

Date: 29.10.24

Mian Farzeen  
Umar  
(BSC)

01  
Dos and Don'ts for General  
Science & Ability Paper  
Hi there, you've done well. Know  
that acquiring knowledge is one  
thing and reproducing it in paper  
according to what's asked is  
another. There are a few things I  
would like to highlight.

1. A 5 marks part requires at least 2 and at max 3 sides of a paper. Know that there can be two or three parts of a question and their marks are divided accordingly. So, address all of them in a just manner.
2. Focus on time management. You get 35 minutes to solve one question and about 8 minutes per 5 mark part. Manage your time accordingly.
3. You need to understand that your paper is supposed to look more scientific than theoretical. So, add flowcharts and diagrams where required.
4. Your handwriting and neatness can be really impactful. Avoid cutting and overwriting.

5. Focus on your spellings and your grammar. Here, in OSA there's no deduction in marks but your expression will definitely create an impact.

6. In ability portion, give explanation for analytical ability question in words. You need to understand that a 5 mark part requires all steps written and explained.

Good luck for OSS 2025. You're gonna rock in sha Allah. :)

1)  $\text{Mean} = \frac{\text{Sum of all values}}{\text{Number of all values}}$

$\Rightarrow \frac{9+8+10+u+12}{5} = 15$

2)  $\Rightarrow$  Sum of known values:

$$9+8+10+12 = 39$$

3)  $\Rightarrow$  Equation:  $\frac{39+u}{5} = 15$

4)  $\Rightarrow$  Solving the equation:

$$39+u = 15 \times 5$$

$$39+u = 75$$

$$u = 75 - 39$$

u = 36  $\rightarrow$  Value of u

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6(b)

Mixture contains sugar solution and coloured water in ratio of 4:3.

→ Let's denote

i) Initial quantity of sugar solution  
as  $4x$  liters

ii) Initial quantity of coloured water  
as  $3x$  liters

• Total initial quantity of mixture  
is  $4x + 3x = 7x$  liters

→ After 10 liters of coloured water  
is added

i) Quantity of sugar solution  
remains  $4x$  liters

ii) Quantity of coloured water changes  
to  $3x + 10$  liters

→ As per the information provided,  
the ratio of sugar solution to coloured  
water now becomes  $\Rightarrow 4:5$

(2)

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→ Equation as per new ratio:

$$\frac{4x}{3x+10} = \frac{4}{5}$$

→ Solving the Equation

$$4x \times 5 = 4 \times (3x+10)$$

$$20x = 12x + 40$$

$$8x = 40$$

$$x = 5$$

→ Calculating Initial Quantity of  
Sugar Solution

• Initial Quantity of sugar

Solution is "4x",  $x=5$

$$= 4(5) = 20$$

Thus, initial quantity of  
Sugar solution in the  
mixture is 20 liters

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6(c)

Football's Shape is That of a Sphere. Thus, to find The volume OF The Football, we use The formula of a sphere:

$$V = \frac{4}{3} \pi r^3$$

V: Volume

R: Radius

$\pi: 3.142$  (approx)

$\Rightarrow$  provided: 12cm

→ Calculating The volume with The provided information, using The formula:

$$V = \frac{4}{3} \times \pi \times (12)^3$$

$$V = \frac{4}{3} \times 3.142 \times 1728$$

$$V = \frac{4}{3} \times 3.142 \times 576$$

$$V = 12.568 \times 576$$

$$V = 7,239.16$$

The volume of The Football is approximately 7,239.16 (cubic cm)

(3)

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6(a) Provided Series:  $-10, -8, 6, 40, 102, ?$  $\rightarrow$  I. Identifying the pattern

i) Differences in consecutive terms

- $-8 - (-10) = 2$
- $6 - (-8) = 14$
- $40 - 6 = 34$
- $102 - 40 = 62$

ii) Examining differences between  
The differences

2, 14, 34, 62

12, 20, 28

8 8

 $\Rightarrow$  Differences form

a sequence that

increases by 8

- Next difference in the sequence should

$$\text{be: } 28 + 8 = 36$$

iii) Adding difference to the last difference

$$62 + 36 = 98$$

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→ Adding this result to the last term  
of the original sequence to find  
the missing term

