a) AJMTVT (b) AMJXVS
    (c) MJXVSU (d) WXYZAX

14. If CIGARETTE is coded as GICERAETT, then DIRECTION will be coded as :
    (a) RIDTCENOI (b) NORTECDIL
    (c) NOIETCRID (d) IRDCTIONE

15. In certain code, PAPER is written as SCTGW. How is MOTHER written in that code?
    (a) ORVLGW (b) PQVJGT
    (c) PQXJJT (d) PQXKJV

16. In a certain language, '734' means 'mangoes are good', '657' means 'eat good food' and '934' means 'mangoes are ripe' which digit means 'ripe' in that language?

(a) 9 (b) 4

(c) 5 (d) 7

17. In a certain code '247' means 'spread red carpet', '256' means 'dust one carpet' and '264' means 'one red carpet'. Which of the following represents 'dust' in that code?

(a) 2 (b) 3

(c) 5 (d) 6

18. In a certain code '256' means 'you are good' '637' means 'we are bad' and '358' means 'good and bad'. Which of the following represents 'and' in that code?

(a) 2 (b) 5

(c) 8 (d) 3

19. In a certain code, '467' means 'Leaves are green' '485' means 'green is good' and '639' means 'they are playing'. Which digit stands for 'leaves' in that code?

(a) 4 (b) 6

(c) 7 (d) 3

20. In a certain code language '851' means 'good sweet fruit' 783 means 'good red rose' and 341 means 'rose and fruit'. Which of the following digits stands for 'sweet' in that language?

(a) 8 (b) 5

(c) 1 (d) 3

21. If EJOTY is coded as 510152025. How would you encode SUNIL in that coding system.

(a) 181214913 (b) 192114912

(c) 192113912 (d) 191214912

22. If PAINT is coded as 74128 and EXCEL is coded as 93596, then how would you encode ACCEPT?

(a) 455978 (b) 547978

(c) 554978 (d) 735961

23. If D = 4 and COVER = 63 then BASIS = ?

(a) 49 (b) 50

(c) 54 (d) 55

24. If DELHI is coded as 73541 and CALCUTTA as 82589662, how can CALICUT be coded?

(a) 5279431 (b) 5978213

(c) 8251896 (d) 8543691

25. If ROSE is coded as 6821, CHAIR is coded as 73456 and PREACH is coded as 961473, what will be the code for SEARCH?

(a) 246173 (b) 214673

(c) 214763 (d) 216473

26. The word 'BODY' is represented by APCZ. What will represent 'DELHI'.

(a) CEKHI (b) EFMIJ

(c) CFKIH (d) CFKGH

27. In a certain code, ROME is coded as SUNI and BOMBAY as CUNCEZ. Then ASIA is coded as :

(a) BIJB (b) ETOE

(c) ESOE (d) ATIA

28. In a certain code, MEN is written as MIN and WOMEN is written as WUMIN. How will CHILD be written in the same code?

(a) CHOLD (b) CHELD

(c) CHILD (d) CHALD

29. If in a certain code, APRIL is written as BQSJM, what is the word whose code is HSFFO?

(a) INDIA (b) MARCH

(c) GREEN (d) TREES

30. In a certain code, SUGAR is written as ARGSU. What is the word is TEAST when decoded?

(a) FEAST (b) STATE

(c) STEAT (d) ATEST

31. In a certain code language 479 means 'fruit is sweet' 248 means 'very sweet voice' and 637 means 'eat fruit daily'. Which digit stands for 'is' in that code?

(a) 7 (b) 9

(c) 4 (d) Can't determined

32. In a certain code 256 means 'red colour chalk' 589 means 'green colour flower' and 245 means 'white colour chalk'. Which digit in the code means 'white'?

(a) 2 (b) 4

(c) 5 (d) Cannot be determined

33. In a certain code 253 means 'books are old' 546 means 'man is old' and 378 means 'buy good books'. What stands for 'are' in that code?

(a) 2 (b) 4

(c) 5 (d) 6

34. In the correctly worked out multiplication problem at the below each letter represents a different digit. What is the value of T?

$$\begin{array}{r} PQ \\ \times QP \\ \hline +PQ \\ TQR \\ \hline T6Q \end{array}$$

