31-8-18)

Verbal

247) Author's main argument

248) "The long-awaited meal became a feast to remember and an almost sacred celebration of life", what does this line imply?

a) After so many days of being hungry, the cave men and women felt alive once again after eating the food.

249) Benefits of fasting

a) It is an act against the drawbacks of appetite

b) It brings joy in eating, & one learns to appreciate food.

c) Method to understand how civilization evolved.

d) Punishment for the greedy & unkind

Aptitude

1) Find the no. of factors for 36,000

2	36,000
2	18,000
2	9,000
2	4500
2	2250
3	1125
3	375
5	125
5	25
5	5
	1

36,000

3600

$3^2 \times 5^2 \times 2^4$

$(2+1) \times (2+1) \times (4+1) = 3 \times 3 \times 5 = 45$

2) Find the no of 5s in 100!

Condn: Only Prime factorization is allowed

to remember
at does
men and
food.
ppetite
reciate
ed.

$$\begin{array}{r|l} 5 & 100 \\ \hline 5 & 20 \\ \hline & 4 \end{array}$$

Ans: 24//

2's & 3's in 100! $12 = 2 \times 2 \times 3$

$$\begin{array}{r|l} 2 & 100 \\ \hline 2 & 50 \\ \hline 2 & 25 \\ \hline 2 & 12 \\ \hline 2 & 6 \\ \hline 2 & 3 \\ \hline & 1 \end{array} \qquad \begin{array}{r|l} 3 & 100 \\ \hline 3 & 33 \\ \hline 3 & 11 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

97 2's 48 3's

so take 96 2's

There are 48 4's & 48 3's

∴ There are 48 12's or 12 multiples in 100!

3) Find the no. of 91 in 231!

$91 = 13 \times 7$

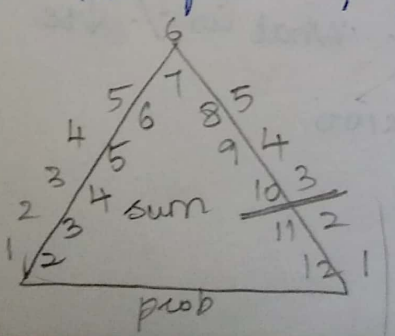
$$\begin{array}{r|l} 7 & 231 \\ \hline 7 & 33 \\ \hline & 4 \end{array} \qquad \begin{array}{r|l} 13 & 231 \\ \hline 13 & 17 \\ \hline & 1 \end{array}$$

$$\begin{array}{r} 13 \\ \times 5 \\ \hline 65 \end{array} \qquad \begin{array}{r} 13 \\ \times 17 \\ \hline 91 \\ 13 \\ \hline 221 \end{array} \qquad \begin{array}{r} 13 \\ \times 9 \\ \hline 117 \end{array}$$

37 7's 18 13's

∴ There are 18 91's in 231!

4) When two dice are thrown simultaneously, find the prob. of getting sum as 10



$n(S) = 36$

$\Rightarrow \frac{3}{36} = \frac{1}{12}$//

5) ~~Fi~~ Two dice are thrown simultaneously. What is the prob. of getting a sum which is multiple of 3 or divisible by 4.

$$\frac{2+5+4+1}{36} + \frac{3+5}{36}$$ (don't consider 12 bcoz it is already in 3)

$$\frac{12}{36} + \frac{8}{36} = \frac{20}{36} = \frac{5}{9}$$

6) The price of sugar decreases by $\frac{1}{7}$. By what % the consumption will be increased to maintain the same expenditure.

if $\frac{1}{n}$ ↑, decrease $= \frac{1}{n+1}$

if $\frac{1}{n}$ ↓, increase $= \frac{1}{n-1}$

so Increa $= \frac{1}{7-1} = \frac{1}{6}$

Percentage = 16.66 %

$$\boxed{\frac{\text{Difference}}{\text{Base value} \rightarrow \text{C.P}} \times 100 = \text{Percentage increase or \% ↓}}$$

Base value:

The value from where the ↑se or ↓se is happening.

7) The price of coconut was Rs. 27. This year the price has gone down to 24. What is % ↓se

$$\frac{\text{Diff}}{\text{Base value}} \times 100 = \frac{3}{27} \times 100$$

$$= \frac{1}{9}$$

$$= 11.11\%$$

8) The selling price of 10 bananas is equal to the C.P of 8 bananas. Find the profit or loss %.

Assume price of 1 banana = Rs. 1

C.P of 8 bananas = Rs. 8

S.P of 10 bananas = Rs. 8

C.P of 10 bananas = Rs. 10

$$\frac{\text{Diff}}{\text{Base value}} \times 100 = \frac{2}{10} \times 100 = \frac{1}{5} = 20\% \text{ loss}$$

9) CP of 10 articles = SP of 11 articles

Assume price of 1 article = Rs. 1

C.P of 10 articles = Rs. 10

S.P of 11 articles = Rs. 10

C.P of 11 articles = Rs. 11

$$\frac{\text{Diff}}{\text{Base value}} \times 100 = \frac{1}{11} \times 100 = \frac{1}{11} = 9.09\% \text{ loss}$$

10) A person has 7225 sappling. The no. of saplings he plant in a row will be same as that of no. of trees in a row. How many rows are there in the field

Soln:

It is a square field because no. of rows = no. of columns

$$\sqrt{7225} = 85$$

To find cube root

$1^3 = 1$
$2^3 = 8$
$3^3 = 27$
$4^3 = 64$
$5^3 = 125$
$6^3 = 216$
$7^3 = 343$
$8^3 = 512$
$9^3 = 729$
$10^3 = 1000$

11) 39|304
3 4 ^{3}

12) 438|976
76^3

13) 941|192
98^3

To find square root:

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

14) 96|04
9 2^2
9 8^2 ✓ Two possibilities

Take $95^2 = 9025$

15) 4489
67^2 ✓
63^2

$65^2 = 4225$

6) Principal = 5000 $r = 5\%$ pa $n = 2$ years
Find amt paid after 2 years

$$S.I = \frac{5000 \times 2 \times 5}{100} = 500$$

To find cube root

$1^3 = 1$
$2^3 = 8$
$3^3 = 27$
$4^3 = 64$
$5^3 = 125$
$6^3 = 216$
$7^3 = 343$
$8^3 = 512$
$9^3 = 729$
$10^3 = 1000$

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63^2

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) Principal = 5000 r = 5% pa n = 2 years
Find amt paid after 2 years

$S.I = \frac{5000 \times 2 \times 5}{100} = 500$

Amt = 5500

17) 100% of a no = 2000

10% = 200

1% = 20

3% = 60

40% = 800

18) Amt paid after 5 years is 2500. Amt paid after 7 years is 3000. Find the principal.

S.I for 2 years = 500

1 year = 250

5 years = $5 \times 250 = 1250$

$P = 2500 - 1250 = 1250$

$\frac{r}{100} \times P = I$

$\frac{r}{100} \times 1250 = 250$

$r = 250 \times \frac{10}{125}$

$\boxed{r = 20\%}$

19) 7365 6 9 is divisible by 9. Find the missing digit

$7+3+6+5+9 = 30$

$30+6$

20) 85263 2 is divisible by 8

21) Passenger ('s' never together)

$\frac{9!}{2! \times 2!} - \frac{8!}{2!}$

22) The prob of a ~~day~~ leap year having 53 Sunda

Leap year ⇒ 366 days

52 weeks & 2 odd days

Sat, Sun
Sun, Mon,
Mon, Tue
Tue, Wed,
Wed, Thurs
Thurs, Fri
Fri, Sat

Ans: 2/7

23) $^{74}C_{72}$

$^{n}C_{r} = {}^{n}C_{n-r}$

So $^{74}C_{72} = {}^{74}C_{2}$

31-8-18 Verbal Set 3

161) a)
162) d)
163) b)
164) b)
165) a) congenital × exogenous (external factor)
166) a) splendid × unimpressive
167) a)
168) d)
169) b) veteran - expert ; veteran × inexperienced
170) d) overt - clearly seen

171) d)
172) c)
173) c)
174) c)

175) a)
176) demonstrate × agree d)
177) a)
178) a)
179) d)

180) a)
181) a)

deliterious - something dangerous
pathology - study of diseases
requiem - elderly for our age
scathing - harsh

Tenses

Simple Present

1) habits
2) Universal facts
3) Definitions

→ Something that doesn't change with time.

Simple Past

An event completed in the past with time.

Present - Perfect

a past event with present relevance

Past - Perfect

2 completed events in past. 1st event - had

Vocabulary

1) congenital - since birth
2) Ingenious - smart (or) clear
3) Ingenuous - honourable ; child like simplicity
4) treacherous - cannot trust
5) animous - hatred
6) astute - shrewd

182) d)
183) A) needs to
184) a)
185) d)

365
1

365
2
S_1
$\frac{2}{7}$

52 day

1/7

Aptitude

1) $1+2^2+3^3+4^4+5^5+6^6 = ?$

unit digit = ?

9 //

$$\begin{array}{r} 1 \\ 4 \\ 7 \\ 6 \\ 5 \\ 6 \\ \hline 29 \end{array}$$

2) $(a^3)^5/(a^2)^4 = ?$

$(a^m)^n = a^{m*n}$

$a^{15}/a^8 = a^{15-8} = a^7$ //

3) which of the following nos is divisible by 11

1045 //

$(4+1)-(5+0) = 0$.

4) The total combination of picking 3 balloons from packet of 25 balloons

$^{25}C_3$

5) 10% discount on all books

addn. 5% on total bill

total bill after initial discount ≥ 1000

3 books => 450, 520, 250

450 => 45 => 405

520 => 52 => 468

250 => 25 => 225

+ 109.8 => 10%

$\frac{109.8}{2}$ => 5%

54.9

176.90 //

6) $(144^{-3/2})^{-1/6}$

$(12^{-3})^{-1/6}$

$12^{3/6}$

$12^{1/2}$

$\sqrt{12}$

$= 2\sqrt{3}$ //

7) $(5^{-2} \times 10^{-4}) / (2^{-5} \times 5^{-6}) = ?$ 2//

$\frac{1}{25} \times \frac{-1}{1}$ $\quad \frac{5^{-2} \times 10^{-4}}{2^{-5} \times 5^{-6}} =$

8) 10, 12, 15 days $60/10$

LCM = 60 units

Efficiency ⇒ J = 6/day

N ⇒ 5/day

S ⇒ 4/day

10 units must be completed each day

So Jagdish & Sumit

9) 26/17 as fraction

1.535

10) In an election, winning candidate won by 15% votes. If a total of 5,000 votes were cast of which 86% were eligible, then how many votes did the winning candidate get?

