



INTERNATIONAL COLLEGE OF ENGINEERING & MANAGEMENT || AFFILIATED TO
TRIBHUVAN UNIVERSITY

BCA

PREPARATION HANDBOOK



BCA Program

Tribhuvan University Faculty of Humanities and Social Science conduct BCA Entrance for the admission to Bachelor of Arts in Computer Application (BCA) degree. BCA is a 4 year degree that specially focuses in providing students' knowledge and skills in building software and mobile application, learning programming and mobile application programming, computer networking etc.

This course is selected as a perfectly designed course for students to develop their future in IT. Students will learn all aspects of existing and updating Technologies as well as the impact of technologies in society and the future of society. In order to develop a student as a leader and driving innovation in a workplace BCA course is being available for students of Nepal.

Duration of BCA Program

The program of study BCA is over 8 Semester i.e. four academic years. The academic year begins in the September and February of each year.

Eligible Criteria for BCA Entrance Exam

The candidate applying for BCA will be eligible for entrance exam when he or she has fulfilled following criteria:

1. Candidate must have secured Minimum D+ grade in each subject of grade 11 and 12 with an aggregate CGPA 2.0 or more or,
2. Candidate must have secured Minimum score of second division marks in 10+2, PCL, OR equivalent in any discipline, or
3. Students who have passed grade 11 and are waiting for supplementary exam (PURA PARIKSHA) of grade 12 can also apply. However, they have to submit all the required documents at the time of admission.

Exam Structure

The test has three primary areas – English, Mathematics, and General Knowledge (GK) with English carrying 40% of the total marks, Mathematics with 45% of the total marks, Logical Reasoning carrying 5% of total marks and GK carrying 10% of the total marks.

Section	Type	Marks
1	English	40
2	Mathematics	45
3	General Knowledge	10
4	Logical Reasoning	5

Mode of Exam

BCA Entrance exam will be taken in only one mode and that is written examination. The 120 minutes exam consists of altogether one hundred (100) objective questions containing 1 mark for each question and altogether there would be 40 question in English section, 45 in Mathematics, 10 question in GK and 5 question in Logical Reasoning section with a total weight of 100 marks. The candidates are qualified based on ranking system for the examinations.

Preparation phases

Phase 1: Completing the syllabus of BCA entrance syllabus

Phase 2: Practicing sample papers

Phase 3: Topic-wise revision

Syllabus**1. English/Grammar (40 marks)**

- Synonym
- Antonym
- Preposition
- Idiom and Phrase
- Analogy Test

- f. Comprehensive Passage and Question
- g. Vocabulary

2. **Mathematics (45 marks)**

- a. Sequence and Series
- b. Time and Work
- c. Ratio Analysis
- d. Equations
- e. Indices (The algebra of exponents)
- f. Inequality
- g. Percentage
- h. Profit and Loss
- i. Number System
- j. Probability
- k. Permutation and Combination

3. **Logical Reasoning (5 marks)**

4. **General Knowledge / Computer (10 marks)**

- a. Politics
- b. Geography
- c. Sports
- d. Novels
- e. I/O Device
- f. Memory

English/Grammar

Synonym/Antonym

Concept with tricks

Synonyms and Antonyms form an essential part of Vocabulary based questions in any competitive exam. Apart from the direct questions, a good vocabulary will enhance your performance in every area of Verbal section.

Synonyms are those words that have the same or very similar meaning whereas Antonym are those words that have opposite meaning.

Synonym example

Weak, Fragile, Flimsy, faint- All mean less energetic

Fast, prompt, quick, hurry -All mean in a fast pace

Rich, wealthy, affluent, well off –All mean rich class people

The list could go on but important point to consider here is the usage part or contextual meaning.

For example, the synonyms for something big are – huge, large, elder etc.

Now, if we have to use it in a sentence where we are talking about a brother, we would write:

Meet my elder brother (It can't be huge brother or large brother).

Similarly, If we say '*My license has expired*'. We can't say that '*my license is dead*', whereas words 'expired' and 'dead' are synonyms and can be replaced with each other in this sentence;

'My grandmother has expired/ is dead'.

