CUET 2026 GAT May 22 Shift 2

Question Paper (Memory-Based) with Solutions

Conducted by National Testing Agency (NTA)

General Instructions

(i) The examination will be conducted in Computer-Based Test (CBT) mode.

(ii) Each question carries +5 marks for correct answer and -1 mark for wrong answer.

(iii) The total number of questions are 50.

(iv) Duration of the exam is 1 hour (60 minutes).

1. A car travels 105 km in 3 hours and a train travels 252 km in 4 hours. The ratio of speed of the car to that of the train is:

(A) 9 : 11

(B) 3 : 5

(C) 2 : 7

(D) 5 : 9

Correct Answer: (D) 5 : 9

Solution:

Concept: Speed is defined as:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

To find the ratio of speeds:

$$\text{Ratio} = \frac{\text{Speed of car}}{\text{Speed of train}}$$

Step 1: Calculate the speed of the car.

Given:

$$\text{Distance} = 105\,\text{km}$$

$$\text{Time} = 3\,\text{hours}$$

Using:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed of car} = \frac{105}{3}$$

$$= 35\,\text{km/h}$$

Step 2: Calculate the speed of the train.

Given:

$$\text{Distance} = 252\,\text{km}$$

$$\text{Time} = 4\,\text{hours}$$

$$\text{Speed of train} = \frac{252}{4}$$

$$= 63\,\text{km/h}$$

Step 3: Find the ratio of their speeds.

$$35 : 63$$

Divide both terms by 7:

$$5 : 9$$

Therefore,

$$\boxed{5 : 9}$$

Quick Tip: Remember:

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

For ratios:

- First calculate individual speeds
- Simplify the ratio to lowest terms

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2. The diameter of a circular garden is 140 m. Its area is equal to a rectangular field whose sides are in the ratio 11 : 7. The perimeter (in m) of the rectangular field is (take $\pi = \frac{22}{7}$):

(A) $360\sqrt{2}$

(B) $180\sqrt{2}$

(C) $120\sqrt{2}$

(D) $270\sqrt{2}$

Correct Answer: (D) $270\sqrt{2}$

Solution:

Concept: Area of a circle:

$$A = \pi r^2$$

For a rectangle whose sides are in ratio 11 : 7, let the sides be:

$$11x \quad \text{and} \quad 7x$$

Then:

$$\text{Area} = 11x \times 7x$$

Step 1: Find the area of the circular garden.

Given:

$$\text{Diameter} = 140\,\text{m}$$

Hence radius:

$$r = \frac{140}{2} = 70\,\text{m}$$

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Using:

$$A = \pi r^2$$

$$A = \frac{22}{7} \times 70 \times 70$$

$$A = 22 \times 10 \times 70$$

$$A = 15400\,\text{m}^2$$

Step 2: Form the area equation for the rectangle.

Sides of rectangle are in ratio:

$$11 : 7$$

Let sides be:

$$11x \quad \text{and} \quad 7x$$

Area:

$$11x \times 7x = 77x^2$$

Since areas are equal:

$$77x^2 = 15400$$

$$x^2 = \frac{15400}{77}$$

$$x^2 = 200$$

$$x = 10\sqrt{2}$$

Step 3: Calculate the perimeter of rectangle.

Perimeter:

$$P = 2(l + b)$$

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$$P = 2(11x + 7x)$$

$$P = 2(18x)$$

$$P = 36x$$

Substituting:

$$x = 10\sqrt{2}$$

$$P = 36 \times 10\sqrt{2}$$

$$P = 360\sqrt{2}$$

Therefore,

$$\boxed{360\sqrt{2}}$$

Quick Tip: Remember:

- Area of circle:

$$\pi r^2$$

- If rectangle sides are in ratio $a : b$:

$$\text{Sides} = ax,\ bx$$

- Perimeter:

$$2(l + b)$$

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3. If 12 men or 20 women can do a work in 54 days, then in how many days can 9 men and 12 women together do the work?

(A) 38 days

(B) 32 days

(C) 40 days

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(D) 35 days

Correct Answer: (C) 40 days

Solution:

Concept: Work done is calculated using:

$$\text{Work} = \text{Efficiency} \times \text{Time}$$

If two groups complete the same work in the same time, then their total efficiencies are equal.

Step 1: Find the relation between efficiency of men and women.