5000 voters ; 86% eligible

$\frac{86}{100} \times 5000 = 4300$ (eligible) = 100%

W L

100% = 4300

$215\% \cdot x = 4300$

$\frac{1}{100} x = 20$

$x = 2000$

$4300 - 2000 = 2300$

11) 92, 182, 266

HCF = 14

12) 10 containers

4 are defective

3 containers are chosen at random

prob. that atleast one is defective = ?

$P(A) = \frac{n(A)}{n(S)}$

$n(S) = {}^{10}C_3 = 120$

n(A)

Def = 4	Non-def = 6	
1	2	$\Rightarrow 4 \times 15 = 60$
2	1	$\Rightarrow + 6 \times 6 + 30$
3	0	$\Rightarrow 4 \times 1 + 4$
		100

$\frac{120}{100} = \frac{5}{6}$

13) smallest 3 digit that 229 & 568 leaving rem 3

$229 \Rightarrow 229 - 3 \Rightarrow 226$

$568 \Rightarrow 568 - 3 \Rightarrow 565$

$2 \overline{)226}$ $\quad$ $5 \overline{)565}$

113 $\quad$ 113

113

14) 5 Red, 4 whites, 3 green balls
3 balls are drawn <u>without</u> replacement
atleast 2 of them are green.

<u>Soln:</u>

R=5 W=4	G=3
Other = 9	G=3
1	2

$^9C_1 \times {}^3C_2$

$9 \times 3 = 27$

15) 8 teams are there. How many games must be played to win the match?

7

16) Largest 3-digit no. which is divisible by 29

99978

17) abc4d is divisible 4, what cannot be value of d?

2

$$\boxed{\log a^b = b \log a}$$

18) $\log 10^3 = 0.477$, $\log 10^9 =$

$\log 10^{3^2} = 2 \log 10^3 = 2(0.477) = 0.954$

19) Least => LCM

15, 25, 30, 45

450

Smallest no. ~ a rem 0?

2×9 9×4

9

Ans: 504 => $5+4 = 9$.

3-9-18

Aptitude

1) What is the next no. of the foll. sequence 7, 14, 55

a) 121 b) 439 c) 220 d) 391

(a no. & its reverse)

$110 + 011 = 121$

$55 + 55 = 110$

$7 + 7 = 14$

2) What no. will replace the ques. mark in this no sequence?

21 32 54 87 131 ?

a) 124 b) 168 c) 186 d) 198

$21+11=32$ $32+22=54$ $54+33=87$

$87+44=131$ $131+55=186$

3) HERE + SHE = COMES what is the value of core where S=8.

$$\begin{array}{r} H\ E\ R\ E \\ S\ H\ E \\ \hline C\ O\ M\ E\ S \end{array}$$

(+1) (+1)

9 4 5 4

8 9 4 +

1 0 3 4 8

CORE = 1054

4) ... = GOAT Then G+O+N+T =

$$\begin{array}{l} {}^{8}T\ {}^{0}O\ M^{7} \\ {}^{2}N\ A^{3}\ G \rightarrow 1 \\ \hline {}^{1}G\ {}^{0}_{0}O\ {}^{A}_{3}\ T_{8} \end{array}$$

$$\begin{array}{r} 1 \\ 0 \\ 2 \\ 7 \\ \hline 11 \end{array}$$

5) BANJO + VIOLA = VIOLIN . Find the value

$$\begin{array}{l} {}^{9}B\ \overset{+1}{A^{3}}\ \overset{7}{N}\ \overset{+1}{}\ J^{8}\ O\,4 \\ \underline{1V\ I\,0\ 0\,4\ L^{2}\ A\,3} \\ 1 \leftarrow V\ {}^{I}_{0}\ {}^{0}_{4}\ {}^{L}_{2}\ {}^{1}_{0}\ N_{7} \end{array}$$

O = 4

6) In how many diff. ways can the letters of the word LEADER be arranged?

$$\frac{6!}{2!} = 720$$

7) In a ~~km~~ 1000m race, Abi beats Manju by 50 m or 10 sec. What is the ratio of their speeds?

A − M = 50

1000 − M = 50

M = 1000 − 50

M = 950

$S = \frac{D}{T}$

D_1 D_2

1000 : 950

20 : 19

8) Find the actual profit when the profit on S.P is 30%.

Assume S.P = 100

P = 30% of 100 = 30

$P = SP - CP$

$30 = 100 - CP$

$CP = 100 - 30$

$CP = 70$ //

$P\% = \frac{P}{CP} \times 100$

$= \frac{30}{70} \times 100$

$= \frac{300}{7}$ 42.

$P\% \simeq 43\%$ //

9) A soln of 72 litres contains alcohol and spirit in the ratio 8:X. If 24 litres of spirit is added to the soln, the ratio becomes 1:1. Find the value of X.

$72 + 24 = 96$

$1x + 1x = 96$

$2x = 96$

$x = 48$ //

$48 : 48 = 96$

$48 : 48 - 24 = 72$

$\cancel{48}^{2} : \cancel{24}^{1} = 72$

$2 : 1 = 72$

$8 : X = 2 : 1$

$X = 4$ //

10) $\boxed{\text{Time taken in the stoppages} = \frac{x-y}{x}}$

where x = speed of the train without stoppages or excluding stoppages

y = speed of the train with stoppages or including stoppages

Q// Excluding stoppages speed of train is 60 km/h including stoppages speed of the train is 49 km/hr, find the time taken by the train in stoppages in min.

Time taken $= \frac{x-y}{x} = \frac{60-49}{60}$ hr

$= \frac{11}{60} \times 60$ min

$= 11$ min//

11) Pipes A, B, C empty a tank in 12, 15, 20 hrs respectively such that pipe A is opened always. Pipes B & C are opened alternatively. In how many hrs tank will be emptied?

LCM = 60 units → capacity

Efficiently A = 5 units/hr

B = 4 units/hr

C = 3 units/hr

$(A+B) + (A+C) = (5+4) + (5+3) = 17$ units

1 hr + 1 hr = 17 units

2 hr = 17 units

×3 ×3

6 hrs = 51 units

Rem = 9 units

A+B = 9 units

6 hrs + 1 hr = 60 units

7 hrs//

12) What is the sum of all the 4 digit numbers made from 1, 2, 3, 4 ~~ma~~ without repetition

Without rep $= (N-1)! \times$ Sum of digits $\times (1111\ldots\ldots N \text{ times})$

With rep $= N^{N-1} \times$ Sum of digits $\times (1111\ldots\ldots N \text{ times})$

Without rep $= (4-1)! \times 10 \times 1111$

$= 3! \times 10 \times 1111$

$= 3 \times 2 \times 10 \times 1111$

$= 60 \times 1111$

$= 66660$

13) If a 4-digit no is framed from the digits 1, 2, 3 & 5. What is the prob. if the no is divisible by 25? If repetition of digits is not allowed?

$$P(A) = \frac{n(A)}{n(S)}$$

$n(S) = \underline{1}\ \underline{2}\ \underline{3}\ \underline{5}$ $\quad \underline{4} \times \underline{3} \times \underline{2} \times \underline{1}$

$= 4! = 24$

$n(A) = \underline{1} \times \underset{(1,3)}{\underline{2}} \times \underset{2}{\underline{1}} \times \underset{5}{\underline{1}}$

$= 2$

$P(A) = \frac{2}{24} = \frac{1}{12}$

14) Prob. of getting selected in 1 company is $\frac{1}{6}$ & in another company is $\frac{1}{8}$ and getting selected in both is $\frac{1}{24}$ then what is the prob. that he will not get selected in any of the

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$= \frac{1}{6} + \frac{1}{8} - \frac{1}{24}$

$= \frac{8+6-2}{48} = \frac{12}{48} = \frac{1}{4}$

$P(\text{getting selected}) = \frac{1}{4}$

$P(\text{not getting selected}) = 1 - \frac{1}{4} = \frac{3}{4}$

15) How many flag of tri colour can be formed from 8 different colour clothes without repetition?

Perm.

$^8P_3 = \frac{8!}{(8-3)!} = \frac{8 \times 6 \times 7 \times \cancel{5}!}{\cancel{5}!} = 336$

$\begin{array}{r} 56 \\ \times 6 \\ \hline 336 \end{array}$

16) How many 4 letter words can we form of Czechoslovakia?

Perm

$n = 14$ letters
$r = 4$ words

$^nP_r = \frac{^{14}P_4}{2! \times 2! \times 2!}$ ($\because$ 2 c's, 2 o's, 2 a)

$= \frac{14!}{(14-4)! \times 2! \times 2! \times 2!}$

$= \frac{14!}{10! \times 2! \times 2! \times 2!}$

$= \frac{\cancel{14}^{2} \times 13 \times \cancel{12}^{\cancel{6}\,3} \times 11 \times \cancel{10!}}{\cancel{10!} \times \cancel{2} \times \cancel{2} \times \cancel{2}}$

$= 91 \times 33$

$= 3003$

$\begin{array}{r} 91 \\ \times 33 \\ \hline 273 \\ 273 \\ \hline 3003 \end{array}$

Combination:

Pascal triangle:

1 1

1 2 1

1 3 3 1

1 4 6 4 1

1 5 10 10 5 1

1 6 15 20 15 6 1

1 7 21 35 35 21 7 1

1 8 28 56 70 56 28 8 1

1 9 36 84 126 126 84 36 9 1

1 10 45 120 210 252 210 120 45 10 1

17) There are 5 credit cards & 4 debit cards. In how many ways can you select 4 credit cards & 3 debit cards?