This is how the usage of synonyms play a vital role.

Antonyms example

Big- Small

Open- Close

True- False (it cannot be 'wrong' as it is opposite to 'right' though logically it is also correct)

Male-Female (it cannot be 'woman' as it will be opposite to the word 'man' though logically it is correct)

Again, while using antonyms, always keep in mind the *context of the word* and then choose the best word that means the opposite.

List of Synonyms – 1

Synonyms for words starting with A, B, C

Word	Synonym-1	Synonym-2	Synonym-3	Synonym-4
Amazing	Incredible	Unbelievable	Improbable	Astonishing
Anger	Enrage	Infuriate	Arouse	Nettle
Angry	Wrathful	Furious	Enraged	Indignant
Answer	Reply	Respond	Retort	Acknowledge
Ask	Question	Inquire	Query	Interrogate
Awful	Dreadful	Terrible	Abominable	Unpleasant
Bad	Depraved	Rotten	Contaminated	Sinful
Beautiful	Gorgeous	Dazzling	Splendid	Magnificent
Begin	Start	Open	Launch	Initiate
Big	Enormous	Huge	Immense	Gigantic
Brave	Courageous	Fearless	Dauntless	Intrepid
Break	Fracture	Wreck	Crash	Demolish
Bright	Sparkling	Shimmering	Radiant	Vivid

Calm	Quiet	Peaceful	Unruffled	Tranquil
Come	Approach	Advance	Near	Arrive
Cool	Chilly	Cold	Frosty	Frigid
Crooked	Bent	Twisted	Zigzag	Hooked
Cry	Weep	Wail	Sob	Bawl
Cut	Slice	Carve	Cleave	Slit

List of Synonyms – 2

Synonyms for words starting with D, E, F

Word	Synonym-1	Synonym-2	Synonym-3	Synonym-4
Dangerous	Perilous	Hazardous	Risky	Uncertain
Dark	Shadowy	Unlit	Murky	Gloomy
Decide	Determine	Settle	Choose	Resolve
Definite	Certain	Sure	Positive	Determined
Delicious	Savory	Delectable	Appetizing	Luscious
Describe	Portray	Characterize	Picture	Narrate
Destroy	Ruin	Demolish	Raze	Slay
Difference	Disagreement	Inequity	Contrast	Dissimilarity
Do	Execute	Enact	Carry Out	Finish
Dull	Unimaginative	Lifeless	Tedious	Tiresome
Eager	Keen	Fervent	Enthusiastic	Involved
End	Stop	Finish	Terminate	Conclude
Enjoy	Appreciate	Delight In	Be Pleased	Indulge In
Explain	Elaborate	Clarify	Define	Interpret
Fair	Just	Impartial	Unbiased	Objective

Fall	Drop	Descend	Plunge	Topple
False	Fake	Fraudulent	Counterfeit	Spurious
Fast	Quick	Rapid	Hasty	Swiftly
Fat	Stout	Corpulent	Paunchy	Plump
Fear	Fright	Dread	Terror	Alarm
Fly	Soar	Hover	Flit	Wing
Funny	Humorous	Amusing	Droll	Laughable

List of Synonyms – 3

Synonyms for words starting with G, H, I, K

Word	Synonym-1	Synonym-2	Synonym-3	Synonym-4
Get	Acquire	Obtain	Secure	Procure
Go	Recede	Depart	Fade	Disappear
Good	Excellent	Apt	Marvelous	Qualified
Great	Noteworthy	Worthy	Distinguished	Remarkable
Gross	Improper	Rude	Coarse	Indecent
Happy	Pleased	Contented	Satisfied	Delighted
Hate	Despise	Loathe	Detest	Abhor
Have	Acquire	Gain	Maintain	Believe
Help	Aid	Assist	Succor	Encourage
Hide	Conceal	Camouflage	Shroud	Veil
Hurry	Hasten	Urge	Accelerate	Bustle
Hurt	Damage	Distress	Afflict	Pain
Idea	Thought	Concept	Conception	Notion
Important	Necessary	Vital	Critical	Indispensable

