3/8/23

Quantitave Aptitude

Group 1

1) Problems on Numbers
2) Problems on HCF and LCM
3) Fractions & Decimals
4) Square Root and Cube Root
5) Simplification
6) Surds and Indices

I) Problem on Numbers

1) The sum of 2 nos is 36 and product is 248. What will be sum of their reciprocals?

Soln: $A+B=36$, $AB=248$

$\frac{1}{A}+\frac{1}{B} = \frac{B+A}{AB} \Rightarrow \frac{36}{248} \Rightarrow \frac{9}{62}$ // → sum of reciprocal

2) In poultry farm having hens and pigs, Rohan can see 84 heads and 282 legs. How many hens are there?

Soln:
Hen → 1 head, 2 legs
Pig → 1 head, → 4 legs

Heads → $H+P = 84$ — ① $\times 4 \Rightarrow 4H+4P = 336$ → ③

Legs → $2H+4P = 282$ — ② (Hen, Pig)

③ − ② $\Rightarrow 4H+4P-2H-4P = 336-282$

$\Rightarrow 2H = 54$

$\boxed{H=27}$ → No of Hens → 27

3) Summation of 5 consecutive no.s is 335. If we add largest and smallest number what we get?

Soln: Trick in consecutive nos → 5, 6, 7, 8, 9, 10

→ 5, 5+1, 5+2, 5+3, 5+4 ..

representation of consec no.s → $x, x+1, x+2, x+3, x+4, ..$

$\rightarrow x + (x+1) + (x+2) + (x+3) + (x+4) = 335$

$5x + 10 = 335$

$5x = 325$

$\boxed{x = 65}$

Repr

$65 + 66 + 67 + 68 + 69 = 335$

↓ Smallest ↓ largest

sum of largest and smallest $= 65 + 69$

$= 134$ //

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4) Since Raj was not paying attention in class, instead of multiplying M by 3/4, he divided by 3/4. This led to a difference of 14 between the two answers. What is value of M?

Sol:

$$M \times \frac{3}{4} - \frac{M}{3/4} = 14$$

$$\frac{3M}{4} - \frac{4M}{3} = 14 \rightarrow \frac{9M - 16M}{12} = 14 \Rightarrow \frac{-7M}{12} = 14$$

$\Rightarrow M = -24 \rightarrow \boxed{M = 24}$

↳ dont consider (−) as they didnt specify −14 (or) +14 as difference and whether $M \times 3/4$ or $\frac{M}{3/4}$ is greater

Tip in exam, if give option a) −24, b) 24 ✓

if a) −24 b) 24 c) +24 (or) −24 ✓

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5) Raman has 2 urns. Both these urns have some pebbles. If 20 pebbles from urn B are shifted to urn A then, the no of pebbles in each urn become interchanged. But if 10 pebbles from urn A are put into urn B, then no of pebbles in B are twice the no in A. How many pebbles do A and B have respectively?

A	B
Initial	

A ← 20 — B

$A \Leftarrow (B-20) \Rightarrow B-20=A$

condition (1) → interchange

$B-A=20$ // ①

cond 2 → $(A-10)2 = B+10$

$2A-20 = B+10$

$2A-B=30$ → ②

① + ②

$\rightarrow 2A-B+B-A=50$

$\boxed{A=50}$ //

from eqn ① → $B-A=20$

$B-50=20$

$\boxed{B=70}$ //

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6) On exchanging the digits in units and tens place the diff btw original and new number becomes 27. The digit in tens place is 3 times the digit in hundreds place. what is 75% of original number?

(digit in units place is 2 times hundreds place)

Soln: Let the number be HTU

can be represented as → $H\times100 + T\times10 + U\times1 = HTU$ ①

given $U=2H$, $T=3H$

① → $100H + 30H + 2U = HTU$

$132H = HTU$ - ②

also diff between org no and change no is 27

H T U

changed no ⇒ $100H + 10U + 1T$

$\Rightarrow 100H + 20H + 3H \Rightarrow 123H$

$132H - 123H = 27$

$9H = 27$

$\boxed{H=3}$ → $\boxed{U=6}$

$\boxed{T=9}$

HTU

⇒ 396

75% of 396 → $\frac{3}{\cancel{75}_{100}} \times \overset{99}{\cancel{396}}_{4}$

$= 3\times99 \rightarrow 297$ //

↓

75% of HTU

7) In an area 20% families have 5 children each; But 8% have no children at all. Amongst rest of families 18% have 4 children and 27% have only one child. How many families live in the area, if 297 families have either 2 (or) 3 children each?

Soln: consider 100 familes

20% → 5 childre / ~~100~~ ; 8% no childre

→ ~~28%~~ 10% → 5 (or) 0 child

remains 90 families → 18% 4 child

27% 1 child

+ 45% → 4 (or) 1

remain 100 − 45 → 55% → 2 (or) 3 fam

child → 5, 4, 3, 2, 1, 0

$55\% \text{ of } 90 = \frac{55}{100} \times 90 = 49.5$

for 100 fam → 49.5% 2 (or) 3 child

so if 2 (or) 3 child is 297 fam then total fam = ?

$100 \rightarrow 49.5$

$x \rightarrow 297$

$\rightarrow \frac{29700}{49.5} = x$

$x = 600$ fam total //

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8) 3/4 part of tank is full of water. When 30 l of water is taken out it becomes empty. The capacity of tank is?

Soln: 3/4 tank = 30 litre

1 tank = ? lit

$\rightarrow \frac{3}{4} \times x = 30 \times 1$

$3x = 120$

$x = 40$

capacity of tank is 40 litre

9) A group wanted to renovate their club. Each member contributed an amount equal to twice the no of members in the club. But the government contributed the same amount as no of members. If each member had contributed the same amount as the no of members and government had given an amount twice the no of members, then they would have Rs. 210 less. How many members are there?

Soln: Let no of member be M

condition 1 ⇒ $2M(M) + M \rightarrow 2M^2 + M$ — ①
(member) (govt)

cond 2 ⇒ $M(M) + 2M \rightarrow M^2 + 2M$ — ②
(mem) (govt)

$2M^2 + M - M^2 - 2M = 210$

$M^2 - M = 210 \rightarrow M^2 - M - 210 = 0$

$(M-15)(M+14) = 0$

$M = 15$ ✓ ← $M = -14$ ✗

210
/ \ -1
-15 14

alternate way) Check eqn ① and ② with the given answer options

10) Two digit number A is formed by reversing the digits of B. B is 45 less than A. The sum of the digits of B is 9. What is A?

Soln: 2 digit no be → TU → $10T + U$ → let this be B

then given A → UT (reverse of B)

A → $U \times 10 + T \times 1$

also $T + U = 9$ — ① (B)

also B is A − 45

$(10T + U) = (10U + T) - 45$ → $10T + U = 10U + T - 45$

÷9] $9T - 9U = -45$

$T - U = -5$ — ②

① + ② → T + U + T − U = 9 − 5

2T = 4

T = 2 → T − U = −5

2 − U = −5

U = 2 + 5

U = 7

alternate soln

if options given

w.k.T) cond sum of 2 digits → 9

so add the nos in options and choose option

A → UT

A → 72 //

B → TU.

B = 27

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11) 280 oranges are divided among some boys and girls whose tot no is 50 so that each boy gets 5 oranges and each girl get 7 oranges. The no of girls is:

Soln:

B + G = 50 − ① → ×5 → 5B + 5G = 250 − ③

5B + 7G = 280 − ② →

③ − ② ⇒ 5B + 5G − 5B − 7G = 250 − 280

−2G = −30

G = 15