$^5C_4 \times {}^4C_3 = 5 \times 4 = 20$

5×4

18) 5 7 3

20 30 10

95 45 ?

$(5 \times 2) - 7 = 10 - 7 = 3$

$(20 \times 2) - 30 = 40 - 30 = 10$

$(95 \times 2) - 45 = 190 - 45 = 145$

19) 12 balls are collected in a box x & y both having 6 balls each. Prob. of getting 8 balls such a way there should be atleast 4 ballys in box y.

$n(A) =$

$n = x = 6$		$y = 6$	
r		r	
4	×	4	$\Rightarrow {}^6C_4 \times {}^6C_4 = 15 \times 15 = 225$
3	×	5	$\Rightarrow {}^6C_3 \times {}^6C_5 = 20 \times 6 = 120$
2	×	6	${}^6C_2 \times {}^6C_6 = 15 \times 1 = 15$

$n(S) = {}^{12}C_8$

$= \frac{12!}{(12-8)!\,8!} = \frac{12!}{8! \times 4!} = \frac{\cancel{12} \times 11 \times \cancel{10} \times 9 \times \cancel{8!}}{\cancel{8!} \times \cancel{4} \times \cancel{3} \times \cancel{2}}$

$n(S) = 45 \times 11 = 495$

$P(A) = \frac{n(A)}{n(S)} = \frac{\cancel{360}}{\cancel{495}} = \frac{8}{11}$

20) A clock uniformly reduces at 4am of 6th day of a month it shows 12 mins higher at 4 pm of 12th day, it shows 20 mins lesser

(or)

A watch was 12 min fast at 6th day of a month at 4 pm. At 12th day of the same month it was 20 min slow at 4 pm. At what time and day will the clock display the correct time?

6th day 4 p.m = +12 min

12th day 4 p.m = −20 min

6 day = 32 min

↓ T ↓ D

6 × 24 hrs = 32 min

Speed = 1 hr = $\frac{\cancel{32}}{\cancel{6} \times \cancel{24}} = \frac{2}{9}$ min/hr

12 min

$T = \frac{D}{S}$ min / min/hr

$= \frac{12}{2/9}$

$= \frac{12}{1} \times \frac{9}{2}$

$= 54$ hrs

T = 2D + 6hrs

20 min

$T = \frac{D}{S} = \frac{20}{2/9}$

$= \frac{20}{1} \times \frac{9}{2} = 90$ hrs

T = 3 Days + 18 hrs

12 − 3 = 9th day

8th 10 p.m

21) 3 boys & 4 girls can complete the work in 8 hrs
4 boys + 3 girls can complete the work in 9 hrs
In how many hrs will 8 girls complete the work

$T = \frac{1}{W}$; $W = \frac{1}{T}$

$3B + 4G = \frac{1}{8}$ —— ①

$4B + 3G = \frac{1}{9}$ —— ②

① × 4 ⇒ $12B + 16G = \frac{4}{8} = \frac{1}{2}$

② × 3 ⇒ $\overset{(-)}{12B} \overset{(-)}{+} 9G = \frac{3}{9} = \frac{1}{3}$

$7G = \frac{1}{2} - \frac{1}{3}$

$7G = \frac{3-2}{6} = \frac{1}{6}$

$G = \frac{1}{7 \times 6}$

$G = \frac{1}{42}$

1 girl can complete in 42 ~~days~~ hrs

so 8 girls

$8G = 8\left(\frac{1}{42}\right)$

Work $= \frac{\cancel{8}^{4}}{\cancel{42}_{21}}$

$T = \frac{21}{4}$

$T = 5\frac{1}{4}$ hrs

$$\begin{array}{r} 5 \\ 4\overline{)21} \\ 20 \\ \hline 1 \end{array}$$

22) 4b 6g = 10 days —— ①

3b 7g = 10 days —— ②

how many will it take to complete 8 girls doing work?

① × 3 ⇒ $12b + 18g = \frac{3}{10}$

② × 4 ⇒ $\overset{(-)}{12b} \overset{(-)}{+} 28g = \overset{(-)}{\cancel{40}}\ \frac{4}{10}$

$-10g = \cancel{40}\ \frac{3}{10} - \frac{4}{10} = -1$

$-10g = \frac{-1}{10}$

$10g = \frac{1}{10}$

$g = \frac{1}{100}$

1 girl takes 100 days

$8g = 8\left(\frac{1}{100}\right)$

$= \frac{8}{100}$

$T = \frac{100}{8}$

$\Rightarrow 12\frac{4}{8}$ days

$\Rightarrow 12\frac{1}{2}$ days.

$$\begin{array}{r} 12 \\ 8\overline{)100} \\ \underline{8\downarrow} \\ 20 \\ \underline{16} \\ 4 \end{array}$$

---

1) A boat can travel upstream in 9 hrs & downstr in 5 hrs. Find the speed of the stream.

$\cancel{a = 9}$ $\cancel{b = 15}$

$\cancel{\frac{1}{2}(9-5) = \frac{1}{2}(14)}$

$u - v = 9$

$u + v = 4$

$2u = 14$

$\boxed{u = 7}$

$u - v = 9$

$u = 9 + v$

$7 = 9 + v$

$v = 9 - 7$

Speed $\boxed{v = 2}$

2) Between 1 & 100, how many nos are divisible by 3 or multiples of 4.

$3\overline{)100}$ 33 $\quad$ $4\overline{)100}$ 25

$25 \times 4 = 100$ (it must be excluded)

So 24 multiples of 4.

3 : 4
12

LCM of 3 & 4 = 12

$\frac{100}{12}$ = 8 nos are divisible by 12

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$= 33 + 24 - 8$

$= 49$ //

$$\boxed{n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(C \cap A) + n(A \cap B \cap C)}$$

3) 2, 3, 5

$2\overline{)100}$ 50	$\frac{100}{3}$	$\frac{100}{5}$
50 is excluded	= 33	= 20 (excluded)
So 49		= 19

LCM of 2 & 3 = 6	LCM of 3 & 5	LCM of 5 & 2
$\frac{100}{6} = 16$	$\frac{100}{15} = 6$	$\frac{100}{10} = 10$ (excluded)
		= 9
$n(A \cap B) = 16$	$n(B \cap C) = 6$	$n(C \cap A) = 9$

$n(A \cup B \cup C) = 49 + 33 + 19 - 16 - 6 - 9 + n(A \cap B \cap C)$

$n(A \cap B \cap C)$ = LCM of 2, 3, 5 = 30

$\frac{100}{30} = 3$ //

$n(A \cup B \cup C) = 49 + 33 + 19 - 16 - 6 - 9 + 3$

$= 73$ //

some horses & pigeons. head count is 80. When it counted the legs, it was 260, Find the no. of horses.

Let horse be h
pigeons be p

$h + p = 80$ —— ①

$4h + 2p = 260$ —— ②

① $\times 4 \rightarrow 4h + 4p = 320$

② $\times 1 \rightarrow 4h + 2p = 260$

$(-) \quad (-) \quad (-)$

$$\begin{array}{r} 320 \\ 260 \\ \hline 60 \end{array}$$

$2p = 60$

$p = 30$

$h + p = 80$

$h = 80 - 30$

$h = 50$ //

5) There are 26 questions in a set

Right ans = 8 m

Wrong ans = −5 mark.

Total marks = 0

x right ans $(26 - x)$ wrong ans

$$\begin{array}{r} 26 \\ \times 5 \\ \hline 130 \end{array}$$

$8x + (26 - x)(-5) = 0$

$8x - 130 + 5x = 0$

$13x = 130$

$x = 10$ //

6) Pipe A fill a tank in 8 min. Due to leakage will take 13 m. Find the time taken by leakage alone to ~~fill~~ empty the tank

LCM of 8 & 13 => 104

Capacity of tank => 104 units

Efficiency:

A = 8 min → 13 l/min

A+B = 13 min → 8 l/min

↓

leakage

A => 13 l/min

pipe A+ leakage = 8 l/min.

Efficiency of leakage = −5 l/min (emptying)

Time = $\frac{104}{5}$ 20.8

7) A = 10 min, B = 15 min, C = 12 min

filling, emptying

$\frac{1}{10} + \frac{1}{15} - \frac{1}{12} = \frac{6+4-5}{60}$

$= \frac{5}{60}$ 12

= 12 min

60 units.

A = 6 units/min

B = 4 units/min

C = 5 units/min

5 | 10, 15, 12

2 | 2, 3, 12

3 | 1, 3, 6

2 | 1, 1, 2

8) A can fill a tank in 12 hrs. B can fill the same tank in 18. A, B, C together can fill the tank in 6 hrs. Time taken by C alone = ?

$A = \frac{1}{12}$; $B = \frac{1}{18}$; $A+B+C = \frac{1}{6}$

LCM of 12, 18, 6 => 36 units

Eff

A = 3 units/hr

B = 2 units/hr

A+B+C = 6 units/hr

3+2+C = 6 units/hr

C = 1 unit/hr

9) Train of length 1000 m moving in a speed of 25 m/s. A man is running inside the train at a speed of 15 m/s. What is the time taken by him to reach the ~~front~~ last bogie?

Effective speed = 25 + 15 = 40 m/s (~~speed~~ dis)

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{1000}{40} = 25 \text{ sec}$$

10) 4 post boxes, 10 letters

In how many ways can we post 10 letters in 4 post boxes.

$$^{10}P_4 = \frac{10!}{(10-4)!} = \frac{10!}{6!} = \frac{10 \times 9 \times 8 \times 7 \times 6!}{6!}$$

$$= 90 \times 56$$

$$= 5040$$

Ans: 4^{10} ways.

11) Using the digits 1, 4, 2, 5, 3 → 4 digit no. such that second last digit is even

$$\underline{4} \times \underline{3} \times \underset{\substack{2 \\ (or) \\ 4}}{\underline{2}} \text{ ways} \times \underline{2} = 48 \text{ ways}$$

12) 0, 1, 2, 5, 6, 7 → 5 digit even nos.

$$\underline{5} \times \underline{4} \times \underline{3} \times \underline{2} \times \underset{0}{\underline{1}} \text{ way} = 120 \text{ ways}$$

$$\underline{4} \times \underline{4} \times \underline{3} \times \underline{2} \; \underset{\substack{2 \text{ (or)} \\ 6}}{\underline{2}} \text{ ways} = 192 \text{ ways}$$

+

312 ways

Circle → (n-1)! ways.