(a) 5 (b) 4

(c) 7 (d) 2

35. What is the value of A if each leter represents a different digit?

$$\begin{array}{r} A3B \\ \times B \\ \hline 217B \end{array}$$

(a) 3 (b) 4

(c) 5 (d) 7

36. If TAP is coded as SZO, then how is FREEZE coded?

(a) EQDFYG (b) ESDFYF

(c) GOFDYF (d) EQDDYD

37. In a certain code, SIKKIM, is written as THLJJL. How is TRAINING written in that code?

(a) SQBHOHOH (b) UQBHOHOF

(c) UQBJOHHO (d) UQBJOHOH

38. In a certain code, MENTION is written as LNEITNO. How is PATTERN written in that code?

(a) APTTREM (b) PTAETNR

(c) OTAETNR (d) OTAETRN

39. In a certain code, FORGE is written as FPTJI. How is CULPRIT written in that code?

(a) CSJNPGR (b) CVMQSTU

(c) CVNSVNZ (d) CXOSULW

40. In a certain code, TRIPPLE is written as SQHOOKD. How is DISPOSE written in that code?

(a) CHRONRD (b) DSOESPI

(c) ESJTPTF (d) ESOPSID

41. If the letters in PRABA are coded as 27595 and THIKLAK are coded as 368451, how can BHARATHI be coded?

(a) 37536689 (b) 57686535

(c) 96575368 (d) 96855368

42. If ENGLAND is written as 1234526 and FRANCE is written as 785291, how is GREECE coded?

(a) 381171 (b) 381191

(c) 832252 (d) 835545

43. If SHARP is coded as 58034 and PUSH as 4658 than RUSH is coded as :

(a) 3568 (b) 3658

(c) 3685 (d) 3583

44. In a certain code GARIMA is written as 725432 and TINA as 6482. How is MARTINA written in that code?

(a) 3256482 (b) 3265842

(c) 364562 (d) 365826

45. In a certain code language 24685 is written as 33776. How is 35791 written in that code?

(a) 44826 (b) 44882

(c) 46682 (d) 44682

46. In a code, language, DISTANCE is written as IDTUBECN and DOCUMENT is written as ODDVNTNE. How THURSDAY written in that language?

(a) DTVSTEYA (b) HTTQRYAD

(c) HTVSTYDA (d) HTVSTYAD

47. In a certain code, SUBSTITUTION is written as ITSBUSNOITUT. How is DISTRIBUTION written in that code?

(a) IRTSIDNOITUB (b) IRTSIDNOIBUT

(c) IRTDISNOITUB (d) IRTDISNOIUTB

48. CONTRIBUTE is written as ETBUIRNTOC, which letter will be in the sixth place when counted from the left if POPULARISE is written in that code?

(a) L (b) A

(c) I (d) R

49. If DIAMOND is coded as VQYMKLV, how is FEMALE coded?

(a) TUMYNU (b) UNNZOV

(c) UVNYNV (d) TVNYNV

50. Which of the following words would correctly decode the word ZHOFRPH if the simple alphabet shifting code is used?

(a) ARTISTS (b) COMPUTE

(c) MAILING (d) WELCOME

51. If AT = 20, BAT = 40, then CAT will be equal to

(a) 30 (b) 50

(c) 60 (d) 70

52. If MACHINE is coded as 19 – 7 – 9 – 14 – 15 – 20 – 11. How will you code DANGER?

(a) 10 – 7 – 20 – 13 – 11 – 24

(b) 11 – 7 – 20 – 16 – 11 – 24

(c) 13 – 7 – 20 – 9 – 11 – 25

(d) 13 – 7 – 20 – 16 – 11 – 24

53. If MOBILITY is coded as 46293927, then EXAMINATION is coded as :

(a) 45038401854 (b) 56149512965

(c) 57159413955 (d) 67250623076

54. If MASTER is coded as $\overline{4}1\dot{1}25\overline{9}$ then POWDER will be be coded as

(a) $\overline{76}\dot{5}43\overline{9}$ (b) $\overline{76}\dot{5}\dot{4}3\overline{9}$

(c) $\overline{76}\dot{5}45\overline{9}$ (d) $\overline{76}\overline{5}\overline{54}9$

55. In a certain code '37' means 'which class' and '583' means 'caste and class'. What is the code for caste?

(a) 3 (b) 7

(c) 8 (d) Either 5 or 8

56. Find the odd one out.

(a) ABTEL (b) RAHCI

(c) LOOTS (d) LPATN

57. Find the odd one out.

(a) BLOW (b) NOPOS

(c) LETAP (d) DHATUMB

58. If "GREEN" means "YELLOW", "YELLOW" means "WHITE", "WHITE" means "RED", "RED" means "VIOLET" and "VIOLET" means "BLACK"; then which of the following will be the colour of human blood?

(a) RED (b) BLACK

(c) GREEN (d) None of these

❍❍❍

ANSWERS AND SOLUTIONS

1. ***Ans.(a)***

T	U	B	U	J	P	O
+2↓	−2↓	+2↓	−2↓	+2↓	−2↓	+2↓
V	S	D	S	L	N	Q

C	S	J	O	H
+2↓	−2↓	+2↓	−2↓	+2↓
E	Q	L	M	J

2. ***Ans.(a)***

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

3. ***Ans.(b)***

A → Z, B → Y, C → X, D → W, … and so on,

∴ CHARM → XSZIN

4. ***Ans.(a)***

T	E	A	R	S
+1↓	+2↓	+3↓	+4↓	+5↓
U	G	D	V	X

S	M	I	L	E
+1↓	+2↓	+3↓	+4↓	+5↓
T	O	L	P	J

5. ***Ans.(b)***

R	I	T	A
+1↓	+1↓	+1↓	+1↓
S	J	U	B

C	U	B	A
↓	↓	↓	↓
D	V	C	B

6. ***Ans.(b)***

The letters are coded as follows :

3	5	7	9	6	4	6	8	2	3
+1↓	−1↓	+1↓	−1↓	+1↓	+1↓	−1↓	+1↓	−1↓	+1↓
4	4	8	8	7	5	5	9	1	4

7. ***Ans.(d)***

The letters are coded as follows :

