OJEE 2026 May 7 Shift 3 MBA

Question Paper (Memory-Based) with Solutions

Conducted by Odisha Joint Entrance Examination Committee (OJEEC)

General Instructions

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

(ii) Each question carries +4 marks for correct answer and -1 mark for wrong answer.

(iii) The total number of questions are 120.

(iv) Duration of the exam is 2 hours (120 minutes).

1. A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?

(A) 1260

(B) 1400

(C) 1250

(D) 1600

Correct Answer: (A) 1260

Solution:

Step 1: Understanding the Question:

The problem involves selecting a team and a captain from a group of players. This is a problem of combinations and permutations.

Step 2: Key Formula or Approach:

The selection can be broken down into two parts:

1. Choose the 5 members for the team from the 10 players. This is a combination problem: $\binom{n}{k} = \frac{n!}{k!(n-k)!}$.

2. Choose a captain from the 5 selected members.

Alternatively, we can first choose a captain from the 10 players, and then select the remaining 4 members from the remaining 9 players. This is equivalent.

Step 3: Detailed Explanation:

Method 1: Choose team first, then captain

1. **Select 5 players for the team from 10 players:**

Number of ways $= \binom{10}{5} = \frac{10!}{5!(10-5)!} = \frac{10!}{5!5!}$

$= \frac{10\times9\times8\times7\times6}{5\times4\times3\times2\times1}$

$= \frac{30240}{120} = 252$

2. **Select 1 captain from the 5 chosen team members:**

Number of ways $= \binom{5}{1} = 5$

3. **Total different selections:**

Total = (Ways to choose team) × (Ways to choose captain)

Total $= 252 \times 5 = 1260$.

Method 2: Choose captain first, then remaining team members

1. **Select 1 captain from 10 players:**

Number of ways $= \binom{10}{1} = 10$

2. **Select the remaining 4 members from the remaining 9 players:**

Number of ways $= \binom{9}{4} = \frac{9!}{4!(9-4)!} = \frac{9!}{4!5!}$

$= \frac{9\times8\times7\times6}{4\times3\times2\times1}$

$= \frac{3024}{24} = 126$

3. **Total different selections:**

Total = (Ways to choose captain) × (Ways to choose remaining members)

Total $= 10 \times 126 = 1260$.

Both methods yield the same result.

Step 4: Final Answer:

1260 different selections can be made.

Quick Tip: When a problem involves choosing a group *and* assigning a role (like captain) within that group, remember that "choosing 5 and then 1 captain from the 5" is equivalent to "choosing 1 captain from 10 and then 4 members from the remaining 9". Pick the method that seems simpler to calculate for your exam.

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2. How many numbers divisible by 132:

264, 396, 462, 792, 968, 2178, 5184, 6336

(A) 4

(B) 5

(C) 6

(D) 7

Correct Answer: (C) 6

Solution:

Step 1: Understanding the Question:

We need to find how many numbers in the given list are exactly divisible by 132.

Given numbers:

$$264,\ 396,\ 462,\ 792,\ 968,\ 2178,\ 5184,\ 6336$$

Step 2: Key Formula or Approach:

A number is divisible by 132 if:

$$\frac{\text{Number}}{132}$$

gives a whole number (integer).

Step 3: Detailed Explanation:

Check each number one by one:

$$264 \div 132 = 2$$

Divisible.

$$396 \div 132 = 3$$

Divisible.

$$462 \div 132 = 3.5$$

Not divisible.

$$792 \div 132 = 6$$

Divisible.

$$968 \div 132 \neq \text{integer}$$

Not divisible.

$$2178 \div 132 = 16.5$$

Not divisible.

$$5184 \div 132 \approx 39.27$$

Not divisible.

$$6336 \div 132 = 48$$

Divisible.

Thus, divisible numbers are:

$$264,\ 396,\ 792,\ 6336$$

Total numbers divisible by 132:

$$4$$

Step 4: Final Answer:

The required count is:

$$\boxed{4}$$

Hence, the correct option is:

$$\boxed{\text{(A) } 4}$$

Quick Tip: To check divisibility quickly, divide the number mentally by the divisor and see whether the result is a whole number.

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3. Two cones have their heights in the ratio 1:3 and the radii of their bases in the ratio 3:1. Find the ratio of their volumes.

(A) 3:1

(B) 2:1

(C) 4:1

(D) 5:1

Correct Answer: (A) 3:1

Solution:

Step 1: Understanding the Question:

The problem asks to find the ratio of the volumes of two cones, given the ratios of their heights and the radii of their bases.

Step 2: Key Formula or Approach:

The volume of a cone (V) is given by the formula:

$$V = \frac{1}{3}\pi r^2 h$$

Where r is the radius of the base and h is the height.