13) There are 18 managers & 2 bosses. They are attending a circular conference. How many ways to arrange so that the bosses are always separated by a manager?

1 — 18 managers + 2 bosses = 20

Boss Manger Boss

18 managers in a circle = (18-1)! ways

18 managers can be arranged in 18 ways

So 17! × 18 × 2!
↓
boss

14) A no. is multiplied from 20 consecutively. How many nos are multiplied so that ans. ends in 3 zeros?

1 zero 1 zero 1 zero

20 × 21 × 22 × 23 × 24 × 25 — 5 × 5

6 ways

20 × 21 = 20 ; 20 × 22 = 0 ; 20 × 24 = 0 ; 20 × 23 = 0

15) When all prime nos are multiplied will 999 excluding 999, product of prime no. ending in ___?

2, 3, 5 . . . . . .

2 × 5 = 10 Ans: 0

16) There are 5 red balls, 6 white balls & 9 green balls. What is the prob. of picking 3 balls randomly such that all are green picked up one after the other?

5 + 6 + 9 = 20 balls

Successively = no replacement

$$\frac{{}^9C_1}{{}^{20}C_1} \times \frac{{}^8C_1}{{}^{19}C_1} \times \frac{{}^7C_1}{{}^{18}C_1}$$

17) Prob. of getting 2 from vowels, 3 from consonants,

$$\frac{5C_2 \times 21C_3}{26C_5}$$

26 — 5 vowel, 21 con

18) George, Paul, Hari

19) There are totally 18 balls. 3 blue balls are removed from the jar & not replaced. Now the prob. of getting blue ball is $\frac{1}{5}$, How many blue balls the jar contained initially?

Already 3 blue balls are removed

So $\frac{1}{5}$ blue balls for

for 5 balls, there is 1 blue ball

So for 15 " , " " 3 " "

So 3+3 = 6 blue balls//

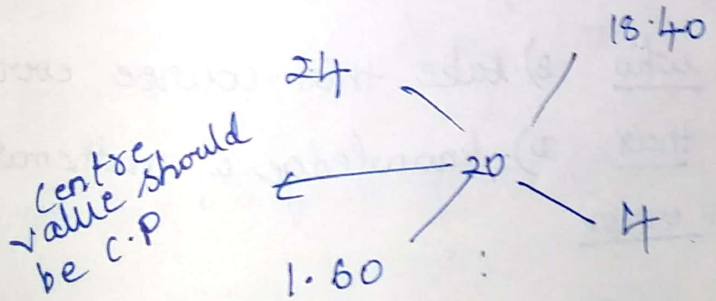
20) How many kgs of wheat cost 24/kg must be mixed with 30 kg of wheat costing 18.40/kg so that 15% profit can be obtained by selling the mixture for 23/kg. What is the final value

115% of C.P = 23

$\frac{115}{100}$ CP = 23

CP = 23 × 100

CP = 20



16 : 40

2 : 5

×6 ↓ 12 kgs

×6 ↓ 30 kgs

2) No. of 2 Rs, 3 Rs & 1 Rs are in the ratio 3:2:1. A total amt of 260 Rs is being shared. Find the no. of 3 Rs. coins.

$$3 \times 2x + 2 \times 3x + 1 \times 1x = 260$$

$$6x + 6x + x = 260$$

$$13x = 260$$

$$x = \frac{260}{13}$$

$$\boxed{x = 20}$$

No. of 3 Rs coins = $2 \times 20 = 40$ coins

Verbal

1) D)
2) D)
3) A)
4) C)
5) B)
6) C)
7) A)
8) C)
9) B)
10) 2)

turned the corner - shutting down

lope - join

counter - oppose

4-9-18

Verbal

Spot the errors:

1) A) A no. of trainees who B) take this course ev year find C) that their D) knowledge of mathem is inadequate E) No error

2) a) Either of the solutions you have
b) proposed are
c) acceptable to the union, whose

3) a) The last man on Earth will b) abondon his ruined house for c) a cafe, and d) his woven clothes for an animal's skin e) no error

Note:

Either Rahul or his friends are
Either Rahul or Ram is

4) a) The station was a hive b) of bustling activity activities c) the arrival of the train was the most important d) event of the day in that remote place. e) no error

5) A) My grandmother's legacy is b) substantial, especially c) if the value of the rare stamps are is d) taken into consideration e) no error.

6) a) Neither Bradley nor ~~Mohr~~ more b) recent critics who have written c) on Shakespeare's tragedies, has have d) been able to give a convincing explanation for the timing of events in Othello e) no error

7) a) the bridal gown was most b) unique : the bridegroom c) designed it d) and his mother provided the lace fabric e) no error

8) a) For a successful career as b) a beautician one you c) must be prepared to dissemble : d) you must not tell your client the unvarnished truth about his or her appearance e) no error

(pronoun must be same throughout)

9) Sentence Correction

5) a)
6) b)
7) c)
8) c)

Sentence completion

1) b)
2) c)
3) b)
4) d)
5) a)
6) d)
7) b)
8) c)
9) c)
10) c)
11) c)
12) d)
13) d)

Sentence selection

1) a)
2) d)
3) b)
4) a)
5) c

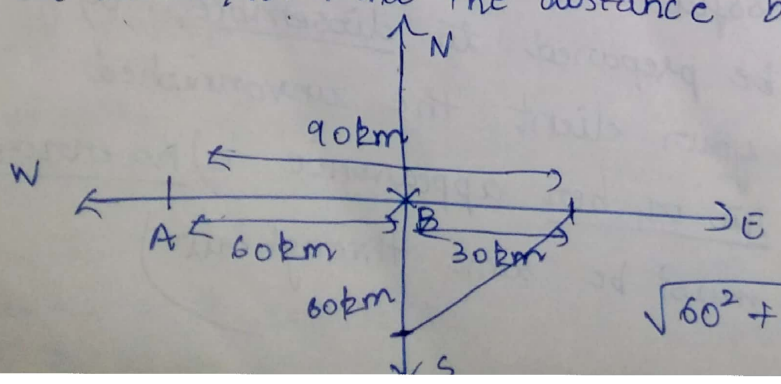
Aptitude

1) ERROR = HACK + CRACK , H+E+A+R=? R=2

$$\begin{array}{r} \cancel{ERR}\ {}^{+1}H^{6}\ A^{6}\ C^{4}\ K^{1} \\ {}^{+1}C\ R^{2}\ A^{6}\ C^{4}\ K^{1} \\ \hline {}^{5}E\ R_{2}\ R_{2}\ O_{3}\ R_{2} \end{array}$$

$9+\overset{5}{\cancel{4}}+6+2$
$= 22$

2) At noon, car A is 60 km west of car B. car A is going east at 30 km/hr. Car B is going south at 20 km/hr. Find the distance b/w them at 3pm



$\sqrt{60^2+30^2} = \sqrt{3600+90}$

3) 10 exams are conducted such that there are 2 maths exams present in that 10. In how many ways the exams can be conducted such that it starts & ends with maths exam.

M1

8 exams

$= 8! \times 2!$ (Maths)

M2

$= 64480$

4) A man going up & down an elevator with speed 30 & 60 resp. what is speed of the man. one man was using an escalator, he has same speed. And he took 30 sec to climb up (escalator's dir is towards down) & 25 sec to climb down (escalator direction remains the same) what is the man's speed outside escalator?

Formula

Speed

man → ← escalator

man → Speed ↑ escalator →

Time constant of same

Avg speed / Speed of man $= \frac{x+y}{2}$

When distance is constant

$= \frac{2xy}{x+y}$

3 people

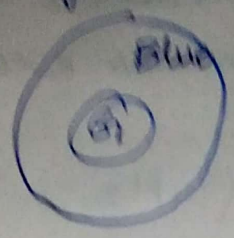
$= \frac{3xyz}{xy+xz+yz}$

Soln:

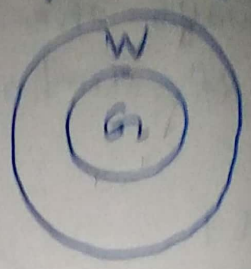
Speed $= \frac{2(30)(60)}{30+60} = \frac{2 \times \cancel{30}^{10} \times \cancel{60}^{2}}{\cancel{90}_{3}} = 40$ km/hr

Syllogism

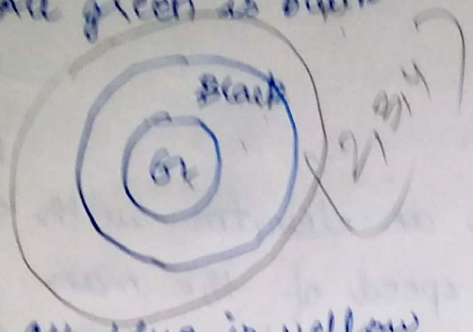
1) A) All green are blue



B) All green is white

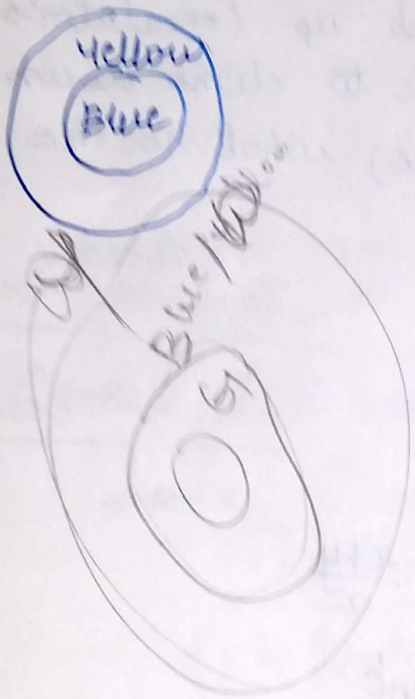


C) All green is black

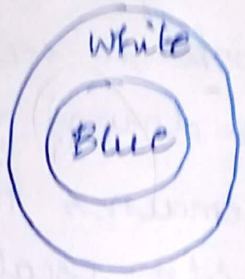


D) All black is white

E) All blue is yellow



F) All blue is white



2) A) All actors know English (1,3,6)

2) B) He does not know Eng (2,4,5)

3) C) He is an actor

4) D) He is not an actor

5) E) He knows Hindi

6) F) He should know Eng

3) i) A, B, C, D, E, F & G are sitting on a wall facing east

ii) C is just right of D

iii) B is on end point & E is his neighbour

iv) G is sitting b/w E & F

v) D is third from south end

~~vi)~~

1) Which of the foll persons are on end points?

a) AE (b) AB c) FB d) CB

2) Which of the foll information is necessary to determine the position of A?

