

Symbiosis Entrance Test (SET)

Quantitative Aptitude — Sample Paper 5

Total Questions:	16	Maximum Marks:	16
Duration:	16 minutes	Marking Scheme:	+1 per correct answer, no negative marking
Mode:	Online CBT		

Instructions

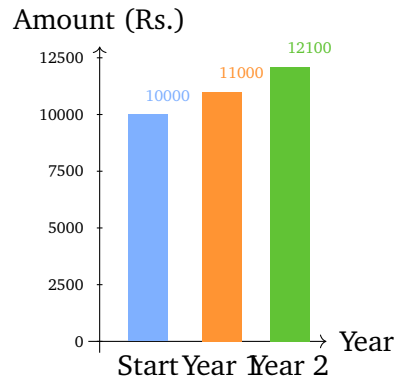
1. This paper contains **16 multiple-choice questions** carrying **1 mark each**.
2. Each question has **four options** (A)–(D). Choose the single best answer.
3. There is **no negative marking** for wrong answers.
4. Attempt all questions within the stipulated time of **16 minutes**.
5. Syllabus: Arithmetic, Algebra, Geometry, Data Interpretation, and Probability — class 9–10 level, as tested in SET (Symbiosis Entrance Test).

SECTION: Quantitative Aptitude (16 Questions × 1 Mark)

- Q1.** A principal of Rs. 8000 is invested at a simple interest rate of 5% per annum for 3 years. What is the interest earned?
- (A) Rs. 1200
(B) Rs. 1000
(C) Rs. 1500
(D) Rs. 800
- Q2.** Class A has 20 students with an average score of 75, and Class B has 30 students with an average score of 85. What is the combined average score of all 50 students?
- (A) 79
(B) 81
(C) 80

(D) 83

Q3. A sum of Rs. 10 000 is invested at 10% per annum compound interest. What is the compound interest earned at the end of 2 years?



- (A) Rs. 1800
- (B) Rs. 2000
- (C) Rs. 2100
- (D) Rs. 2500

Q4. What is the HCF (Highest Common Factor) of 36, 48, and 60?

- (A) 6
- (B) 8
- (C) 9
- (D) 12

Q5. What is the unit digit of 7^{52} ?

- (A) 1
- (B) 3
- (C) 7
- (D) 9

Q6. A father's age is 4 times his son's age. After 12 years, the father will be twice as old as his son. What is the father's present age?

- (A) 20 years
- (B) 24 years



- (C) 28 years
- (D) 32 years

Q7. A invests Rs. 20 000 for 6 months and B invests Rs. 15 000 for the full year in a business. If the total profit at the end of the year is Rs. 10 000, what is A's share of the profit?

- (A) Rs. 3000
- (B) Rs. 3600
- (C) Rs. 4000
- (D) Rs. 5000

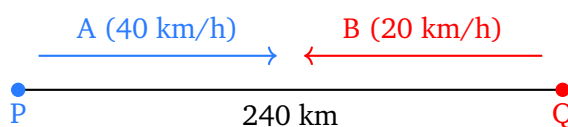
Q8. A shopkeeper sells goods at cost price but uses a faulty weight of 800 g instead of 1 kg. What is his actual profit percentage?

- (A) 10%
- (B) 15%
- (C) 20%
- (D) 25%

Q9. An article is sold for Rs. 480 at a loss of 20%. At what price should the article be sold to make a profit of 25%?

- (A) Rs. 750
- (B) Rs. 720
- (C) Rs. 780
- (D) Rs. 800

Q10. Towns P and Q are 240 km apart. Persons A and B start simultaneously from P and Q respectively at 6:00 AM, walking towards each other. A walks at 40 km/h and B at 20 km/h. At what time will they meet?



- (A) 9:00 AM



- (B) 10:00 AM
- (C) 11:00 AM
- (D) 12:00 PM

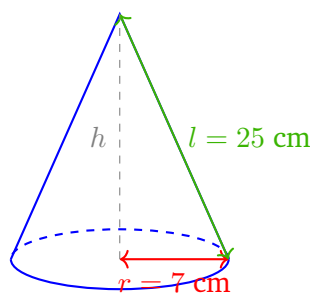
Q11. A motorboat travels 24 km downstream in 3 hours and the same 24 km upstream in 4 hours. What is the speed of the boat in still water?

- (A) 5 km/h
- (B) 6 km/h
- (C) 7 km/h
- (D) 8 km/h

Q12. Pipe A can fill a tank in 12 hours and Pipe B can drain the full tank in 18 hours. If both pipes are opened simultaneously when the tank is empty, how many hours will it take to fill the tank?