Interesting Fascinating Bright Intelligent Animated

Keep Hold Maintain Sustain Support

Kill Slay Execute Assassinate Abolish

List of Synonyms – 4

Synonyms for words starting with L, M, N, O, P

Word	Synonym-1	Synonym-2	Synonym-3	Synonym-4
Lazy	Indolent	Slothful	Idle	Inactive
Little	Dinky	Puny	Diminutive	Miniature
Look	Scrutinize	Inspect	Survey	Study
Love	Like	Admire	Esteem	Fancy
Make	Design	Fabricate	Manufacture	Produce
Mark	Impress	Effect	Trace	Imprint
Mischievous	Prankish	Waggish	Impish	Sportive
Move	Plod	Go	Creep	Crawl
Neat	Trim	Dapper	Natty	Smart
New	Novel	Modern	Current	Recent
Old	Aged	Used	Worn	Dilapidated
Part	Portion	Section	Fraction	Fragment
Place	Space	Area	Spot	Plot
Plan	Region	Location	Situation	Position
Predicament	Quandary	Dilemma	Plight	Spot
Put	Place	Assign	Keep	Establish

List of Synonyms – 5

Synonyms for words starting with Q, R, S, T, U

Word	Synonyms-1	Synonyms-2	Synonyms-3	Synonyms-4
Quiet	Tranquil	Peaceful	Calm	Restful
Right	Correct	Accurate	Factual	True
Run	Race	Sprint	Dash	Rush
Say/Tell	Recount	Narrate	Explain	Reveal
Scared	Panicked	Fearful	Unnerved	Insecure
Show	Display	Exhibit	Present	Note
Slow	Unhurried	Behind	Tedious	Slack
Stop	Cease	Halt	Stay	Pause
Story	Tale	Yarn	Account	Narrative
Strange	Odd	Peculiar	Unusual	Unfamiliar
Take	Hold	Catch	Seize	Grasp
Tell	Disclose	Reveal	Show	Expose
Think	Consider	Contemplate	Reflect	Mediate
Trouble	Distress	Anguish	Anxiety	Wretchedness
True	Accurate	Right	Proper	Precise
Ugly	Horrible	Unpleasant	Monstrous	Terrifying

List of Antonyms – 1

Antonyms for words starting with A

Word	Antonym-1	Antonym-2	Antonym-3	Antonym-4
Absence	Presence	Plenty	Existence	Enough
Accept	Refuse	Fail	Deny	Reject
Accurate	Inaccurate	Indefinite	Unreliable	Faulty
Advantage	Disadvantage	Harm	Impotence	Inferiority
Alive	Dead	Unconscious	Sluggish	Deceased
Ancient	Modern	Current	Fresh	New
Answer	Question	Query	Quiet	Trouble
Approval	Disapproval	Denial	Veto	Refusal
Approached	Receded	Departed	Leave	Retreat
Abundant	Scarce	Lacking	Sparse	Meager
Admit	Deny	Repudiate	Expel	Oust
Advance	Retreat	Retire	Behind	Later
Artificial	Natural	Genuine	Real	Unaffected
Ascend	Descend	Drop	Slump	Decline
Attack	Defense	Flight	Shelter	Shield
Attention	Inattention	Disregard	Lethargy	Neglect
Asleep	Awake	Conscious	Attentive	Awake
Ally	Enemy	Antagonist	Detractor	Foe
Agree	Disagree	Reject	Resist	Object