Hence, A = 1, L = 12 M = 13, P = 16

A = 1, B = 2, C = 3, … Z = 26

PALAM = 16 + 1 + 12 + 1 + 13 = 43

So, SANTACRUZ = 19 + 1 + 14 + 20 + 1 + 3 + 18 + 21 + 26 = 123

8. ***Ans.(d)***

The letters are coded as follows :

A = 2, C = 6, T = 40, Z = 52

A = 2, B = 4, C = 6 … Z = 52

ACT = 2 + 6 + 40 = 48

BAT = 4 + 2 + 40 = 46

9. ***Ans.(c)***

Given REASON = 5 and BELIEVED = 7

Hence, Required code=No.of letters in the word-1

GOVERNMENT = 10 – 1 = 9

10. ***Ans.(a)***

Given, The letters are coded as follows :

A = 26, B = 25, C = 24 … Z = 1

GO = 20 + 12 = 32; SHE = 8 + 19 + 22 = 49

SOME = 8 + 12 + 14 + 22 = 56

11. ***Ans.(a)***

MONKEY $\xrightarrow{\text{Reversing the word}}$

Y	E	K	N	O	M
−1↓	−1↓	−1↓	−1↓	−1↓	−1↓
X	D	J	M	N	L

TIGER $\xrightarrow{\text{Reversing the word}}$

R	E	G	I	T
−1↓	−1↓	−1↓	−1↓	−1↓
Q	D	F	H	S

12. ***Ans.(b)***

V	I	C	T	O	R	Y
+3↓	+3↓	+3↓	+3↓	+3↓	+3↓	+3↓
Y	L	F	W	R	U	B

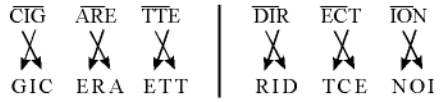
S	U	C	C	E	S	S
+3↓	+3↓	+3↓	+3↓	+3↓	+3↓	+3↓
V	X	F	F	H	V	V

13. ***Ans.(b)***

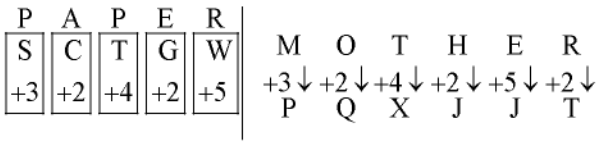
D	E	L	H	I
−1↓	−2↓	−3↓	−4↓	−5↓
C	C	I	D	D

B	O	M	B	A	Y
−1↓	−2↓	−3↓	−4↓	−5↓	−6↓
A	M	J	X	V	S

14. ***Ans.(a)***



15. ***Ans.(c)***



16. ***Ans.(a)***

Give, Mangoes are good = '734'

'Eat good food' = '657'

'Mangoes are ripe' = '934'

From equations, good is coded as '7', From equations, 'Mangoes' and 'are' are coded as '4' and '3' or '3' and '4'.

From equation 'ripe' is coded as '9'

17. ***Ans.(c)***

Given, 'Spread red Carpet' = '247'

'dust one carpet = '256'

'one red carpet' = '264'

From equations , 'one' and 'carpet' are coded as '2' and '6' or '6' and '2'.

From equation 'dust' is coded as '5'.

18. ***Ans.(c)*** Given, 'You are good' = '256'

'We are bad' = '637'

'Good and Bad' = '358'

So, and is coded as 8.

19. ***Ans.(c)***

Given, 'Leaves are green' = '467'

'Green is good' = '485'

and 'They are playing' = '639'

From equations 'are' is coded as '6'.

From equations, 'green' is coded as '4'.

From equation , 'Leaves is coded as '7'.

20. ***Ans.(b)***

Given 'good sweet fruit' = '851'

'good red rose' = '783'

'Rose and fruit' = 341'

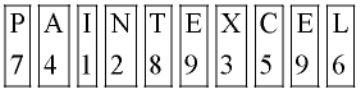
From equations 'good' is coded as '8'.

From equation 'fruit is coded as '1'.

From equation, 'Sweet' is coded as '5'.

21. ***Ans.(b)***

22. ***Ans.(a)***



ACCEPT = 455978

23. ***Ans.(b)***

D = 4

COVER = 63

$\Rightarrow 3+15+22+5+18=63$

C = 3, O = 15, V = 22, E = 5 and R = 18

BASIS = 2 + 1 + 19 + 9 + 19 = 50

24. ***Ans.(c)***

The alphabets are coded as follows :

D E L H I C A U T

7 3 5 4 18 2 9 6

CALICUT = 8251896

25. ***Ans.(b)***

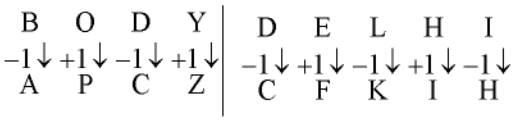
The alphabets are coded as follows :

R O S E C H A I P

6 8 21 7 3 4 59

SEARCH = 214673

26. ***Ans.(c)***



27. ***Ans.(b)***

Vowel is coded by the next vowel and consonant is coded by the next consonant.

$\therefore$ ASIA → ETOE

28. ***Ans. (a)***

Vowel is coded by the next vowel wherever it appears.