- (A) 24 hours
- (B) 28 hours
- (C) 30 hours
- (D) 36 hours

Q13. A cone has a base radius of 7 cm and a slant height of 25 cm. Find the total surface area of the cone. (Use $\pi = 22/7$)



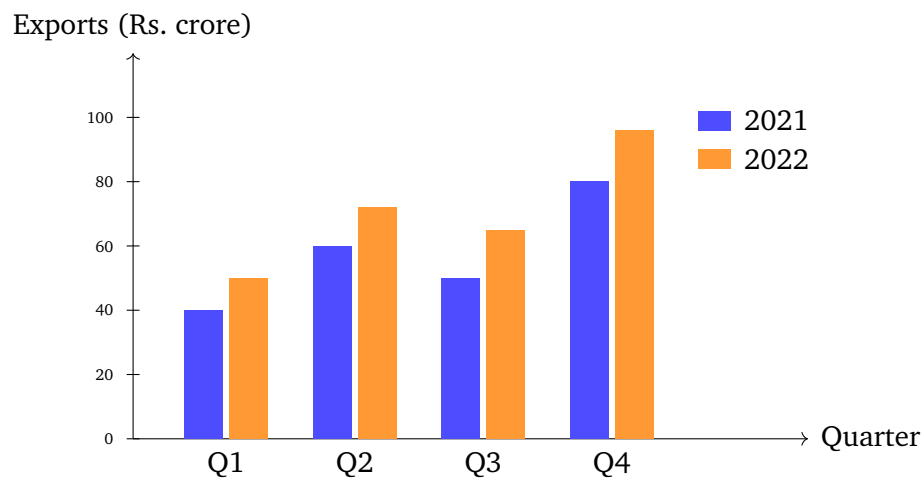
- (A) 704 cm^2
- (B) 770 cm^2
- (C) 616 cm^2
- (D) 550 cm^2

Q14. The diagonals of a rhombus are 24 cm and 10 cm. What is the perimeter of the rhombus?



- (A) 48 cm
- (B) 52 cm
- (C) 56 cm
- (D) 60 cm

Q15. The bar chart shows the quarterly exports (in Rs. crore) of Company X for 2021 and 2022. In which quarter did the exports show the **highest percentage increase** from 2021 to 2022?



- (A) Q1
- (B) Q2
- (C) Q3
- (D) Q4

Q16. A card is drawn at random from a standard deck of 52 playing cards. What is the probability of drawing a face card (Jack, Queen, or King)?

- (A) $\frac{1}{13}$
- (B) $\frac{1}{4}$
- (C) $\frac{4}{13}$
- (D) $\frac{3}{13}$



DETAILED SOLUTIONS

Sol. 1.

Solution

Topic: Simple Interest

$$\text{Formula: SI} = \frac{P \times R \times T}{100}$$

$$\text{SI} = \frac{8000 \times 5 \times 3}{100} = \frac{1,20,000}{100} = \text{Rs. 1200}$$

Why other options are wrong:

(B) Rs. 1000 would require only 2.5 years.

(C) Rs. 1500 would require a 6.25% rate.

(D) Rs. 800 corresponds to 2 years, not 3.

Answer: (A) [Go Back to Q 1](#)

Sol. 2.

Solution

Topic: Weighted Average

$$\text{Total marks of Class A} = 20 \times 75 = 1500.$$

$$\text{Total marks of Class B} = 30 \times 85 = 2550.$$

$$\text{Combined total} = 1500 + 2550 = 4050.$$

$$\text{Combined average} = \frac{4050}{50} = 81.$$

Note: The answer is *not* the simple average $(75 + 85)/2 = 80$, because the classes have different sizes.

Answer: (B) [Go Back to Q 2](#)

Sol. 3.

Solution

Topic: Compound Interest

$$A = P \left(1 + \frac{r}{100} \right)^n = 10000 \times (1.10)^2 = 10000 \times 1.21 = 12100$$

$$\text{CI} = A - P = 12100 - 10000 = \text{Rs. 2100}$$

Why other options are wrong:

(A) Rs. 1800 = Simple interest for 2 years at 9% – incorrect rate/method.

(B) Rs. 2000 = SI for 2 years at 10% – misses the compounding on Year 1 interest.

(D) Rs. 2500 = CI at a higher rate.

Answer: (C) [Go Back to Q 3](#)


Sol. 4.

Solution**Topic: Number System / HCF**

Prime factorizations:

$$36 = 2^2 \times 3^2, \quad 48 = 2^4 \times 3, \quad 60 = 2^2 \times 3 \times 5.$$

HCF = product of lowest powers of common prime factors = $2^2 \times 3 = 12$.**Answer: (D)** [Go Back to Q 4](#)

Sol. 5.

Solution**Topic: Number System / Cyclicity of Unit Digit**

Unit digits of powers of 7 repeat in a cycle of length 4:

$$7^1 \rightarrow 7, \quad 7^2 \rightarrow 9, \quad 7^3 \rightarrow 3, \quad 7^4 \rightarrow 1, \quad 7^5 \rightarrow 7, \dots$$

 $52 = 4 \times 13$, so the remainder when divided by 4 is 0.A zero remainder means the unit digit equals that of 7^4 , which is 1.**Answer: (A)** [Go Back to Q 5](#)

Sol. 6.