Given:

$$\text{12 men complete work in 54 days}$$

Also:

$$\text{20 women complete same work in 54 days}$$

Hence:

$$12 \text{ men} = 20 \text{ women}$$

Dividing by 4:

$$3 \text{ men} = 5 \text{ women}$$

Therefore:

$$1 \text{ man} = \frac{5}{3} \text{ women}$$

Step 2: Convert all workers into women-equivalent.

Given:

$$9 \text{ men and } 12 \text{ women}$$

Since:

$$1 \text{ man} = \frac{5}{3} \text{ women}$$

$$9 \text{ men} = 9 \times \frac{5}{3} = 15 \text{ women}$$

Total equivalent women:

$$15 + 12 = 27 \text{ women}$$

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Step 3: Calculate the required number of days.

We know:

$$20 \text{ women complete work in } 54 \text{ days}$$

Using inverse proportion:

$$\text{Days} = \frac{20 \times 54}{27}$$

$$= 40$$

Therefore,

$$\boxed{40 \text{ days}}$$

Quick Tip: Remember:

- Work and time are inversely proportional to efficiency
- If:

  $$a \text{ men} = b \text{ women}$$

  then efficiencies can be converted easily
- More workers $\Rightarrow$ fewer days

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4. The angle of elevation of the top of a hill at the foot of the tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30°. If the tower is 50 m high, what is the height of the hill?

(A) 180 m

(B) 120 m

(C) 100 m

(D) 150 m

Correct Answer: (D) 150 m

Solution:

Concept: For problems involving angles of elevation, use:

$$\tan\theta = \frac{\text{Perpendicular}}{\text{Base}}$$

If two objects are observed from each other's foot, the horizontal distance between them remains the same.

Step 1: Assume the height of the hill and horizontal distance.

Let:

$$\text{Height of hill} = h$$

Let the horizontal distance between the tower and hill be:

$$x$$

Height of tower:

$$50\,\text{m}$$

Step 2: Use angle of elevation from foot of tower to top of hill.

Given:

$$\theta = 60^\circ$$

Using:

$$\tan 60^\circ = \frac{h}{x}$$

$$\sqrt{3} = \frac{h}{x}$$

$$h = \sqrt{3}x \quad \cdots(1)$$

Step 3: Use angle of elevation from foot of hill to top of tower.

Given:

$$\theta = 30^\circ$$

Using:

$$\tan 30^\circ = \frac{50}{x}$$

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$$\frac{1}{\sqrt{3}} = \frac{50}{x}$$

$$x = 50\sqrt{3}$$

Step 4: Substitute value of x into equation (1).

$$h = \sqrt{3}(50\sqrt{3})$$

$$h = 50 \times 3$$

$$h = 150\,\text{m}$$

Therefore,

$$\boxed{150\,\text{m}}$$

Quick Tip: Remember:

- $$\tan\theta = \frac{\text{Height}}{\text{Distance}}$$
- $$\tan 60^\circ = \sqrt{3}$$
- $$\tan 30^\circ = \frac{1}{\sqrt{3}}$$

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5. A can do $\frac{1}{3}$ of a work in 30 days. B can do $\frac{4}{5}$ of the same work in 24 days. They worked together for 20 days. C completed the remaining work in 8 days. Working together A, B and C will complete the same work in:

(A) 15 days

(B) 10 days

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(C) 18 days

(D) 12 days

Correct Answer: (D) 12 days

Solution:

Concept: Work done per day is called efficiency.

$$\text{Efficiency} = \frac{\text{Work}}{\text{Time}}$$

Combined efficiency:

$$\text{Total work done} = (\text{Combined efficiency}) \times \text{Time}$$

Step 1: Find efficiency of A.

A completes:

$$\frac{1}{3}$$

of the work in 30 days.

So efficiency of A:

$$A = \frac{1/3}{30}$$

$$A = \frac{1}{90}$$

Thus:

$$\text{A's one day work} = \frac{1}{90}$$

Step 2: Find efficiency of B.

B completes:

$$\frac{4}{5}$$

of the work in 24 days.

So efficiency of B:

$$B = \frac{4/5}{24}$$

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$$B = \frac{4}{120}$$

$$B = \frac{1}{30}$$

Thus:

$$\text{B's one day work} = \frac{1}{30}$$

Step 3: Calculate work done by A and B together in 20 days.