$\therefore$ CHILD $\rightarrow$ CHOLD

29. ***Ans.(c)***

A	P	R	I	L		G	R	E	E	N
+1↓	+1↓	+1↓	+1↓	+1↓		+1↓	+1↓	+1↓	+1↓	+1↓
B	Q	S	J	M		H	S	F	F	O

30. ***Ans.(b)***

31. ***Ans.(b)***

Given, 'fruit is sweet' = '479'

'very sweet voice' = '248'

'Eat fruit daily' = '637'

From equations 'sweet' is coded as '4'.

From equations 'fruit' is coded as '7'.

From equations 'is' is coded as '9'.

32. ***Ans.(b)***

Given, 'Red colour chalk' = '256'

'Green colour flower' = '589'

'White colour chalk' = '245'

From equations, 'Colour' is coded as '5'.

From equations , 'Chalk' is coded as '2'.

From equations 'White' is coded as '4'.

33. ***Ans.(a)***

Given, 'Books are old' = '253'

'Man is old' = '546'

'Buy good books' = '378'

From equations 'old' is coded as '5'.

From equations 'books' is coded as '3'.

From equations 'are' is coded as '2'.

34. ***Ans.(c)***

$Q + R = Q \Rightarrow R = 0$; $PQ \times P = PQ \Rightarrow P = 1$

$P + Q = 6 \Rightarrow Q = 5$; $15 \times 51 = 765$; $T = 7$

35. ***Ans.(b)***

From the question, B can be 1, 5 or 6; 1 and 6 do not satisfy the question. So,

$\therefore$ B = 5 and A = 4 only 2 or 4.

B = 2, D = 4 and C = 3

36. ***Ans.(d)***

T	A	P		F	R	E	E	Z	E
−1↓	−1↓	−1↓		1−↓	↓	−1↓	−1↓	−1↓	−1
S	Z	O		E	Q	D	D	Y	D

= EQDDYD

37. ***Ans.(b)***

S	I	K	K	I	M
+1↓	−1↓	+1↓	−1↓	+1↓	−1↓
T	H	L	J	J	L

T	R	A	I	N	I	N	G
+1↓	↓	−1↓	+1↓	−1↓	+1↓	−1↓	+1↓	−1
U	Q	B	H	O	H	O	F

38. ***Ans.(c)***

M	EN	TI	ON		P	AT	TE	RN
−1↓	✕	✕	✕		−1	✕	✕	✕
L	NE	IT	NO		O	TA	ET	NR

39. ***Ans.(c)***

F	O	R	G	E
↓	+1↓	+2↓	+3↓	+4↓
F	P	T	J	I

C	U	L	P	R	I	T
↓	+1↓	+2↓	+3↓	+4↓	+5↓	+6↓
C	V	N	S	V	N	Z

40. ***Ans.(a)***

T	R	I	P	P	L	E
−1↓	−1↓	−1↓	−1↓	−1↓	−1↓	−1↓
S	Q	H	O	O	K	D

D	I	S	P	O	S	E
−1↓	−1↓	−1↓	−1↓	−1↓	−1↓	−1↓
C	H	R	O	N	R	D

41. ***Ans.(c)***

the alphabets are coded as follows :

P R A B T H I L K

2 7 5 9 3 6 8 4 1

BHARATHI = 96575368

42. ***Ans.(b)***

The alphabets are coded as follows :

E N G L A D F R C
1 2 3 4 5 6 78 9

GREECE = 381191

43. ***Ans.(b)***

The alphabets are coded as follows :

S H A R P U
5 8 0 3 4 6

RUSH = 3658

44. ***Ans.(a)***

The alphabets are coded as follows :

G A R I M T N
7 2 5 43 6 8

MARTINA = 3256482

45. ***Ans.(b)***

The letters are coded as follows :

2	4	6	8	5	3	5	7	9	1
+1↓	−1↓	+1↓	−1↓	+1↓	+1↓	−1↓	+1↓	−1↓	+1↓
3	3	7	7	6	4	4	8	8	2

46. ***Ans.(d)***

D I S T A N C E
I D T U B C C N

AND

D O C U M E N T
O D D V N T N E **Therefore**

T H U R S D A Y
H T V S T Y A D

47. ***Ans.(a)***

SUB STI TUT ION | DIS TRI BUT ION
ITS BUS NOI TUT | IRT SID NOI TUB

48. ***Ans.(a)***

CONTRIBUTE $\xrightarrow{\text{Reversing the word}}$ ET UB IR TN OC
ET BU IR NT OC

49. ***Ans.(a)***

DIAMOND — If a letter is n^{th} place from the begining
VQYMKLV — Coded letter is the $(n+1)^{th}$ place from the end.

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

FEMALE $\xrightarrow{\text{Code}}$ TUMYNU

50. ***Ans.(d)***

After shifting three place backward of the coded word ZHOFRPH, we get WELCOME.