All information

B E G F A C D → E

N E P T U N E

U R A N U S

S O L A R S Y S T E M

$^{1}K\ {}_{9}A\ {}^{1}N\ {}_{6}S\ {}^{9}A\ Sb$

$O^{3}\ H^{4}\ I\ O_{3}$

$O\ R\ E\ G\ O\ N_{9}$

$_{1}\ _{3}$

$^{1+}_{4}K\ {}_{9}A\ {}^{1+}N\ {}^{1+}_{7}\ {}_{5}Z\ {}^{9}A\ S^{2}$

$O_{5}\ H_{8}\ I_{6}\ O_{6}^{+}$

$O\ R\ E\ G\ O\ N_{1}$

$_{5}\ _{3}\ _{1}\ _{5}$

G+R+O+S+S.

⇓

10

1+0+5+2+2

10

Verbal

Sentence Completion

1) b)
2) c)
3) b)

Sentence selection

1) a) c)
2) d)
3) b)
4) a)
5) b)
6) a)
7) c) d)
8) d) a)
9) a)

1) b)
2) a)
3) d
4) b)
5) a)

Blood relations

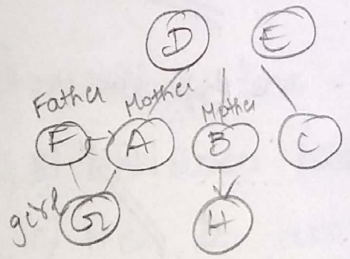
1) Pointing to a boy a girl says, "He is the son of the daughter of the father of my uncle". How the boy related to the girl?

mom/aunt grandfather

a) Nephew b) brother c) son d) cannot determin

brother or cousin

2) A, B, C are the kids of D, E. F is the spous of A. G is the granddaughter of D whose fath is F. B is the mother of H. who is the male kid in the family?



a) A b) B c) C d) E

Seating

1) A, B, C, D, E, F, G, H are sitting in a bench fa north, exactly 3 & exactly 5 persons sit to left of B & E respectively.

B is the only one b/w F & C.

2) 4 people with 4 diff. professions are sitting in a circular table. A sits opposite to a cook. B sits on the right side of the beautician. Teacher is on the left side of the accountant. D sits opposite to C. C is on the right of the accountant.

1) F B C D A E G

2)

Cook
B

D
Teacher

C Beautician

A
Accountant

9
GO – 1
TO – 1
OUT – 2

GO –
TO –
OUT

8G 01
2T 01
OUT2

O+U+T

1+0+2 = 3

8U S2 A0
+1 8U 2S S2 R
P E A C E 9
9 0

P+E+A+C+E

9U S4 A
+1 1 9U 4S S4 R
P E A C E
1 0 3

8U S4 A2
1 8U 4S S4 R1
P E AC E9
9 2

+1 9U S2 S2 R6
9 U9 S2 A4
1 P E A4 C6 E0
0

+1 9U S S R +
U S A
1 P E A C E 0
0

Data sufficiency

1) 3 bags total weight 10 kg. Which is the heaviest bag?

a) Weight of 1st bag is 2.5 kg
b) " " 3rd bag is 5.5 kg

Ans: b alone is sufficient.

2) How is Manohar related to Shruthi?

a) Shruthi & Deepak are siblings
b) Manohar is the father of Deepak.

Ans: Both.

3) How is S related to M?

a) S & D are siblings
b) M is the father of Deepak

[Gender is not known.]

S may be daughter/son.

Ans: Neither a nor b

4) Ravi ranks 9th in the class. What is the total no. of students in the class?

a) His friend's rank is 35th which is the last rank in the class

b) Ravi's rank is 27th from the last

Ans: Either a or b

Clocks

Formula:

$$30h - \left(\frac{11}{2}\right)m = \theta$$

$180° = (90° + 45°)$

Hour hand

1 hr = 30°

4 o clock = 30° × 4 = 120°

Min hand

60 min = 360°

$1 \text{ min} = \frac{360}{60} = 6°$

For every 1° of min hand, hour hand moves $\frac{1}{2}°$

		Other angles
0°/180°		22°
12 hrs	11	44°
24 hrs	22	

Q Between 3 to 4 o' clock, at what time the hands of the clock are together?

$$30h - \frac{11}{2}m = \theta$$

$$30(3) - \frac{11}{2}m = \theta$$

$$90 - \frac{11}{2}m = 0°$$

$$90 = \frac{11}{2}m$$

$$\frac{90 \times 2}{11} = m$$

Q How many times the hands of the clock are at right angles in a day?

44 times

Odd days for centuries

4/9/2018

100 years < 24 leap years, 76 non-leap years

Normal year ÷ by 4, rem = 0 ⇒ leap year

~~Lea~~ Century ÷ by 400

Because 100th year is not a leap year.

Century – 100 – 5 odd days

200 – $\frac{10}{7}$ = 3 odd days

300 = $\frac{5+5+5}{7}$ = $\frac{15}{7}$ = 1 day

400 = $\frac{5+5+5+5+1}{7}$ = $\frac{21}{7}$ = 0 odd days

Jan – 6, ~~2, 2, 5~~
Feb – 2
March – 2
April – 5
May – 0
June – 3
July – 5
Aug – 1
Sep – 4
~~Au~~ Oct – 6
Nov – 2
Dec – 4

Leap year = 2 odd days

Non leap year = 1 odd days

0 – Sun
1 – Mon
2 – Tue
3 – Wed
4 – Thur
5 – Fri
6 – Sat

4/9/18

$\frac{4}{7}$ = 4

9 ⇒ Sep = 4

$\frac{9}{7}$ Rem = 2

2018

Every 400 years calendar will repeat

~~2055~~

18

4 leap, 14 non leap

8 odd days, 14 odd days

14
8
22

$\frac{22}{7}$ Rem = 1

4 +
4 +
1 +
9

15/4

6-9-18

Interview questions:

Pointers:

*→value (Dereference operator) (Indirection operator)
&→address (Reference operator)

MVC (Model View Controller) ⊗

Model:

Interface:

In order to add additional features to any device, we need interface.

Exceptions:

2 ways to implement or handle exception
i) Try and catch
ii) Throws
They are required for smooth running of any program.

Storage classes: ⊗
i) Auto
ii) Static
iii) Extern/Global
iv) Register

a) Default initial value
b) Scope
c) Lifetime of a program

Return type of main() printf(), scanf()
integer

Is it a good habit to use registers in storage class?
NO

Precision:

1. int
2. long int
3. Double ⇒ 15
4. Float ⇒ 6

Arrays can be initialized in 5 ways.

i) a[i] or a[0] [base index]
ii) i[a]
iii) Pointers concept → * (a+0)
iv) * a
v) a → gives address

} → gives value

Dangling pointer:

A pointer that points to the garbage value

Null pointer

* A pointer which points to nothing
* Null pointer is different from '0'.

Null pointer exception:

Memory allocation:

Malloc:

It is used at the beginning i.e. during initializ

Calloc:

Allocate memory during runtime

Realloc:

If memory allocated by malloc & calloc are not sufficient, then realloc is used. It increas memory dynamically.

Drawbacks in arrays:

Drawbacks of pointers:

Declaring pointer:

```
int a=10;
int *ptr;
*ptr = &a;
~~ptr~~ printf("%d", *ptr);
```

10

Double pointer:

*(*ptr)

1) GCD of more than two (or array) numbers

Given an array of nos, find GCD of the array elements

Eg: ① I/p: arr[] = {1,2,3}

O/p: 1

② I/p arr[] = {2,4,6,8}

O/p: 2

```
#include <stdio.h>
int gcd (int a, int b)
{
 if (a==0 || b==0)
 return 0;
 if (a==b)
   return a;
 if (a>b)
   return gcd (a-b,b);
 return gcd (a,b-a);
}
int findGCD (int arr[], int n)
{
 int result = arr[0];
 for (int i=1; i<n; i++)
   result = gcd (arr[i], result);
 return result;
}
```

```
int main ()
{
int arr[] = {2,4,6,8};
int n= sizeof(arr) / sizeof(arr[0]);
printf ("%d" findGCD (arr, n));
}
```

2) Eliminating vowels from string

I/p:

Focus Academy for career enhancement

O/p:

Fcs cdmy fr crr nhncmnt

(a)

```
#include <stdio.h>
# include <string.h>
int check_vowel (char);
int main()
{
char s[100], t[100];
int i, j=0;
scanf (" %[^\n]s", s);
for (i=0; s[i] != '\0'; i++)
{
  if (check_vowel(s[i]) == 0)
  {
    t[j] = s[i];
    j++;
  }
}
t[j] = '\0';
strcpy (s, t);
printf (" %s\n", s);
return 0;
}
```

Note:

To read a string gets () can also be used.

```
int check_vowel (int ch
{
switch (char)
{
case 'a' :
case 'A' :
case 'e' :
case 'E' :
case 'i' :
case 'I' :
case 'o' :
case 'O' :
case 'u' :
case 'U' :
return 1;
default:
return 0;
}
```

Drawbacks of pointers: (8)

* It allows persons to access memory using address.
* Hence there are chances of system being hacked

How to overcome?

using memory management i.e. malloc, calloc, realloc.