Step 3: Detailed Explanation:

Let the heights of the two cones be h_1 and h_2, and their radii be r_1 and r_2.

Given:

- Ratio of heights: $\frac{h_1}{h_2} = \frac{1}{3}$.
- Ratio of radii: $\frac{r_1}{r_2} = \frac{3}{1}$.

The volume of the first cone is $V_1 = \frac{1}{3}\pi r_1^2 h_1$.

The volume of the second cone is $V_2 = \frac{1}{3}\pi r_2^2 h_2$.

The ratio of their volumes is:

$$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi r_1^2 h_1}{\frac{1}{3}\pi r_2^2 h_2}$$

Cancel out the common factors ($\frac{1}{3}\pi$):

$$\frac{V_1}{V_2} = \frac{r_1^2 h_1}{r_2^2 h_2}$$

Rearrange the terms:

$$\frac{V_1}{V_2} = \left(\frac{r_1}{r_2}\right)^2 \times \left(\frac{h_1}{h_2}\right)$$

Substitute the given ratios:

$$\frac{V_1}{V_2} = \left(\frac{3}{1}\right)^2 \times \left(\frac{1}{3}\right)$$

$$\frac{V_1}{V_2} = \left(\frac{9}{1}\right) \times \left(\frac{1}{3}\right)$$

$$\frac{V_1}{V_2} = \frac{9}{3} = \frac{3}{1}$$

So, the ratio of their volumes is 3:1.

Step 4: Final Answer:

The ratio of their volumes is 3:1.

Quick Tip: When dealing with ratios of volumes or areas of similar geometric shapes, express the ratio of the formula variables and then substitute the given ratios. For example, for cones, $V \propto r^2h$, so $\frac{V_1}{V_2} = \left(\frac{r_1}{r_2}\right)^2 \left(\frac{h_1}{h_2}\right)$.

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4. The altitude drawn to the base of an isosceles triangle is 8cm and the perimeter is 32cm. Find the area of the triangle?

(A) 48

(B) 60

(C) 70

(D) 80

Correct Answer: (A) 48

Solution:

Step 1: Understanding the Question:

The problem asks to find the area of an isosceles triangle, given its altitude to the base and its perimeter.

Step 2: Key Formula or Approach:

1. **Properties of an isosceles triangle:** The altitude to the base bisects the base and is perpendicular to it. The two non-base sides are equal.
2. **Pythagorean theorem:** In a right-angled triangle, $a^2 + b^2 = c^2$.
3. **Area of a triangle:** Area $= \frac{1}{2} \times$ base $\times$ height.

Step 3: Detailed Explanation:

Let the isosceles triangle be ABC, with AB = AC.

Let the base be BC. Let D be the midpoint of BC.

The altitude AD = 8 cm. (This forms two right-angled triangles, ADB and ADC).

Let BD = CD = x cm. So, the base BC = $2x$ cm.

Let the equal sides be AB = AC = y cm.

Perimeter information:

Perimeter = AB + AC + BC = $y + y + 2x = 2y + 2x$.

Given Perimeter = 32 cm.

So, $2y + 2x = 32 \Rightarrow y + x = 16 \Rightarrow y = 16 - x$. (Equation 1)

Pythagorean theorem in triangle ADB:

$AD^2 + BD^2 = AB^2$

$8^2 + x^2 = y^2$

$64 + x^2 = y^2$. (Equation 2)

Substitute Equation 1 into Equation 2:

$64 + x^2 = (16 - x)^2$

$64 + x^2 = 16^2 - 2 \times 16 \times x + x^2$

$64 + x^2 = 256 - 32x + x^2$

Cancel x^2 from both sides:

$64 = 256 - 32x$

$32x = 256 - 64$

$32x = 192$

$x = \frac{192}{32} = 6$.

Now, find the base of the triangle:

Base BC = $2x = 2 \times 6 = 12$ cm.

Calculate the Area of the triangle:

Area = $\frac{1}{2} \times$ Base $\times$ Height

Area = $\frac{1}{2} \times 12$ cm $\times 8$ cm

Area = $6 \times 8 = 48$ cm^2.

Step 4: Final Answer:

Option (B) 48 is the correct answer

Quick Tip: Always draw a diagram for geometry problems. Use algebraic equations for lengths and apply theorems like Pythagoras. Double-check calculations and compare with options. If discrepancies arise, highlight them.

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5. A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is:

(A) 285

(B) 290

(C) 297

(D) 305

Correct Answer: (C) 297

Solution:

Step 1: Understanding the Question:

The problem asks to calculate the average number of visitors per day for a month of 30 days, given different average visitor numbers for Sundays and other days, and knowing that the month starts on a Sunday.