51. ***Ans.(c)***

AT = 20 and BAT = 40
The letters are coded as follows :
A = 1, T = 20, B = 2 … Z = 26
AT = 1 × 20 = 2
BAT = 2 × 1 × 20 = 40
CAT = 3 × 1 × 20 = 60

52. ***Ans.(a)***

MACHINE = 19 – 7 – 9 – 14 – 15 – 20 – 11
The letters are coded as follows :
A = 7, B = 8, C = 9 … Z = 32
DANGER = 10 – 7 – 20 – 13 – 11 – 24

53. ***Ans.(b)***

Given, MOBILITY = 46293927
Let, A = 1, B = 2, C = 3 … Z = 26
M = 13 = 1 + 3 = 4;
O = 15 = 1 + 5 = 6
B = 2; I = 9;
L = 12 = 1 + 2 = 3
T = 20 = 2 + 0 = 2;
Y = 25 = 2 + 5 = 7
So, letters are coded as follows :
A = 1, B = 2, C = 3 … J = 1
K = 2, L = 3 … Y = 7, Z = 8
EXAMINATION = 56149512965

54. ***Ans.(c)***

Given, MASTER $= \overline{4}1\dot{1}25\overline{9}$

The letters are coded as follows :

A = 1, B = 2, C = 3 … I = 9

$J = \overline{1}, K = \overline{3} \ldots R = \overline{9}$

$S = \dot{1}, T = \dot{2}, U = \dot{3} \ldots Z = \dot{8}$

POWDER $= \overline{76}\dot{5}45\overline{9}$

55. ***Ans.(d)***

Given, which class = 37

and caste and class = 583

the common word class is coded as '3'.

caste is coded as '5' or '8'.

56. ***Ans. (d)***

Vowel and consonant logic.

57. ***Ans. (a)***

Vowel and consonant logic.

58. ***Ans. (d)***

❍❍❍

Unit I GATE Previous Years Questions

Objective Questions PRACTICE SHEET

1. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair. Unemployed : Worker

(a) fallow : land

(b) unaware : sleeper

(c) wit : jester

(d) renovated : house

[GATE-2010]

2. 25 persons are in a room 15 of them play hockey 17 of them play football and 10 of them play both hockey and football. Then the number of persons playing neither hockey nor football is:

(a) 2 (b) 17

(c) 13 (d) 3

[GATE-2010]

3. Hari (H), Gita (G), Irfan (I) and Saira (S) are siblings (i.e. brothers and sisters). All were born on 1st January. The age difference between any two successive siblings (that is born one after another) is less than 3 years.

Given following facts:

(i) Hari's age + Gita's age > Irfan's age + Saira's age

(ii) The age difference between Gita and Saira is 1 year. However, Gita is not the oldest and saira is not the youngest

(iii) There are no twins

In what order were they born (oldest first)?

(a) HSIG (b) SGHI

(c) IGSH (d) IHSG

[GATE-2010]

4. 5 Skilled workers can build a wall in 20 days, 8 semi-skilled workers can build a wall in 25 days; 10 unskilled workers can build a wall in 30 days. If a team has 2 skilled 6 semi-skilled and 5 unskilled workers, how long will it take to build the wall?

(a) 20 days (b) 18 days

(c) 16 days (d) 15 days

[GATE-2010]

5. Given digits 2, 2, 3, 3, 3, 4, 4, 4, 4 how many distinct 4 digit numbers greater than 3000 can be formed?

(a) 50 (b) 51

(c) 52 (d) 54

[GATE-2010]

6. If 137 + 276 = 435, how much is 731 + 672 =?

(a) 534 (b) 1403

(c) 1623 (d) 1513

[GATE-2010]

7. The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair:

GLADIATOR : ARENA

(a) dancer : stage

(b) commuter : train

(c) teacher : classroom

(d) lawyer : courtroom

[EC, EE : GATE-2011]

423. We have 2 rectangular sheets of paper, M and N, of dimensions 6 cm × 1 cm each. Sheet M is rolled to form an open cylinder by bringing the short edges of the sheet together. Sheet N is cut into equal square patches and assembled to form the largest possible closed cube.Assuming the ends of the cylinder are closed, the ratio of the volume of the cylinder to that of the cube is_____

(a) $\frac{\pi}{2}$ (b) $\frac{3}{\pi}$

(c) $\frac{9}{\pi}$ (d) 3π

[CH, CS : GATE-2021 (Set-1)]

424. Details of prices of two items P and Q are presented in the below table. The ratio of cost of item P to cost of item Q is 3 : 4. Discount is calculated as the difference between the marked price and the selling price. The profit percentage is calculated as the ratio of the difference between selling price and cost, to the cost

$$\left(\text{Profit\%} = \frac{\text{Selling price Cost}}{\text{Cost}} \times 100\right)$$

Items	Cost (₹)	Profit %	Marked Price (₹)
P	5,400	----	5,860
Q	----	25	10,000

The discount on item Q, as a percentage of its marked price, is_____.

(a) 25 (b) 12.5

(c) 10 (d) 5

[CH, CS : GATE-2021 (Set-1)]

425. There are five bags each containing identical sets of ten distinct chocolates. One chocolate is picked from each bag.

The probability that at least two chocolates are identical is_____.

(a) 0.3024 (b) 0.4235

(c) 0.6976 (d) 0.8125

[CH, CS : GATE-2021 (Set-1)]

426. Given below are two statements 1 and 2, and two conclusions I and II.

Statement 1 : All bacteria are microorganisms.

Statement 2 : All pathogens are microorganisms.

Conclusion I : Some pathogens are bacteria.

Conclusion II : All pathogens are not bacteria.

Based on the above statements and conclusions, which one of the following options is logically CORRECT?