(b)
```
#include<stdio.h>
#include<string.h>
int check_vowel (char ch)
{
  switch (ch)
  {
   case 'A':
   case 'a':
   case 'E':
   case 'e':
   case 'I':
   case 'i':
   case 'O':
   case 'o':
   case 'U':
   case 'u':
     return 0;
     break;
   default:
     return 1;
     break;
  }
}
int main ()
{
 char string [50], change[50];
 int i=0, j=0;
```

```
gets (string);
while (string[i] != '\0')
{
  if (check_vowel (string[i]))
  {
    change[j++] = string[i];
  }
  i++;
}
change[j] = '\0';
puts (change);
}
```

③ Program to sort an array in ascending & descending order.

I/p:

5
8
6
9
2
7

O/p:

2 6 7 8 9
9 8 7 6 2

```
#include<stdio.h>
int main (void)
{
int a[10], i=0, j=0, n, t;
scanf ("%d", &n);
printf ("\n");
for (i=0; i<n; i++)
{
  scanf ("%d", &a[i]);
}
for (j=0; j<(n-1); j++)
{
 for (i=0; i<(n-1); i++)
  {
   if (a[i+1] < a[i])
   {
    t = a[i];
    a[i] = a[i+1];
    a[i+1] = t;
   }
  }
 }
}
for(i=0; i<n; i++)
{
 printf ("%d\t", a[i]);
}
printf ("\n");
for(j= n-1; j>=0; j--)
{ printf ("%d\t", a[j]);
} return0;
```

Program to eliminate repeated letters in a string.

I/P:
Hai Hello C Program....

O/P:
Hai elo C Prgm.

```
#include <stdio.h>
#include <string.h>
int main()
{
char a[100], b[100]={0};
scanf("%[^n]s", a);
int f= strlen(a);
int i, j, K=0, count=0;
for(i=0; i<f; i++)
{
 for(j=0; j<i; j++)
 {
  if(a[i]==b[j])
  {
   count=1;
  }
 }
 if(count==0)
 {
  b[K++]=a[i];
 }
 count=0;
 }
for(j=0; j<strlen(b); j++)
{
printf("%c", b[j]);
}
}
```

int K=10;

printf("%d %d %d", ++K, K++, K);

Associativity, so go from right to left

12	11	10

Buffer value = 10

New buf value = 10++ = 11

New buf value = 11++ = 12

O/P:
12 11, 12

latest buffer val

lavishjain36@gm
8087693442.

(5) Sum of digits:

```
#include <stdio.h>
int main()
{
int n, t, sum =0, remainder
scanf("%d", &n);
while (num/pow!=0)
  {
    sum+= (num/pow)%10;
      pow*=10;

  }
printf("%d", sum
```

(6) Sort first half in ascending & second half in descending order.

I/P: arr[] = {5, 2, 4, 7, 9, 3, 1, 6, 8}

O/P: arr[] = {1, 2, 3, 4, 9, 8, 7, 6, 5}

```
#include <stdio.h>
void sort (int arr[], int n)
 {
  int i, j, t;
  for (i=0; i<(n-1); i++)
   {
    for (j=0; j<(n-1); j++)
     {
      if (arr[j] < arr[i])
       {
        t= a[i];
```

```
a[j] = a[j];
a[j] = t;

}

}

}
void printorder (int arr[], int n)
{
sort (arr, n);
for (int i=0; i<n/2; i++)
  printf ("%d", arr[i]);
for (int j=n-1; j>=n/2; j--)
  printf ("%d", arr[j]);
}
int main()
{
int arr[] = {5,4,6,2,1,3,8,9,7};
int n = sizeof(arr) / sizeof(arr[0]);
printOrder (arr, n);
return 0;
}
```

④ Program for searching an element in the array.

* C language was developed in AT&T Bell Labs now known as Nokia lab.

① Write a program to calculate area of square, circle & circumference of circle.

```
#include <stdio.h>
int main()
{
int side, radius;
scanf("%d", &side);
printf("The area of the square is %d", side*side);
scanf("%d", &radius);
printf("The area of the circle is %d", 3.14 * radius * radius);
printf("The circumference of circle is %d", 2*3.14*radius);
}
```

② To find Leap year / Non leap year :

```
#include <stdio.h>
int main()
{
int year;
scanf("%d", &year);
if (year % 4 ==0)
{
if (year % 100 ==0)
{
if (year % 400 ==0)
{
printf("Leap year");
}
```

```
else
printf ("Non- leap year");
}
else
printf ("Leap year");
}
else
printf (" Non-leap year");
}
```

3) Program to print month name according to nos given.

```
#include<stdio.h>
int main ()
{
int month_no;
scanf (" %d", &month_no);
switch (month_no)
{
case 1 :
printf (" January ");
break;
case 2 :
printf (" February");
break;
case 3 :
printf ("March");
break;
case 4 :
printf ("April");
break;
case 5:
printf ("May");
break;
case 6:
printf (" June");
break;
case 7:
printf ("July");
break;
case 8:
printf ("August");
break;
case 9:
printf ("September");
break;
case 10:
printf ("October");
break;
case 11:
printf ("November");
break;
case 12:
printf ("December");
break;
default:
printf (" Enter valid no");
}
}
```

④ String reversal:

```
#include<stdio.h>
#include <string.h>
void reverse (char[], int , int);
int main ()
{
 char str1[100];
 int size;
 scanf("%[^n]s", str1);
 size = strlen (str1);
 reverse (str1, 0, size-1);
 printf("%s", str1);
 return 0;
}
void reverse (char str1[], int index, int size)
{
 char temp;
 temp = str1[index];
 str1[index]= str1 [size-index];
 str1[size-index] = temp;
 if (index == size/2)
 {
  return;
 }
 reverse (str1, index+1, size);
}
```

⑤ Input: num1 and num2 such that $0 \leq num1 <= 99999999$ and $0 <= num2 <= 9$

You have to find the number of occurences of input num2 in input num1 and return it with function

I/p: 122212
2

O/p: 5

```
num1, int num2)
int count = 0;
while (num1 != 0)
{
 if((num1 % 10) == num2)
  ++count;
 num1 /= 10;
}
return count;
}
int main()
{
 long long n;
 int key;
 scanf("%lld", &n);
 scanf("%d", &key);
 printf("%d", isOccured(n, key));
}
```

⑥ Find the output of the following code.

```
main()
{
printf("\nab");
printf("\bsi");
printf("\rha");
```

⑦ Remove all vowels from a given string using pointers.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

```
# include < stdio.h>
int is Occured (int num1, int num2)
{
int count = 0;
while (num1 !=0)
{
 if((num1 % 10) == num2)
  ++ count;
 num1 /= 10;
}
return count;
}
int main()
{
long long n;
int key;
scanf (" %lld", &n);
scanf (" % d",& key);
printf (" %d", is Occured (n, Key));
}
```

⑥ Find the output of the following code.

```
main ()
{
printf ("\nab");
printf ("\bsi");
printf ("\rha");
```

ab
psi
hai

⑦ Remove all vowels from a given string using pointers.

```
# include <stdio.h>
# include <stdlib.h>
# include< string.h>
```

```
#define TRUE 1
#define FALSE 0
int check_vowel (char);
int main()
{
char string[100], *temp, *pointer,
                ch, * start;

gets (string);
temp = string;
pointer = (char*) malloc (100);
if (pointer == NULL)
{
 exit(EXIT_FAILURE);
}
start = pointer ;
while (*temp)
{
ch = *temp;
if(! check_vowel (ch))
{
 * pointer = ch;
  pointer++;
 }
 temp++;

}
* pointer = '\0';
pointer = start ;
strcpy (string , pointer);
free (pointer);
printf(" %s\n", string);
return 0;

}
```

general

```
main ()
{
char ch;
scanf (" %c", &ch);
if (ch == 'a' || ch == 'e' ||
 ch == 'i' || ch == 'o' || ch
{
printf ("Vowel");
}
else
{
printf ("Consonant");
}
```

while((c/pow)!=0)

$(2+5)^2 = (2+5)(2+5)$

$t_1=1 \quad t_2=1$

$t_1=2 \quad t_2=3$

$\frac{2}{5}$

1×2

$r_e = 2$

$r = 4$

$r = 8$

$r = 16$

$r = 32$

$1, 2, 5$

$3, 2, 3, 5^3$

12

$n = 1$

$rem = 2$

$res = result + pow(2,3)$

$= 0 + pow$

5) Program to check for prime numbers

```
#include <stdio.h>
int main()
{
int n, i, flag=0;
scanf("%d", &n);
for (i=2; i<=n/2; ++i)
{
  if(n%i==0)
  {
    flag=1;
    break;
  }
}
if (flag==0)
printf("%d is a prime number", n);
else
  printf("%d is not a prime number", n);
return 0;
}
```

6-9-18 Logical Reasoning

1) Pick the odd one out

a) AEK
b) DFH
c) TWZ
d) MOQ

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
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

2) GULMOHAR is coded as TFONLSZI

PIPAL

G U L M O H A R
T F O N L S Z I

P I P A L
K R K Z O

27-7
27-21 = 6

9/20

3) 3, 15, 75, 63, ...

3, 15, 75, 63, 99

Odd nos:

1, 3, 5, 7, 9, 11

×3 = 3, 15, 35, 63, 99

4) 24 : 50, 102 : ?