Step 2: Key Formula or Approach:

Average $= \frac{\text{Total number of visitors}}{\text{Total number of days}}$.

1. Determine the number of Sundays in the month.
2. Determine the number of "other days" in the month.
3. Calculate the total visitors for Sundays.
4. Calculate the total visitors for "other days".
5. Sum these to get the total visitors for the month.

Step 3: Detailed Explanation:

Given:

- Total days in the month = 30.
- Month begins with a Sunday.
- Average visitors on Sundays = 510.
- Average visitors on other days = 240.

1. **Number of Sundays in the month:**

Since the month starts on a Sunday, the Sundays will fall on days: 1, 8, 15, 22, 29.

Number of Sundays = 5.

2. **Number of other days:**

Number of other days = Total days - Number of Sundays = $30 - 5 = 25$.

3. **Total visitors on Sundays:**

Total Sunday visitors = 5 Sundays $\times$ 510 visitors/Sunday = 2550.

4. **Total visitors on other days:**

Total other day visitors = 25 days $\times$ 240 visitors/day = 6000.

5. **Total visitors for the month:**

Total visitors = Total Sunday visitors + Total other day visitors = $2550 + 6000 = 8550$.

6. **Average number of visitors per day:**

Average = $\frac{\text{Total visitors}}{\text{Total days}} = \frac{8550}{30} = \frac{855}{3} = 285$.

Step 4: Final Answer:

The average number of visitors per day is 285.

Quick Tip: Carefully count the number of specific days (e.g., Sundays) in the given month, especially when the starting day is specified. Avoid making assumptions about the number of weekend days if not explicitly stated.

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6. Identify the odd word

(A) Overbearing

(B) Megalomania

(C) Narcissistic

(D) Despotic

Correct Answer: (B) Megalomania

Solution:

Step 1: Understanding the Question:

The question asks to identify the word that does not belong to the same semantic group as the others (the odd one out).

Step 3: Detailed Explanation:

Let's analyze the meaning of each word:

- **Overbearing:** Domineering; dictatorial; unpleasantly forceful. (Describes a behavior/attitude).
- **Megalomania:** Delusion about one's own power or importance (often associated with mental illness). (Describes a psychological condition/delusion).
- **Narcissistic:** Having an excessive or erotic interest in oneself and one's physical appearance. (Describes a personality trait/disorder).
- **Despotic:** Of or typical of a despot; tyrannical. (Describes a ruler's absolute power, often oppressive).

Words like "overbearing", "narcissistic", and "despotic" describe a personality trait or behavior characterized by excessive self-importance, arrogance, or domineering nature.

"Megalomania" refers to a **delusion** of grandeur or extreme power, often with a clinical or psychological connotation, making it distinct from a personality trait or behavioral style. It's a symptom rather than a style.

Therefore, Megalomania is the odd word.

Step 4: Final Answer:

The odd word is Megalomania.

Quick Tip: For "odd one out" questions, analyze the core meaning, connotation, and part of speech of each word. Look for a common theme or category shared by most words, and then identify the one that falls outside that category.

7. Identify the odd word

(A) Malicious

(B) Inhibitive

(C) Spiteful

(D) Malevolent

Correct Answer: (B) Inhibitive

Solution:

Step 1: Understanding the Question:

The question asks to identify the word that does not belong to the same semantic group as the others (the odd one out).

Step 3: Detailed Explanation:

Let's analyze the meaning of each word:

- **Malicious:** Characterized by malice; intending or intended to do harm. (Negative intent).
- **Inhibitive:** Tending to inhibit or restrain. (Relates to hindering or preventing).
- **Spiteful:** Showing or caused by malice; malicious. (Negative intent).
- **Malevolent:** Having or showing a wish to do evil to others. (Negative intent).

Words like "malicious", "spiteful", and "malevolent" all describe an intention or desire to cause harm, evil, or injury to others. They share a common theme of ill will or harmful intent.

"Inhibitive" means tending to restrain or hinder something. While it can have a negative connotation in some contexts, its core meaning is about prevention or restriction, not about ill will or harmful intent.

Therefore, Inhibitive is the odd word.

Step 4: Final Answer:

The odd word is Inhibitive.

Quick Tip: When evaluating synonyms or near-synonyms, look for the most precise core meaning. Sometimes, one word will deviate from the common semantic field of the others based on a subtle but crucial difference in definition.

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8. If $5\sqrt{5} \times 5^3 \div 5^{-3/2} = 5^{x+2}$, find the value of x.