(a) Only conclusion I is correct

(b) Only conclusion II is correct

(c) Either conclusion I or II is correct.

(d) Neither conclusion I nor II is correct.

[CH, CS : GATE-2021 (Set-1)]

427. Some people suggest anti-obesity measures (AOM) such as displaying calorie information in restaurant menus. Such measures sidestep addressing the core problems that cause obesity: poverty and income inequality.

Which one of the following statements summarizes the passage?

(a) The proposed AOM addresses the core problems that cause obesity.

(b) If obesity reduces, poverty will naturally reduce, since obesity causes poverty.

(c) AOM are addressing the core problems and are likely to succeed.

(d) AOM are addressing the problem superficially.

[CH, CS : GATE-2021 (Set-1)]

❍❍❍

ANSWERS AND EXPLANATIONS

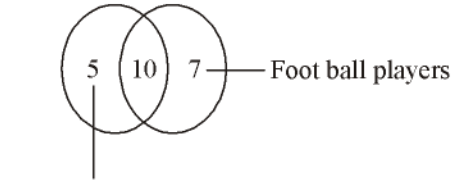
1. ***Ans. (a)***

2. ***Ans. (d)***

For above the logical venn diagram shows as follows

Total No. of players = hockey only + foot ball only + both hockey and foot ball

$= 5 + 10 + 7 = 25$



Total No. of persons = 25

Neither hockey nor football players = Total No. persons – Total No. of players

$= 25 - 22 = 3$

3. ***Ans. (b)***

S - 5 years

G - 4 years

H - 3 years

I - 1 year

Assume, the age of Man is one year, Hari is 3 years, Gita is 4 years and Saira is 5 years

The age difference between all of them is not more than 3 years

Hari's age + Gita's age

$= 3 + 4 = 7$ years

Irfan's age + Saira's age

$= 1 + 5 = 6$ years

7 years > 6 years

The age difference between Gita and Saira is 1 years

The order of they born from oldest is SGHI.

4. ***Ans. (d)***

We know that,

$$\frac{M_1D_1H_1}{W_1} = \frac{M_2D_2H_2}{W_2}$$

So, for skilled workers we have that 5 workers can build a wall in 20 days.

So, 2 skilled workers can build a wall in

$$D_s = \frac{5\times 20}{2}$$

$$D_s = 50 \text{ days}$$

Similary,

8 semi skilled worker $\rightarrow$ 25 days.

So, 6 semi-skilled worker $\rightarrow D_{ss}$

$$D_{ss} = \frac{8\times 25}{6}$$

$$\Rightarrow \quad \frac{4\times 25}{3} = \frac{100}{3} \text{ days}$$

Similary,

10 unskilled worker $\rightarrow$ 30 days

So, 5 unskilled worker $\rightarrow D_{us}$

$$D_{us} = \frac{10\times 30}{5} = 60 \text{ days}$$

Now, if they work together to complete the work so time required

$$= \frac{1}{50} + \frac{3}{100} + \frac{1}{60}$$

$$\Rightarrow \quad \frac{6+9+5}{300} = \frac{20}{300} = \frac{1}{15}$$

Hence, team of 2 skilled, 6 semi-skilled and 5 unskilled worker can build the wall in 15 days

5. ***Ans. (b)***

If you had 4 of each digit available you could make {3 or 4}, {2, 3, 4}, {2, 3, 4}, {2, 3, 4}

Total cases

2	3	3	3

$$\Rightarrow \quad 2 \times 3 \times 3 \times 3 = 54$$

But you only have 3 threes and 2 twos.

The following are to be excluded :

3333 (too many threes)

and 4222 (too many twos)

3222 (too many twos)

So, now $54 - 3 = 51$

6. ***Ans. (c)***

Given $137 + 276 = 435$

Above given addition is of octal number mean these numbers are of base 8.

$$\text{i.e.} \qquad \begin{array}{r} (137)_8 \\ +(276)_8 \\ \hline 435 \end{array}$$

$$\text{Similarly,} \qquad \begin{array}{r} (731)_8 \\ +(672)_8 \\ \hline 1623 \end{array}$$

7. ***Ans. (d)***

Here the relationship between the given pair is worker and his work place. Gladiator (man trained to fight for public entertainment in ancient Rome) Arena: Level area in centre of sports stadium.

Gladiator fights in an Arena.

- Dancer doesn't fight on stage.
- Commuter doesn't fight in class room
- Teacher doesn't fight in class room
- Lawyer fights (argues) in the court room

Lawyer is one who argues in the court room. The obvious analogical relationship is

Gladiator : Arena : : Lawyer : Court Room

8. ***Ans. (b)***

From the above graph we get the relationship between fuel consumption at various speeds.

and its given that at,

Lap P speed was = 15 km/hr

and at this speed consumed fuel was

= 60 km/liter.

and the distance travel in lap

P = 15 km.

So actual fuel consumed /km

$$= \frac{15}{60} = \frac{1}{4} \text{ liters}$$

Similary we can find for all laps as Q, R, and S.

Lap	Fuel consumption (km/L)	Actual fuel Consumed (L)
P	60	$\frac{1}{4}$
Q	90	$\frac{75}{90} = \frac{5}{6}$
R	75	$\frac{40}{75} = \frac{8}{15}$
S	30	$\frac{10}{30} = \frac{1}{3}$

So, from the above we see that fuel consumed per kilometer was least during the Lap P.