List of Antonyms – 2

Antonyms for words starting with B, C

Word	Antonym-1	Antonym-2	Antonym-3	Antonym-4
Beginning	Ending	Finish	Epilogue	Finale
Blunt	Sharp	Polite	Subtle	Sharp
Blame	Praise	Approval	Peace	Ratification
Bitter	Sweet	Bland	Pleasant	Mild
Borrow	Lend	Forfeit	Lend	Return
Bravery	Cowardice	Timidity	Fear	Cowardice
Broad	Narrow	Quiet	Little	Tiny
Careful	Rush	Careless	Inexact	Unwise
Calm	Troubled	Harsh	Furious	Worried
Capable	Incapable	Clumsy	Stupid	Ignorant
Captivity	Freedom	Liberty	Freedom	License
Cheap	Dear	Expensive	Expensive	Worthy
Clever	Stupid	Foolish	Ignorant	Naïve
Correct	Incorrect	Improper	Invalid	Biased
Conceal	Reveal	Divulge	Unwrap	Ignore
Comfort	Discomfort	Gloom	Injury	Torment
Courage	Cowardice	Humility	Timidity	Irresolution
Cruel	Kind	Gentle	Compassionate	Mild
Courteous	Discourteous	Rude	Uncivil	Unrefined
Cunning	Simple	Ignorant	Blunt	Rough

Beautiful Ugly Drab Offensive Repulsive

List of Antonyms – 3

Antonyms for words starting with D, E, F

Word	Antonym-1	Antonym-2	Antonym-3	Antonym-4
Dainty	Clumsy	Ugly	Inferior	Coarse
Dark	Light	Distinct	Evident	Vivacious
Deep	Shallow	Artless	Flighty	Trivial
Decrease	Increase	Expansion	Growth	Enlargement
Demand	Supply	Reply	Offer	Grant
Despair	Hope	Cheer	Faith	Pleasure
Disappear	Appear	Begin	Solidify	Coagulate
Dismal	Cheerful	Bright	Intelligent	Luminous
Ebb	Flow	Flow	Incline	Expansion
Encourage	Discourage	Agitate	Sadden	Dispirit
Entrance	Exit	Conclusion	Egress	Leave
End	Beginning	Bottom	Creation	Origin
Expand	Contract	Diminish	Shrink	Shrivel
Expensive	Inexpensive	Cheap	Worthless	Reasonable
Fail	Succeed	Ascend	Rise	Reach
Feeble	Sturdy	Strong	Powerful	Expert
Foolish	Wise	Sane	Realistic	Serious
Famous	Unknown	Obscure	Inferior	Typical
First	Last	Minor	Trivial	Auxiliary
Freedom	Captivity	Slavery	Inability	Restraint

Frequent	Seldom	Ceasing	Irregular	Rare
Friend	Enemy	Foe	Stranger	Opponent
Fortunate	Unfortunate	Failing	Lacking	Losing
Frank	Secretive	Timidity	Shy	Evasive

List of Antonyms – 4

Antonyms for words starting with G, H, I, J, K

Word	Antonym-1	Antonym-2	Antonym-3	Antonym-4
Generous	Mean	Greedy	Biased	Prejudiced
Gentle	Rough	Surly	Excited	Harsh
Gloomy	Cheerful	Lively	Luminous	Intelligent
Giant	Dwarf	Pygmy	Dwarf	Teen
Happy	Sad	Miserable	Serious	Morose
Harmful	Harmless	Assisting	Honest	Fortunate
Hasten	Dawdle	Halt	Hinder	Dissuade
Hate	Love	Liking	Sympathy	Flattery
Healthy	Unhealthy	Ill	Diseased	Infirm
Horizontal	Vertical	Divergent	Unfair	Irregular
Hinder	Aid	Help	Further	Allow
Honest	Dishonest	Counterfeit	Deceitful	Corrupt
Humble	Proud	Brave	Unrefined	Intricate
Hunger	Thirst	Distaste	Disgust	Satiation
Immense	Tiny	Minute	Limited	Restricted

Imprison	Free	Cease	Permit	Release
Inferior	Superior	Chief	Extraordinary	Foremost
Interior	Exterior	Outside	Revealed	Public
Interesting	Uninteresting	Dull	Repulsive	Homely
Intentional	Accidental	Involuntary	Unwilling	Unplanned
Justice	Injustice	Penalty	Illegality	Corruption
Knowledge	Ignorance	Inanity	Stupidity	Impotence