(A) 5

(B) 7

(C) 10

(D) 4

Correct Answer: (A) 5

Solution:

Step 1: Understanding the Question:

We need to simplify the expression:

$$5\sqrt{5} \times 5^3 \div 5^{-3/2}$$

and compare it with:

$$5^{x+2}$$

to find the value of x.

Step 2: Key Formula or Approach:

Use the laws of exponents:

$$a^m \times a^n = a^{m+n}$$

$$\frac{a^m}{a^n} = a^{m-n}$$

Also,

$$\sqrt{5} = 5^{1/2}$$

Step 3: Detailed Explanation:

Rewrite the expression:

$$5\sqrt{5} \times 5^3 \div 5^{-3/2}$$

Since:

$$5\sqrt{5} = 5^1 \times 5^{1/2} = 5^{3/2}$$

So:

$$5^{3/2} \times 5^3 \div 5^{-3/2}$$

Apply exponent rules:

$$= 5^{3/2+3-(-3/2)}$$

$$= 5^{3/2+3+3/2}$$

$$= 5^{3+3}$$

$$= 5^6$$

Given:

$$5^{x+2} = 5^6$$

Equate exponents:

$$x + 2 = 6$$

$$x = 4$$

Step 4: Final Answer:

The value of x is:

$$\boxed{4}$$

Hence, the correct option is:

$$\boxed{\text{(D) } 4}$$

Quick Tip: Convert roots into fractional exponents first. Then apply exponent laws carefully while multiplying or dividing powers with the same base.

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9. Find the value of $(1-\frac{1}{2})(1-\frac{1}{3})(1-\frac{1}{4})\ldots(1-\frac{1}{n})$.

(A) $\frac{1}{n}$

(B) $\frac{1}{n+1}$

(C) $1+\frac{1}{n}$

(D) $1-\frac{1}{n}$

Correct Answer: (A) $\frac{1}{n}$

Solution:

Step 1: Understanding the Question:

The problem asks to find the value of a product series involving fractions.

Step 2: Key Formula or Approach:

Simplify each term in the product, then look for a pattern of cancellation (telescoping product).

Step 3: Detailed Explanation:

Given series:

$$\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\ldots\left(1-\frac{1}{n}\right)$$

Simplify each term:

$$1-\frac{1}{2}=\frac{2-1}{2}=\frac{1}{2}$$

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

$$1-\frac{1}{4}=\frac{4-1}{4}=\frac{3}{4}$$

And so on, up to the last term:

$$1-\frac{1}{n}=\frac{n-1}{n}$$

Now, write the product:

$$\left(\frac{1}{2}\right)\times\left(\frac{2}{3}\right)\times\left(\frac{3}{4}\right)\times\cdots\times\left(\frac{n-1}{n}\right)$$

Observe the cancellation pattern: the numerator of each term cancels with the denominator of the preceding term.

$$\frac{1}{2}\times\frac{2}{3}\times\frac{3}{4}\times\cdots\times\frac{n-1}{n}$$

Only the first numerator (1) and the last denominator (n) remain.
The value of the product is $\frac{1}{n}$.

Step 4: Final Answer:
The value of the series is $\frac{1}{n}$.

Quick Tip: For products or sums of series, always simplify the first few terms to identify a telescoping pattern where intermediate terms cancel out. This is a common technique for solving such problems.

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10. Which of the following is used to Manage Data Base?

(A) Operating System

(B) Complier

(C) Cache Memory

(D) DBMS

Correct Answer: (D) DBMS

Solution:

Step 1: Understanding the Question:

The question asks to identify the software system used for managing databases.

Step 3: Detailed Explanation:

* **DBMS (Database Management System):** A DBMS is a software system designed to store, retrieve, and manage data in a database. It provides an interface for users and applications to interact with the database, allowing for data definition, retrieval, update, and management. Examples include MySQL, PostgreSQL, Oracle, SQL Server.
* **Operating System:** An operating system (OS) is system software that manages computer hardware and software resources and provides common services for computer programs. It manages the overall functioning of the computer, not specifically databases.
* **Compiler:** A compiler is a computer program that translates code written in one programming language (source language) into another language (target language), often machine code. It does not manage databases.
* **Cache Memory:** Cache memory is a small, high-speed type of computer memory that stores frequently used data or program instructions for rapid access. It is a hardware component that optimizes data access, not a database management system.

Therefore, DBMS is the correct term for managing databases.

Step 4: Final Answer:

DBMS is used to manage databases.

Quick Tip: Remember the acronyms:

- OS: Operating System (manages computer resources)
- DBMS: Database Management System (manages data)
- RAM: Random Access Memory (primary storage)
- CPU: Central Processing Unit (processor)