(24×2) + 2 = 50

(102×2) + 2 = 206

103
×2
206

5) K E W H I represents F A R C E

I N X R F Q

11 5 23 8 9

K E W H I

F A R C E

6 1 18 3 5

9

I N X R F Q

D I S M A L

27 − 11 = 16 − 10 = 6

27 − 5 = 21 − 20 = 1

27 − 23 = 4

A E 5

D F 6

Aptitude

1) $\left(\frac{1}{512}\right)^{1/9}$

$= \left(\frac{1}{2^9}\right)^{1/9}$

$= \frac{1}{2}$

2) The ratio b/w speeds of 2 trains is 5:3. If the 1st train ran 350 km in 2 hrs, then what is the spe of the 2nd train?

a) 100 kmph b) 150 kmph c) 105 kmph d) 205 kmph

$T_1 = \text{Speed} = \frac{D}{T} = \frac{350}{2} = 175$ kmph

$5x = 175$

$x = \frac{175}{5} = 35$

$x = 35$

$3x = 3(35)$

$= 105$ kmph

$$CP = \left(\frac{100}{100 + \text{gain}\%}\right) \times SP$$

SP = 100% CP + 0%

3) A shopkeeper offers buy one get one free offer on a T-shirt marked at Rs. 2400. If a sale, the shopkeeper earns a profit of 33.33 then what is the actual price of the T-shirt

a) Rs. 900 b) ₹800 c) ₹1200 d) ₹1500

$$C.P = \left(\frac{100}{100 + 33.33}\right) \times SP$$

$$\left(\frac{100}{100 + \frac{1}{6}}\right) \times 2400$$

$$C.P = \left(\frac{100}{100 + 33.33}\right) \times \frac{2400}{2}$$

$$\frac{100}{133.33} \times 2400$$

$$\frac{100}{\frac{600+1}{6}} \times 2400$$

$$\frac{100}{1} \times \frac{6}{601} \times 240$$

$$= \frac{100}{100 + 33.33} \times 1200$$

$$2400 = 100\,CP + 33.33\,CP$$

$$\frac{2400}{133.33} = CP$$

$$\frac{2400}{134} \times$$

$$\boxed{CP = \text{Rs. } 900}$$

4) Every year before the festive season, a shopkeeper increases the price of the products by 35% & then introduces 2 succ discounts of 10% & 15% respectively. What is his % loss or gain?

a) 3.27 % loss b) 3.27 % gain c) no loss no gain

d) 8.875 % loss e) 8.875 % gain

C.P = 100

C.P₁ = 135

$$135 \times 1.35 = 135 + 13.5 = 121.5$$

10% of 135 = $\frac{10}{100} \times 13.5 = 13.5$

15% of 121.5 = $\frac{15}{100} \times 12.15$

10% + 5%

S.P = 103.29

Gain = 3.29

$$P\% = \frac{3.29}{100} \times 100$$

$$CP = \left(\frac{100}{100 + \text{gain}\%}\right) \times SP$$

SP = 100% CP + P% CP

3) A shopkeeper offers buy one get one free offer on a T-shirt marked at Rs. 2400. If after a sale, the shopkeeper earns a profit of 33.33%, then what is the actual price of the T-shirt?

a) Rs. 900 b) ₹ 800 c) ₹ 1200 d) ₹ 1500

$$C.P = \left(\frac{100}{100 + 33.33}\right) \times SP$$

$$C.P = \left(\frac{100}{100 + 33.33}\right) \times \frac{2400}{2}$$

$$= \frac{100}{100 + 33.33} \times 1200$$

$$\boxed{CP = \text{Rs. } 900}$$

$$\frac{100}{133.33} \times 2400$$

$$\left(\frac{100}{100 + \frac{1}{6}}\right) \times 2400$$

$$\frac{100}{\frac{600+1}{6}} \times 2400$$

$$\frac{100}{1} \times \frac{6}{601} \times 2400$$

$$2400 = 100\,CP + 33.33\,CP$$

$$\frac{2400}{133.33} = CP$$

$$\frac{2400}{134}$$

4) Every year before the festive season, a shopkeeper increases the price of the products by 35% & then introduces 2 succ discounts of 10% & 15% respectively. What is his % loss or gain?

a) 3.27 % loss b) 3.27 % gain c) no loss no gain

d) 8.875 % loss e) 8.875 % gain

C.P = 100

$C.P_1 = 135$

10% of $135 = \frac{10}{100} \times 135 = 13.5$

15% of $121.5 = \frac{15}{100} \times 121.5$

10% + 5%

S.P = 103.29

Gain = 3.29

$P\% = \frac{3.29}{100} \times 100$

$$\begin{array}{r} 135.0 \\ -\ 13.5 \\ \hline 121.5 \end{array}$$

$$\begin{array}{r} 6.07 \\ \times 3 \\ \hline 18.21 \end{array}$$

$$\begin{array}{r} 121.50 \\ \times 3 \\ \hline 7.5 \end{array}$$

$$\begin{array}{r} 1.8 \\ 7.5 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 103.29 \\ 100.00 \\ \hline 3.29 \end{array}$$

$$\begin{array}{r} 6.07 \\ \times 3 \\ \hline 18.21 \end{array}$$

$$\begin{array}{r} 121.50 \\ 18.21 \\ \hline 103.29 \end{array}$$

5) A rectangle's length is 4 times ... It has an area of 2500 sq. yards. What is the length of the rectangle?

a) 25 yards b) 100 yards c) 625 yards d) 5 yards

$l = 4b$

$\text{Area} = l \times b = 2500$ sq

$4b \times b = 2500$

$4b^2 = 2500$

$b^2 = \frac{2500}{4}$ (625, 1250)

$\boxed{b = 25}$

$l = 4(25)$

$l = 100$ yards

6) A, B & C are such that B is the S.I on A & C is the S.I on B for the same period & same rate of interest. Find the relation b/w these 3 terms

a) $a^2 = bc$ b) $c^2 = ab$ c) $b^2 = ac$ d) $a = b = c$

$S.I = \frac{Pnr}{100}$

$B = \frac{Anr}{100}$ $C = \frac{Bnr}{100}$

$\frac{B}{A} = \frac{nr}{100}$ $\frac{C}{B} = \frac{nr}{100}$

$\frac{B}{A} = \frac{C}{B}$

$B^2 = AC$

7) Which no. should be multiplied by 43 so that it will have 3 prime factors?

a) 2 b) 3 c) 6 d) 8

$43 \times 2 = 86$

$43 \times 3 = 129$

$43 \times 8 = 344$

$43 \times 6 = 258$

$344 = 2 \times 2 \times 2 \times 43$

$258 = 2 \times 3 \times 43$

$86 = 2 \times 43$

$129 = 3 \times 43$

8) Which is ÷ by 11?

a) 235641 b) 245642

c) 315624 d) 415624

a) 11 − 10 b) 9 − 12

c) 10 − 11 d) 11 − 11 = 0

a) 12 b) 4 c) 24 d) Data insuff.

is 2208. LCM = 552 HCF = ?

$ab = 2208$

$HCF \times LCM = 2208$

$HCF \times 552 = 2205$

$HCF = \frac{2205}{552}$ 4

10) A total profit of Rs 36,000 is to be distributed among A, B & C. The ratio b/w A & B is 5:4 & the ratio b/w B & C is 8:9 What is share of C.

a) 12 000 b) 24000 c) 10000 d) 20,000

$A : B = 5 : 4$

$\frac{A}{B} = \frac{5}{4}$

$B : C = 8 : 9$

$\frac{B}{C} = \frac{8}{9}$

5 4
8 9

$A : B : C = 40 : 32 : 36$

C' share $= \frac{36}{108} \times 36,000$

A : B : C
5 : 4
×2 8 : 9
10 : 8 : 9

11) What is the no. that should be sub from 682 to make it a perfect square

a) 2 b) 4 c) 6 d) 8

$(25+1)^2 = 625 + 1 + 50 = 676$

36×36

36^2 1236

$16^2 = 236$

$24^2 = 316$

$28^2 = 664$

$26^2 = 36$

12) In a football match, awards are given to each of the 11 members of the team & a trophy to the winning team. If all winning team gets 2.75 kg weight awards & the weight of the match winning trophy is 1.275 kg, what is the weight of the award given to each player?

a) 200 gm b) 150 gm c) 124 gm d) 134 gm

2.750
1.275
1.475 kg

$\frac{1.475 \times 1000}{11}$ 0.134

13) A contractor estimates 3 people can paint a house in 4 days. If he uses 4 people instead of how long will it take to complete the job?

a) 4 b) 2 c) 3 d) 5

$4 : 3 :: 4 : x$

$4x = 12$

$\boxed{x = 3}$

(or) $\frac{M_1 \times D_1}{W_1} = \frac{M_2 \times D_2}{W_2}$

$3 \times 4 = 4 \times x$

$\boxed{x = 3}$

14) The rate at which a sum will become 10 times itself in 20 years at S.I ?

a) 45% b) 50% c) 47.50% d) 49%

$S.I = \frac{Pnr}{100}$ $r = ?$ $n = 20$

$A = 10P$

$Amt = 10P$

$Amt - S.I = P$

$10P - S.I = P$

$9P = SI$

$9P = \frac{P \times 20 \times r}{100}$

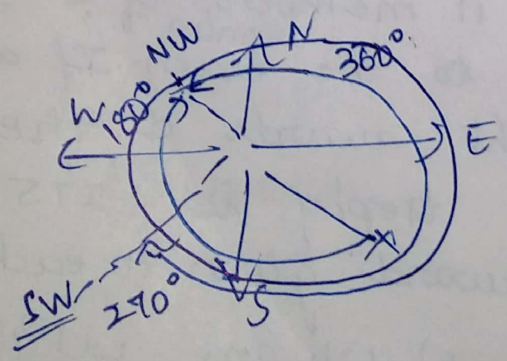
$\frac{9\cancel{P} \times \cancel{100}}{\cancel{P} \times \cancel{20}} = r$

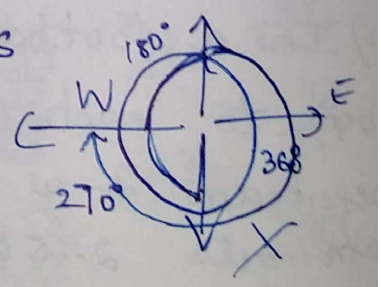
$\boxed{45 = r}$

1) The glass lay untouched on the table.

2) A lady is facing SE, then she turns 180° in clockwise dir & then 360° in anticlockwise dir. & then another 270° in the clockwise dir, which dir. is she facing now?