List of Antonyms – 5

Antonyms for words starting with L, M, P, R, S

Word	Antonym-1	Antonym-2	Antonym-3	Antonym-4
Lazy	Industrious	Energetic	Caring	Fresh
Little	Large	Much	Big	Sufficient
Lofty	Lowly	Humble	Below	Beneath
Misunderstand	Understand	Comprehend	Construe	Grasp
Possible	Impossible	Unlikely	Improbable	Impossible
Prudent	Imprudent	Foolish	Indiscreet	Stupid
Rapid	Slow	Delayed	Sluggish	Languishing
Rigid	Pliable	Soft	Gentle	Pliant
Satisfactory	Unsatisfactory	Intolerable	Unreliable	Inadequate
Scatter	Collect	Gather	Maintain	Combine
Serious	Trivial	Insincere	Dishonest	Deceptive
Sour	Sweet	Bland	Calm	Blah
Sorrow	Joy	Benefit	Cheer	Benefit

Strong

Weak

Intermittent

Idle

Inactive

The main trick for finding the correct word of given question would be **logical association** where we would logically associate the word as per sentence like above example of dead and expired and another trick is to create word families.

Preposition

Concept with tricks

Prepositions are the words that link nouns, pronouns and phrases to other words in a sentence. The word or phrase that the preposition introduces is called the object of the preposition.

Example: The book is **on** the table.

Types of Prepositions

A. Preposition for Time:

Prepositions used for time of different natures are: "in, on, at" etc.

Example: He was born *in* 1945.

B. Preposition for Place:

Prepositions "in, on or at" are usually used for different places.

Example: Students study *in* library.

C. Preposition for Directions:

Prepositions like: "to, towards, through, into" are used to describe the direction.

Example: She went *to* the library.

D. Preposition for Agent:

Preposition for agent is used for a thing which is the cause of another thing in the sentence. Such prepositions are: "by, with" etc.

Example: This book is written *by* Shakespeare.

E. Preposition for Instrument:

Different prepositions are used by different devices, instruments or machines. E.g.: "by, with, on" etc.

Example: She comes *by* bus daily.

NOTE: A preposition is always followed by a "noun". It is never followed by a verb.

Uses of prepositions

Prepositions are used for the following purposes:

- A.** To show where something/someone is

Example:

1. A CD is lying *on* the slab.
2. Aashvik was playing *in* the lawn.

- B.** With time words

Example: *at* noon, *on* Sunday, *in* the year 2015

- B.** After some nouns

Example:

1. We had fun *with* the new toy.
2. There is some trouble *with* the switch.

- D.** After some adjectives

Example:

1. We are excited *about* the new project.
2. The Champagne region is renowned *for* its wines.

- E.** After some verbs

Examples:

1. They are listening *to* the recording.
2. Julianne has waited *for* her mother for 2 hours.

- F.** In some phrases

Examples:

1. Our plane landed *in* the end.
2. They reached late *for* the show.

Idioms and Phrases**a) Concept**

An idiom is a phrase or an expression that has a figurative or literal meaning. These do not convey the exact meaning of the words but are an expression of a hidden meaning. The number of idioms runs into hundreds and idioms can be arbitrary. It is a challenge to master this topic but with the help many sources online, a ready-made list of idioms that you can learn and memorize.

Analogy Test**a) Concept with tricks**

Verbal analogies tests are standardized psychometric assessment tests that provide the information about a candidate's general verbal acuity and insight. Verbal analogy tests are designed to assess a candidate's ability to recognize relationships between ideas, think methodically and fluency in the English language. The questions in the test are designed to assess a candidate's logical and analytical reasoning through the use of partial analogies.

Tips for solving Analogies

- The only way to become better at verbal analogies is through practice. Our verbal analogy tests are developed by professionals and provide you with full explanations.
- Try to determine the relationship between the first pair of words.
- Turn the analogies into sentences. Read the analogy problems as sentences, even if they aren't actually written that way.
- Go through tough problems systematically.
- Read all of the answer choices first before making a decision. This might sound obvious, but candidates commonly stop reading the answer choices once they've found what seems like a strong match.
- Eliminate any pairs in the answers that do not have a similar type of relationship.
- If the meaning of a word is unknown, then try to recollect the context in which you have come across the word.
- Also, consider alternative meanings of words.
- Take another look at the relationship possibilities as described above and try to look for them when trying to solve analogies.
- If all else fails, eliminate the unlikely answers and make an educated guess.