9. ***Ans. (c)***

Let the backlog be x

Let the daily orders = y

If he uses 7 trucks for 4 days

Then $7 \times 4 = x + 4y$

If he uses 3 trucks for 10 days

$$3 \times 10 = x + 10y$$

$$\therefore \qquad y = \frac{1}{3}$$

$$\Rightarrow \qquad n = 26\frac{2}{3}$$

To clear the orders in 5 days total orders,

$$= x + 5y = 28\frac{1}{3}$$

Total trucks required

$$= \frac{\text{Total trucks}}{\text{Total days}}$$

$$= \frac{28(1/3)}{5} \simeq 6$$

10. ***Ans. (d)***

P, Q, R and S are four types of dangerous microbes recently found in a human habitat In the graph

- on X-axis represents probability that microbe will over come human immunity system and
- on Y-axis represents Toxicity (in milligrams of microbe required to destroy half of the body mass in kilograms

419. *Ans. (c)*

S > R

Q is shortest and U is taller than only one.

T > S

Hence, possible order is Q > T > S > R > U

420. *Ans. (c)*

The ratio of boys to girls in a class 7 to 3

We know that acceptable value will be always divided sum of Ratio.

Here Sum of ratio is 10

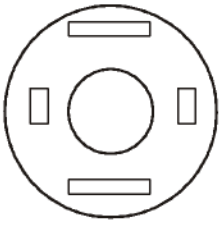
So, only 50 is divided by 10.

421. *Ans. (a)*

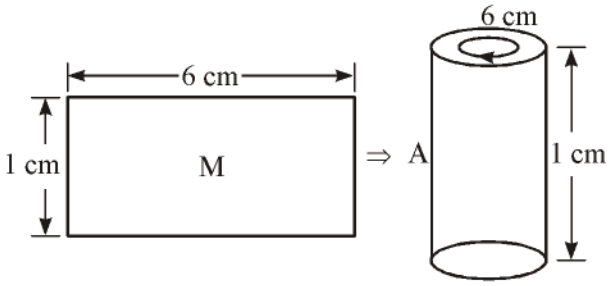
A convex polygon is a polygon with all interior angles smaller measure then a state line 180°.

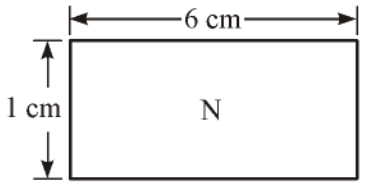
422. *Ans. (a)*

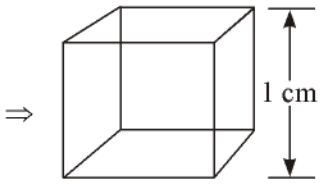
Unfolded in the reverse order of folding, will look like at



423. *Ans. (c)*







Volume cylinder = $\pi r^2 h$

Now, $2\pi r = 6$ (figure A)

$$r = \frac{3}{\pi}$$

Volume of cylinder

$$= \pi \times \frac{3}{\pi} \times \frac{3}{\pi} \times 1 = \frac{9}{\pi}$$

Volume of cube = $(1)^3$

$$\text{Ratio} = \frac{9}{\pi} : 1 = 9 : \pi$$

424. *Ans. (c)*

Ratio of Cost P to Q = 3 : 4

Cost price of P = 5400

So, cost price of Q will be

$$= \frac{5400}{3} \times 4 = 7200$$

Cost = 7200

Marked price = 10,000

Profit = 25%

So, selling prince

$$= 7200 \times \frac{125}{100} = 9000$$

$$\text{Discount\%} = \frac{\text{Marked prince} - \text{Selling price}}{\text{Marked price}} \times 100$$

$$= \frac{10,000 - 9,000}{10,000} \times 100 = 10\%$$

425. ***Ans. (c)***

10 distinct chocolates, 5 bags

$$P(\text{atleast } 2) = 1 - P(\text{exactly } 1)$$

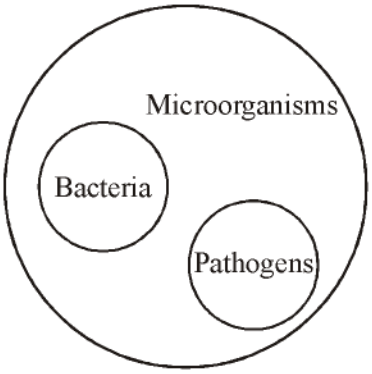
$$P(\text{exactly } 1) = P(\text{All different})$$

$$= \frac{10 \times 9 \times 8 \times 7 \times 6}{10^5}$$

$$P(\text{atleast } 2) = 1 - \frac{10 \times 9 \times 8 \times 7 \times 6}{10^5}$$

$$= 1 - 0.3024 = 0.6976$$

426. ***Ans. (d)***



Conclusion I :

Some pathogens are bacteria. [×]

Conclusion II :

All pathogens are not bacteria. [×]

Neither conclusion I nor II is correct

427. ***Ans. (d)***

Superficially is the deciding key word which means apparently/seemingly.