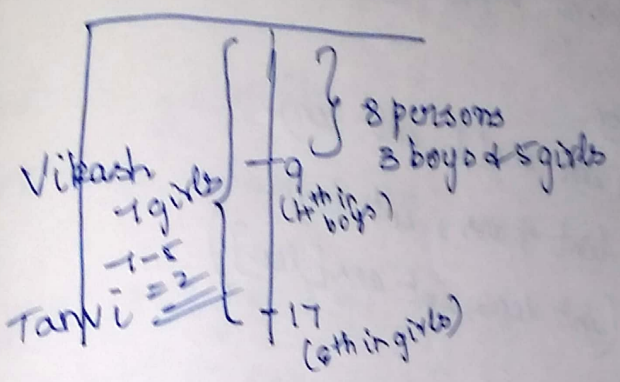
a) NE b) SE c) SW d) S

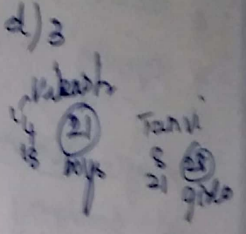




3) In a class of boys & girls, Vikash's rank is 17th, then Vikash's rank among the boys in the class is 4th from the top & 18th from the bottom & Tanvi's rank among the girls in the class is 9th from the top & 21st from the bottom. In the order of rank, how many girls are there b/w Tanvi & Vikash?

a) 1 (b) 2 c) 5 d) 3





4) Antonym of diaspora

a) spread b) movement c) focus d) scattering

5) Water, kneading, flour, baking, wheat

(3) (4) (2) (5) (1)

6) He worked really hard & thus deserves to be promoted

(pronoun so deserves else deserve)

7) 26, 13 & 34 - which two are coprimes?

13, 34

13 ÷ 1 34 ÷ 1

8) Find the remainder when 123456789101112.....100 digits ÷ by 16?

a) 2 b) 4 c) 6 d) 9

12-9-18

Technical Training:

C

* If array is passed in function, then size should also be passed.
* Then data type should be pointer (*) or array []
* Variables used must be declared.
* Opening & closing brackets must be checked.

Single dimension:

```
int SortArray (int arr[], int len)
int SortArray (int *arr, int len)
int SortArray (int len, int arr[len])
```

Two-dimension:

```
int SortArray (int **mat, int m, int n)
int SortArray (int m, int n, int mat[m][n])
```

1) I/P : 5

O/P:

```
a
a b
a b c
a b c d
a b c d e
```

```
printcharecterpattern (int num)
{
    int i, j, value = 1;
    char ch = 'a';
    char print = ch;
    for (i=0; i<num; i++, print = ch)
    {
    for (j=0; j<=i; j++)
     printf ("%c", print++);
     printf ("\n");
}
```

2) switch case:
break for each case

3) I/p:
4

O/p:

```
11
1111
111111
11111111
```

```
void printpattern (int n)
{
 int i, j, print=1;
 for (i=1; i<=n; i++)
 {
  for(j=1; j<=2*i; j++)
   printf("%d", print);
   printf("\n");
  }
}
```

4) I/p:
5, 7, 4

O/p:
35

```
int multiplynumber (int a, int b, int c)
{
int result, min, max, mid;
max = (a>b) ? ((a>c) ? a:c) : ((b>c) ? b:c);
min = (a<b) ? ((a<c) ? a:c) : ((b<c) ? b:c);
mid = (a+b+c) - (min+max);
result = (max*mid);
return result;
}
```

5) Array in descending order (Sort):

extra }

6) I/p:

4

O/p:

```
1
1 1
1 1 1
1 1 1 1
```

7)
```
int countElement (int *arr, int len, int n)
{
    int i, count=0;
    for (i=0; i< len; i++)
    {
        if (arr[i] > (2 *n))
        count +=1;
    }
return count;
}
```

I/p: { 22, 55, 66, 33, 44, 77 } 30

O/p: 2 (∵ 30 × 2 = 60 > 60 ⇒ 66, 77)

8) Array reverse:

function defn → *

len --=1;

9)
```
if (i==j)
{
res = *(matrix + (i*n)+j);
if (res %2 ) [or if (res %2!=0)]
    sum=sum+res;
```

Diagonal odd sum

10) Birthday:

```
int checkBirthday (char *month, int day)
{
  if ( strcmp (month, "july") ==0 && (day == 5)
    return 1;
  else
    return 0;
```

11) sum ÷ by no. of digits
return rem.

```
safe = num
while (num != 0)
  {
  }
num = safe;
pf ("%d", num);
```

12) Descending sort array:

```
int arr [ ] = { 123, 678, 897, 333, 100, 78, 46, 234
                100, 123, 333, 99 }

for (i=0 ; i <= len -1; i++)
 {
  for ( j= i ; j< len ; j++)
   {
    temp = 0 ;
    if (arr[i] < arr [j])
     {
      temp = arr[i];
      arr[i] = arr[j];
      arr[j] = temp;
     }
```

13) Max-element of 2 arrays:

```
findMaxElement (int *arr1, int len1, int *arr2,
                                    int len2)
{
    sortArray (arr1, len1);
    sortArray (arr2, len2);
    if (arr1 [len1-1] > arr2 [len2-1])
        return arr1[len1-1];
    else
        return arr2[len2-1];
}
```

Min element
compare first two elements

14) Array sum:

```
int getarraysum (int *arr, int len)
{
    int sum =0, i;
    for (i=0; i< len; i= i+1)
    {
        sum + =arr[i];
    }
    return sum;
}
```

15) Find min, add digits, check even

```
int i, min, results, len = arr. length;
for (~~int~~ i=0, min=arr[0]; i<len; i++)
{
    if(arr[i] < min)
    min = arr[i];
}
results=getSum(min);
if (results % 2==0)
```

```
return;
}
}
```

16) Grade check:

No error

17) Manchester

I/P 1 0 0 0 1 1

O/P 1 1 0 0 1 0

```
int * manchester (int * arr, int len)
{
int * res = (int *) malloc (sizeof (int) * len);
int i;
res[0] = ! (0 == arr[0]);
for (i=1 ; i
res [i] = ! (
```

18) MatrixSum

```
int matrixSum (int ** matrix, int m, int n)
{
  int i,j, sum=0, res;
  for (i=0; i<m; i++)
  {
    for (j=0; j<n; j++)
      res ~~sum +=~~ = *(mat + (i*n)+j);
      sum+= res;
  }
  return sum;
}
```

19) Replace full array with max element of ary.

I/p : {5, 10, 15, 20}

O/p : {20, 20, 20, 20}

```
int i;
if (len>0)
{
 int max=arr[0];
 for(
   ___ __
 for (
```

20)

```
1
121
12321
1234321
123454321
```

```
long long int ;
for (row=1; row<=N; row++, num=num*10+1)
 pf ("%lld", num*num) ;
```

21) Shift the elements in array

arr[i] = arr[i++] ✗

arr[i] = arr[i+1] ✓

22) Replace values :

```
i+=1;
j+=1;
```

23) Count the same elements which are even in an array.

```
for (i=0; i<len-1; i=i+1)
```

19) Replace full array with max element of ary.

I/p : {5, 10, 15, 20}

O/p : {20, 20, 20, 20}

```
int i;
if (len>0)
{
  int max=ars[0];
  for(
    ___ __
  for (
```

20)

```
1
121
12321
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```

```
long long int ;
for (row=1; row<=N; row++, num=num*10+1)
  pf ("%lld", num*num) ;
```

21) Shift the elements in array

arr[i] = arr[i++] ✗

arr[i] = arr[i+1] ✓

22) Replace values :

```
i+=1;
j+=1;
```

23) Count the same elements which are even in an array.

```
for (i=0; i<len-1; i=i+1)
```

24) Selection Sort

{ 123, 678, 897, 333, 100, 78, 46, 234 }

x y index_of_min

0 0

if (arr[index_of_min] > arr[y])

25) Time:

instance ⇒ dot

pointer ⇒ arrow

```
TIME ~~void~~ diff_in_times (TIME *t1, TIME *t2)
{ TIME temp;
int h, m, s, diff, totsec1, totsec2;
totsec1 = toseconds (t1);
totsec2 = to seconds (t2);
diff = abs (totsec1 - totsec2);
(or) temp.h = diff / 3600;
temp.m = (diff % 3600) / 60;
temp.s = (diff % 3600) % 60;
printf (" %d : %d : %d ", h, m, s);
(or) return temp;
}
```

```
res = *(matrix + (i*n)+j);
if (res % 2 != 0)
sum += res;
```

24) Selection sort

{123, 678, 897, 333, 100, 78, 46, 234}

x y index_of_min

0 0

if (arr[index_of_min] > arr[y])

instance ⇒ dot

pointer ⇒ arrow

25) Time:

```
TIME ~~void~~ diff_in_times (TIME *t1, TIME *t2)
{ TIME temp;
int h, m, s, diff, totsec1, totsec2;
totsec1 = toseconds (t1);
totsec2 = to seconds (t2);
diff = abs (totsec1 - totsec2);
(or)
temp.h = diff / 3600;
temp.m = (diff % 3600) / 60;
temp.s = (diff % 3600) % 60;
printf ("%d : %d : %d", h, m, s);
(or)
return temp;
}
```

```
res = *(matrix + (i*n)+j);
if (res % 2 != 0)
sum += res;
```

26) 8 cells (cell complete)

```
int* cellcomplete (int* cells, int days)
{
  int res[8] = {0}, ind, ctr;
  res[0] = 0 ^ cells[1];
  for(ind=1; ind<7; ind++)
    res[ind] = cells[ind-1] ^ cells[ind+1];
  res[7] = cells[6] ^ 0;
  for (ind=0; ind<8; ind++)
    cells[ind] = res[ind];
  }
  return res;
```

for (ctr=1; ctr<=days; ctr++) {

27) Exponent

```
else
{
Exponent exp = new Exponent (base, exponent);
    res = 1.0/exponent.posExponent();
}
```

28) Delete Duplicate:
2, 3, 2, 2, 5, 6, 6, 7

```
for(i=0; i<len; i++)
{
  for (j=i+1; j<len; j++)
  {
    if (arr[j]==arr[i])
    {
      for(k=j; k<len-1; k++)
        arr[k] = arr[k+1];
      len = len-1;
      count = count+1;
    } j--;
```

Manchester: Java

```
res[0] = !(arr[0]==0);
for
{
res[i] = (result)?0:1;
}
```

Occurrence:

```
if(arr[i++] ==value)
```

http://14.102.2.231:8080/AssessmentTool

http://14.102.2.232:8080/AssessmentTool

userid : 1234 password : admin

Fill & logout
Then login , userid: emailid
password: student123

CTS WIPRO ACCENTURE model test verbal
quants reasoning