Examples

Pantry : Store :: Scullery : ?

- (A) Cook (B) Kitchen (C) Utensils (D) Wash

Answer: Option D

Calf : Cow :: Puppy : ?

- (A) Dog (B) Bitch (C) Horse (D) Donkey

Answer: Option B

Carpenter : Saw :: Tailor ?

- (A) Measurement (B) Sewing (C) Cloth (D) Needle

Answer: Option D

Comprehensive Passage and Question

a) Concept

Reading Comprehension section can be one of the complex sections depending on the standard of language used. Usually, the difficulty level of the Verbal section (which comprises of verbal ability and reading comprehension) is dependent on the reading comprehension test.

As part of a reading comprehension test you will be tested on your vocabulary, absorption and understanding of the language. English comprehension passage is the good test of your language skills. The questions in the reading comprehension exercise are mostly inference based.

Example

Passage 1

Philosophy of Education is a label applied to the study of the purpose, process, nature and ideals of education. It can be considered a branch of both philosophy and education. Education can be defined as the teaching and learning of specific skills, and the imparting of knowledge, judgment and wisdom, and is something broader than the societal institution of education we often speak of. Many educationalists consider it a weak and woolly field, too far removed from the practical applications of the real world to be useful. But philosophers dating back to Plato and the Ancient Greeks have given the area much thought and emphasis, and there is little doubt that their work has helped shape the practice of education over the millennia.

Plato is the earliest important educational thinker, and education is an essential element in "The Republic" (his most important work on philosophy and political theory, written around 360 B.C.). In it, he advocates some rather extreme methods: removing children from their mothers' care and raising them as wards of the state, and differentiating children suitable to the various castes, the highest receiving the most education, so that they could act as guardians of the city and care for the less able. He believed that education should be holistic, including facts, skills, physical discipline, music and art. Plato believed that talent and intelligence is not distributed genetically and thus is be found in children born to all classes, although his proposed system of selective public education for an educated minority of the population does not really follow a democratic model.

Aristotle considered human nature, habit and reason to be equally important forces to be cultivated in education, the ultimate aim of which should be to produce good and virtuous citizens. He proposed that teachers lead their students systematically, and that repetition be used as a key tool to develop good habits, unlike Socrates' emphasis on questioning his listeners to bring out their own ideas. He emphasized the balancing of the theoretical and practical aspects of subjects taught, among which he explicitly mentions reading, writing, mathematics, music, physical education, literature, history, and a wide range of sciences, as well as play, which he also considered important. During the Medieval period, the idea of Perennialism was first formulated by St. Thomas Aquinas in his work "De Magistro". Perennialism holds that one should teach those things deemed to be of everlasting importance to all people everywhere, namely principles and reasoning, not just facts (which are apt to change over time), and that one should teach first about people, not machines or techniques. It was originally religious in nature, and it was only much later that a theory of secular perennialism developed.

During the Renaissance, the French skeptic Michel de Montaigne (1533 - 1592) was one of the first to critically look at education. Unusually for his time, Montaigne was willing to question the conventional wisdom of the period, calling into question the whole edifice of the educational system, and the implicit assumption that university-educated philosophers were necessarily wiser than uneducated farm workers, for example.

Q1. What is the difference between the approaches of Socrates and Aristotle?

1) Aristotle felt the need for repetition to develop good habits in students; Socrates felt that students need to be constantly questioned

2) Aristotle felt the need for rote-learning; Socrates emphasized on dialogic learning

3) There was no difference

4) Aristotle emphasized on the importance of paying attention to human nature; Socrates emphasized upon science

Ans1. The first option is correct – their approaches were different and this difference is quite explicitly explained in the fourth paragraph

Q2. Why do educationists consider philosophy a ‘weak and woolly’ field?