❍❍❍

Unit II Practice Sheet

1. Coding of CAFDI = IDFAC then . What is coding for 23557

(a) 75532 (b) 52357

(c) 555723 (d) 52375

[DRDO-2007]

2. In this questions, notation+, ÷ and × are used as follows

$A + B$ means A is the husband of B;

$A \div B$ means A is the sister of B;

$A \times B$ means A is the son of B.

with these relations, the relationship denoted by $P \div Q \times R$ is

(a) P is son of R (b) P is daughter of R

(c) P is uncle of R (d) P is father of R

[DRDO-2008]

3. If DELHI is written as EDHIL, then PARIS is written as

(a) APRIS (b) SARIP

(c) SAPIR (d) APISR

[DRDO-2008]

4. The odd one in the list: LAN, TCP/IP, HACKER and KILLER is

(a) LAN (b) TCP/IP

(c) KILLER (d) HACKER

[DRDO-2008]

5. If NATION is to 523675, then NOTION is to

(a) 573675 (b) 563765

(c) 576375 (d) 557365

[DRDO -2008]

6. The next two numbers of the series 3, 5, 11, 21 are

(a) 34 and 52 (b) 34 and 53

(c) 35 and 52 (d) 35 and 53

[DRDO -2008]

Direction : 7 to 10

Study Table 1 and Table 2 and answer the related question.

Table 1 : *Activities of an airliner during the period 1995–2000*

Year	*All servics (including domestic and international servics)*			
	Aircraft miles flown	*Passengers carried*	*Mail carried*	*Freight carried*
	In thousands		*In tons*	
1995	11,443	905.6	1.837	25,392
1996	11,993	1,004.8	2,071	29,993
1997	12,717	1,026.6	1,908	26,598
1998	12,830	1,018.7	2,008	25,330
1999	14,000	1,101.3	2.183	26,064
2000	15,196	1,153.8	2,475	22,298

Table 2 : *Percentage share of domestic service in different categories of activities during the period 1995–2000*

Activities	*Year*					
	1995	*1996*	*1997*	*1998*	*1999*	*2000*
Aircraft miles flown	15.94	17.20	17.09	16.23	14.48	13.63
Passengers carried	42.96	42.49	43.13	41.22	39.03	38.75
Mail carried	33.97	33.49	31.39	29.48	28.22	27.59
Freight carried	17.19	21.28	21.28	26.38	25.39	23.54

7. The percentage increase in aircraft miles flown from 1995 to 1998 is approximately :

(a) 0.29

(b) 12.12

(c) 1.29

(d) None of these

[Vizag Steel-2010]

ANSWERS SHEET

1.	*Ans. (a)*	18.	*Ans. (a)*	35.	*Ans. (d)*	52.	*Ans. (b)*	69.	*Ans. (c)*
2.	*Ans. (b)*	19.	*Ans. (b)*	36.	*Ans. (a)*	53.	*Ans. (b)*	70.	*Ans. (b)*
3.	*Ans. (d)*	20.	*Ans. (b)*	37.	*Ans. (d)*	54.	*Ans. (b)*	71.	*Ans. (d)*
4.	*Ans. (c)*	21.	*Ans. (d)*	38.	*Ans. (d)*	55.	*Ans. (d)*	72.	*Ans. (a)*
5.	*Ans. (a)*	22.	*Ans. (a)*	39.	*Ans. (d)*	56.	*Ans. (a)*	73.	*Ans. (d)*
6.	*Ans. (d)*	23.	*Ans. (d)*	40.	*Ans. (d)*	57.	*Ans. (d)*	74.	*Ans. (a)*
7.	*Ans. (b)*	24.	*Ans. (c)*	41.	*Ans. (b)*	58.	*Ans. (b)*	75.	*Ans. (d)*
8.	*Ans. (a)*	25.	*Ans. (d)*	42.	*Ans. (b)*	59.	*Ans. (b)*	76.	*Ans. (c)*
9.	*Ans. (c)*	26.	*Ans. (b)*	43.	*Ans. (c)*	60.	*Ans. (c)*	77.	*Ans. (b)*
10.	*Ans. (b)*	27.	*Ans. (c)*	44.	*Ans. (d)*	61.	*Ans. (a)*	78.	*Ans. (a)*
11.	*Ans. (d)*	28.	*Ans. (c)*	45.	*Ans. (a)*	62.	*Ans. (c)*	79.	*Ans. (d)*
12.	*Ans. (b)*	29.	*Ans. (d)*	46.	*Ans. (a)*	63.	*Ans. (d)*	80.	*Ans. (b)*
13.	*Ans. (d)*	30.	*Ans. (c)*	47.	*Ans. (b)*	64.	*Ans. (c)*	81.	*Ans. (c)*
14.	*Ans. (a)*	31.	*Ans. (d)*	48.	*Ans. (b)*	65.	*Ans. (b)*	82.	*Ans. (d)*
15.	*Ans. (d)*	32.	*Ans. (d)*	49.	*Ans. (d)*	66.	*Ans. (b)*	83.	*Ans. (d)*
16.	*Ans. (d)*	33.	*Ans. (d)*	50.	*Ans. (b)*	67.	*Ans. (b)*		
17.	*Ans. (b)*	34.	*Ans. (d)*	51.	*Ans. (a)*	68.	*Ans. (d)*		

❍❍❍