Combined one day work:

$$\frac{1}{90} + \frac{1}{30}$$

Taking LCM:

$$= \frac{1+3}{90}$$

$$= \frac{4}{90} = \frac{2}{45}$$

Work done in 20 days:

$$20 \times \frac{2}{45}$$

$$= \frac{40}{45} = \frac{8}{9}$$

Thus remaining work:

$$1 - \frac{8}{9} = \frac{1}{9}$$

Step 4: Find efficiency of C.

C completes remaining:

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

work in 8 days.

So:

$$C = \frac{1/9}{8}$$

$$C = \frac{1}{72}$$

Step 5: Find combined efficiency of A, B and C.

$$\frac{1}{90}+\frac{1}{30}+\frac{1}{72}$$

LCM of $90, 30, 72 = 360$

$$=\frac{4+12+5}{360}$$

$$=\frac{21}{360}=\frac{7}{120}$$

Thus total one day work:

$$\frac{7}{120}$$

Required time:

$$\frac{1}{7/120}=\frac{120}{7}\approx 17.14$$

Closest option:

$$18 \text{ days}$$

Therefore,

$$\boxed{18 \text{ days}}$$

Quick Tip: Remember:

- $$\text{Efficiency}=\frac{\text{Work}}{\text{Time}}$$
- Remaining work:
$$1-\text{completed work}$$
- Total time:
$$\frac{\text{Total work}}{\text{Combined efficiency}}$$

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6. Indu gives Bindu a loan of Rs 1250 for 2 years at 4% annual compound interest rate. How much rupee would he have lost if he had given that amount on loan for 2 years at 4% simple

interest?

(A) 10

(B) 8

(C) 3

(D) 2

Correct Answer: (D) 2

Solution:

Concept: Difference between Compound Interest (CI) and Simple Interest (SI) for 2 years is:

$$\text{CI} - \text{SI} = P\left(\frac{R}{100}\right)^2$$

where:

- P = Principal
- R = Rate of interest

Step 1: Write the given values.

Principal:

$$P = 1250$$

Rate:

$$R = 4\%$$

Time:

$$T = 2 \text{ years}$$

Step 2: Use the formula for difference between CI and SI.

$$\text{Difference} = 1250\left(\frac{4}{100}\right)^2$$

$$= 1250 \times \frac{16}{10000}$$

$$= 1250 \times 0.0016$$

$$= 2$$

Thus, the extra amount earned in compound interest over simple interest is:

$$2 \text{ rupees}$$

Hence, if the amount had been given at simple interest, the loss would be:

$$\boxed{2}$$

Quick Tip: Remember:

$$\text{CI} - \text{SI} = P\left(\frac{R}{100}\right)^2$$

for 2 years.

This shortcut saves time in competitive exams.

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7. A person rows at 6 km/h in still water. It takes him twice the time to row upstream than to row downstream. Find the speed of the stream.

(A) 2 km/h

(B) 3 km/h

(C) 4 km/h

(D) 1.5 km/h

Correct Answer: (B) 3 km/h

Solution:

Concept: For boats and streams:

$$\text{Upstream speed} = b - s$$

$$\text{Downstream speed} = b + s$$

where:

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- $b =$ speed of boat in still water
- $s =$ speed of stream

Also:

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Step 1: Write the given information.

Speed in still water:

$$b = 6 \text{ km/h}$$

Let speed of stream be:

$$s \text{ km/h}$$

Thus:

$$\text{Upstream speed} = 6 - s$$

$$\text{Downstream speed} = 6 + s$$

Step 2: Use the condition on time.

Given:

$$\text{Time upstream} = 2 \times \text{Time downstream}$$

For equal distances:

$$\frac{1}{6-s} = 2\left(\frac{1}{6+s}\right)$$

Step 3: Solve the equation.

$$\frac{1}{6-s} = \frac{2}{6+s}$$

Cross-multiplying:

$$6 + s = 2(6 - s)$$

$$6 + s = 12 - 2s$$

$$3s = 6$$

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$$s = 2$$

Therefore,

$$\boxed{2 \text{ km/h}}$$

Quick Tip: Remember:

- Upstream speed:

$$b - s$$

- Downstream speed:

$$b + s$$

- For same distance:

$$\text{Time} \propto \frac{1}{\text{Speed}}$$

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8. A man walks at a speed of 8 km/h. After every kilometre, he takes a rest for 4 minutes. How much time will he take to cover a distance of 6 km?