Solution**Topic: Ages**Let son's present age = x years. Then father's present age = $4x$ years.After 12 years: $4x + 12 = 2(x + 12)$

$$\Rightarrow 4x + 12 = 2x + 24 \Rightarrow 2x = 12 \Rightarrow x = 6$$

Father's present age = $4 \times 6 = 24$ years.Check: Son is 6, father is 24. After 12 years: son 18, father 36 = 2×18 . ✓**Answer: (B)** [Go Back to Q 6](#)

Sol. 7.

Solution**Topic: Partnership / Profit Sharing**Effective investments = Investment $\times$ Time:

$$\text{A: } 20000 \times 6 = 1,20,000$$

$$\text{B: } 15000 \times 12 = 1,80,000$$

Ratio = $1,20,000 : 1,80,000 = 2 : 3$. Total parts = 5.

$$A's \text{ share} = \frac{2}{5} \times 10000 = \text{Rs. } 4000.$$

Answer: (C) [Go Back to Q 7](#)

Sol. 8.

Solution

Topic: Profit and Loss / False Weight

The shopkeeper charges for 1000 g but delivers only 800 g.

Profit per transaction (in units of goods) = $1000 - 800 = 200$ g.

$$\text{Profit\%} = \frac{200}{800} \times 100 = \mathbf{25\%}.$$

Answer: (D) [Go Back to Q 8](#)

Sol. 9.

Solution

Topic: Profit and Loss / Finding New SP

SP at 20% loss = 480. Let CP = x .

$$x \times 0.80 = 480 \Rightarrow x = 600.$$

Required SP for 25% profit = $600 \times 1.25 = \text{Rs. } 750$.

Answer: (A) [Go Back to Q 9](#)

Sol. 10.

Solution

Topic: Time, Speed and Distance / Meeting Point

Combined speed = $40 + 20 = 60$ km/h.

$$\text{Time to meet} = \frac{240}{60} = 4 \text{ hours.}$$

They start at 6:00 AM $\Rightarrow$ they meet at 10:00 AM.

Answer: (B) [Go Back to Q 10](#)

Sol. 11.

Solution

Topic: Boats and Streams

$$\text{Downstream speed} = \frac{24}{3} = 8 \text{ km/h.}$$

$$\text{Upstream speed} = \frac{24}{4} = 6 \text{ km/h.}$$



$$\text{Speed in still water} = \frac{\text{downstream} + \text{upstream}}{2} = \frac{8 + 6}{2} = 7 \text{ km/h.}$$

Answer: (C) [Go Back to Q 11](#)

Sol. 12.

Solution

Topic: Pipes and Cisterns

$$\text{Filling rate of A} = \frac{1}{12} \text{ tank/hour.}$$

$$\text{Draining rate of B} = \frac{1}{18} \text{ tank/hour.}$$

$$\text{Net filling rate} = \frac{1}{12} - \frac{1}{18} = \frac{3 - 2}{36} = \frac{1}{36} \text{ tank/hour.}$$

$$\text{Time to fill the tank} = 36 \text{ hours.}$$

Answer: (D) [Go Back to Q 12](#)

Sol. 13.

Solution

Topic: Mensuration / Cone (Total Surface Area)

$$\text{TSA} = \pi r(l + r) = \frac{22}{7} \times 7 \times (25 + 7) = 22 \times 32 = 704 \text{ cm}^2$$

$$\text{Breaking down: Lateral SA} = \pi r l = 22 \times 25 = 550 \text{ cm}^2; \text{ Base area} = \pi r^2 = 22 \times 7 = 154 \text{ cm}^2;$$

$$\text{Total} = 550 + 154 = 704 \text{ cm}^2.$$

Answer: (A) [Go Back to Q 13](#)

Sol. 14.

Solution

Topic: Geometry / Rhombus

The diagonals of a rhombus bisect each other at right angles.

$$\text{Half-diagonals: } d_1/2 = 12 \text{ cm and } d_2/2 = 5 \text{ cm.}$$

$$\text{Side} = \sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13 \text{ cm.}$$

$$\text{Perimeter} = 4 \times 13 = 52 \text{ cm.}$$

Answer: (B) [Go Back to Q 14](#)

Sol. 15.



Solution**Topic: Data Interpretation / Percentage Change**

Quarter	2021	2022	Increase	% Increase
Q1	40	50	10	$(10/40) \times 100 = 25\%$
Q2	60	72	12	$(12/60) \times 100 = 20\%$
Q3	50	65	15	$(15/50) \times 100 = 30\%$
Q4	80	96	16	$(16/80) \times 100 = 20\%$

Q3 has the highest percentage increase at 30%.

Answer: (C) [Go Back to Q 15](#)

Sol. 16.

Solution**Topic: Probability**

Total cards = 52.

Face cards per suit: J, Q, K = 3. Total face cards = $3 \times 4 = 12$.

$$P(\text{face card}) = \frac{12}{52} = \frac{3}{13}.$$

Answer: (D) [Go Back to Q 16](#)

ANSWER KEY

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	A	2	B	3	C	4	D	5	A
6	B	7	C	8	D	9	A	10	B
11	C	12	D	13	A	14	B	15	C
16	D								

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