$$102 + 98 = 200$$

The next number in the  
Sequence is 200

→ Question 7

(a) → Provided Equation: 20% of  $x = y$

→ Expanding the Equation:

$$\frac{20}{100} \times x = y$$

$$y = \frac{x}{5}$$

→ Finding value of  $y\%$  of  $a_0$  in  
terms of  $x$

i)  $y\% \text{ of } a_0 = \frac{y}{100} \times a_0$

ii) Substituting  $y$  from earlier equation:

$$y\% \text{ of } a_0 = \frac{x/5}{100} \times a_0$$

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→ Simplifying The expression:

$$= \frac{x}{5 \times 100} \times 20$$

$$= \frac{x}{500} \times 20$$

$$= \frac{20x}{500} = \frac{x}{25}$$

Y.I. of 20 in terms of  $x$  is

$$\boxed{\frac{2x}{25}}$$

7(b) → Designing Monthly Salaries:

i) P and Q

• Average monthly salary = Rs. 5050

$$\Rightarrow \frac{p+q}{2} = 5050$$

$$\Rightarrow p+q = 10,100 \rightarrow ①$$

ii) Q and R

• Average monthly salary = Rs. 6250

$$\Rightarrow \frac{q+r}{2} = 6250$$

$$\Rightarrow q+r = 12,500 \rightarrow ②$$

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### iii) P and R

• Average monthly salary is = Rs. 5200

$$\Rightarrow \frac{P+R}{2} = 5200$$

$$\Rightarrow P+R = 10,400 \rightarrow ③$$

⇒ Solving Equations (1, 2, 3)

$$\cdot (P+Q) + (Q+R) + (P+R) = 10,100 +$$

$$12,500 + 10,400$$

$$\Rightarrow 2P + 2Q + 2R = 33,000$$

$$\Rightarrow P+Q+R = \frac{33,000}{2} = 16,500$$

i) Subtracting equation  $(P+Q+R)$  from

$$(P+Q+R)$$

$$(P+Q+R) - (P+Q+R)$$

$$\Rightarrow 16,500 - 10,100$$

$$\cdot R = 6400$$

ii) Substituting R into equation (3):  $P+R$

$$\Rightarrow P + 6400 = 10,400$$

$$\Rightarrow P = 10,400 - 6400 = 4000$$

Monthly Salary of P is Rs. 4,000

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## 07(a) → Examining Probabilities of ~~EEG~~ S/100

## 2. Coin Toss

$$ii) \text{ Head-Head (HH)} = \frac{1}{4}$$

iii) Head-Tail (HT) =  $\frac{1}{2}$

$$\text{iii) Tail - Head(GH) = } \frac{1}{e}$$

iv) Tail - Tail ( $\tau\tau$ ) =  $\frac{1}{2}$

→ Provided Information

- Total number of trials (coin tosses) = 500
- Number of times two heads occurred = 105
- Number of times one head occurred = 275
- Number of times no head occurred = 130

# → Calculating Probabilities

i) Probability of getting a heads.

$$P(\text{Two Heads}) = \frac{105}{500} = 0.21$$

ii) Probability of getting 1 head:

$$P(\text{One Head}) = \frac{275}{500} = 0.55$$

iii) Probability of getting no heads:

$$P(\text{No heads}) = \frac{100}{500} = 0.24$$

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7(d)

→ Let Jamie's current age be  $x$ , and

Jamie's dad's current age be  $4x$

(In 14 years)

(Dad is 4 times

older than

Jamie)

• Jamie's age will be:  $x + 14$

• Jamie's dad's age will be:  $4x + 14$

→ As per provided information, in 14

years, Jamie's dad will be twice the  
age of Jamie:

$$4x + 14 = 2(x + 14)$$

→ Solving the Equation

i)  $4x + 14 = 2x + 28$

$$4x - 2x = 28 - 14$$

$$2x = 14$$

$$x = 7$$

• Jamie's current age is  $\boxed{7}$

→ Jamie's dad's current age: ..

$$4x, x = 7$$

$$\Rightarrow 4(7) = 28$$

Sum of Jamie's age and his  
dad's age is:

$$7 + 28 = \boxed{35}$$