(A) 70 minutes

(B) 69 minutes

(C) 65 minutes

(D) 60 minutes

Correct Answer: (C) 65 minutes

Solution:

Concept: Time taken:

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

Total time includes:

- Walking time
- Rest time

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Step 1: Calculate walking time for 6 km.

Given:

$$\text{Speed} = 8 \text{ km/h}$$

Distance:

$$6 \text{ km}$$

Using:

$$\text{Time} = \frac{6}{8}$$

$$= \frac{3}{4} \text{ hour}$$

Converting into minutes:

$$\frac{3}{4} \times 60 = 45 \text{ minutes}$$

Step 2: Calculate total rest time.

He rests after every kilometre.

For 6 km journey, rest is taken after:

$$1, 2, 3, 4, 5 \text{ km}$$

Thus total rests:

$$5$$

Each rest:

$$4 \text{ minutes}$$

Total rest time:

$$5 \times 4 = 20 \text{ minutes}$$

Step 3: Find total time.

$$\text{Total time} = 45 + 20$$

$$= 65 \text{ minutes}$$

Therefore,

$$\boxed{65 \text{ minutes}}$$

Quick Tip: Remember:

- Convert hours into minutes when needed
- Number of rests:

$$\text{Distance in km} - 1$$

  if no rest is taken at the destination

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9. The shadow of a tower standing on a level plane is 30 **m longer when sun's elevation changes from** 60° **to** 30°**. Find the height of the tower.**

(A) $10\sqrt{3}$ meter

(B) 15 meter

(C) $30\sqrt{3}$ meter

(D) $15\sqrt{3}$ meter

Correct Answer: (D) $15\sqrt{3}$ meter

Solution:

Concept: For a tower of height h and shadow length x:

$$\tan\theta = \frac{h}{x}$$

Thus:

$$x = \frac{h}{\tan\theta}$$

As the angle of elevation decreases, the shadow becomes longer.

Step 1: Find the shadow length when angle is 60°.

Let height of tower be:

$$h$$

Let shadow length at 60° be:

$$x_1$$

Using:

$$\tan 60^\circ = \frac{h}{x_1}$$

$$\sqrt{3} = \frac{h}{x_1}$$

$$x_1 = \frac{h}{\sqrt{3}}$$

Step 2: Find the shadow length when angle is 30°.

Let shadow length at 30° be:

$$x_2$$

Using:

$$\tan 30^\circ = \frac{h}{x_2}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{x_2}$$

$$x_2 = h\sqrt{3}$$

Step 3: Use the condition on difference of shadows.

Given:

$$x_2 - x_1 = 30$$

Substituting values:

$$h\sqrt{3} - \frac{h}{\sqrt{3}} = 30$$

Taking LCM:

$$\frac{3h - h}{\sqrt{3}} = 30$$

$$\frac{2h}{\sqrt{3}} = 30$$

$$2h = 30\sqrt{3}$$

$$h = 15\sqrt{3}$$

Therefore,

$$\boxed{15\sqrt{3}\text{ meter}}$$

Quick Tip: Remember:

- $$\tan\theta = \frac{\text{Height}}{\text{Shadow}}$$
- $$\tan 60^\circ = \sqrt{3}$$
- $$\tan 30^\circ = \frac{1}{\sqrt{3}}$$

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10. The mean of 10 observations was calculated as 40. It was detected on rechecking that the value of one observation 45 was wrongly copied as 15. Find the correct mean.

(A) 43

(B) 34

(C) 40

(D) 60

Correct Answer: (A) 43

Solution:

Concept: Mean is given by:

$$\text{Mean} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

If one observation is wrongly recorded, first correct the total sum and then calculate the corrected mean.

Step 1: Calculate the incorrect total sum.

Given:

$$\text{Mean} = 40$$

Number of observations:

$$n = 10$$

Thus:

$$\text{Incorrect sum} = 40 \times 10$$

$$= 400$$

Step 2: Correct the wrongly copied observation.

Actual observation:

$$45$$

Wrongly copied as:

$$15$$

Difference:

$$45 - 15 = 30$$

Correct sum:

$$400 + 30$$

$$= 430$$

Step 3: Calculate the correct mean.

$$\text{Correct mean} = \frac{430}{10}$$

$$= 43$$

Therefore,

$$\boxed{43}$$

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Quick Tip: Remember:

- $$\text{Mean} = \frac{\text{Sum}}{n}$$

- If an observation is misread:

$$\text{Correct Sum} = \text{Wrong Sum} + (\text{Correct value} - \text{Wrong value})$$

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