1) It is not practically applicable

2) Its theoretical concepts are easily understood

3) It is irrelevant for education

4) None of the above

Ans2. The first option is correct because educationists believe that philosophical abstractions are not suitable for practical application.

Q3. What do you understand by the term ‘Perennialism’, in the context of the given comprehension passage?

1) It refers to something which is of ceaseless importance

2) It refers to something which is quite unnecessary

3) It refers to something which is abstract and theoretical

4) It refers to something which existed in the past and no longer exists now

Ans3. The first option is correct because the term comes from the root word ‘perennial’ – which means ceaseless.

Q4. Were Plato’s beliefs about education democratic?

1) He believed that only the rich have the right to acquire education

2) Yes

3) He believed that only a select few are meant to attend schools

4) He believed that all pupils are not talented

Ans4. The second option is correct – Plato’s beliefs were democratic but not his suggested practices

Q5. Why did Aquinas propose a model of education which did not lay much emphasis on facts?

- 1) Facts are not important
- 2) Facts do not lead to holistic education
- 3) Facts change with the changing times
- 4) Facts are frozen in time

Ans5. The third option is correct – facts do change with the changing times; hence, they are not of the utmost importance when aiming for holistic education.

Mathematics

Sequence and Series

Concept with tricks

Questions on number series are prevalent in most of the management aptitude exams. These questions are based on numerical sequences that follow a logical rule/ pattern based on elementary arithmetic concepts. A particular series is given from which the pattern must be analyzed. You are then asked to predict the next number in the sequence following the same rule. Generally, there are three types of questions asked from the number series:

1. A numerical series is given in which a number is wrongly placed. You are asked to identify that particular wrong number.
2. A numerical series is given in which a specific number is missing. You are required to find out that missing number.
3. A complete numerical series is followed by an incomplete numerical series. You need to solve that incomplete numerical series in the same pattern in which the complete numerical series is given.

Different types of Number Series:

The most common patterns followed by number series are:

1. Series consisting of Perfect Squares:

A series based on Perfect squares is most of the times based on the perfect squares of the numbers in a specific order & generally one of the numbers is missing in this type of series.

Example:

324, 361, 400, 441, ?

Solution

$$324 = 18^2, 361 = 19^2, 400 = 20^2, 441 = 21^2, 484 = 22^2$$

2. Perfect Cube Series:

It is based on the cubes of numbers in a particular order and one of the numbers is missing in the series.

Example:

512, 729, 1000, ?

Solution:

$$8^3, 9^3, 10^3, 11^3$$

3. Geometric Series:

It is based on either descending or ascending order of numbers and each successive number is obtained by dividing or multiplying the previous number by a specific number.

Example: 4, 36, 324, 2916?

Solution

$$4 \times 9 = 36, 36 \times 9 = 324, 324 \times 9 = 2916, 2916 \times 9 = 26244.$$

4. Arithmetic Series:

It consists of a series in which the next term is obtained by adding/subtracting a constant number to its previous term.

Example: 4, 9, 14, 19, 24, 29, 34 in which the number to be added to get the new number is 5.

Now, we get an arithmetic sequence 2,3,4,5.

5. Two-stage Type Series:

In a two step Arithmetic series, the differences of consecutive numbers themselves form an arithmetic series.

Example: 1, 3, 6, 10, 15.....

Solution:

$$3 - 1 = 2, 6 - 3 = 3, 10 - 6 = 4, 15 - 10 = 5....$$

Now, we get an arithmetic sequence 2, 3, 4, 5

6. Mixed Series:

This particular type of series may have more than one pattern arranged in a single series or it may have been created according to any of the unorthodox rules.

Example: 10, 22, 46, 94, 190, ?

Solution

$$10 \times 2 = 20 + 2 = 22,$$

$$22 \times 2 = 44 + 2 = 46,$$

$$46 \times 2 = 92 + 2 = 94,$$

$$94 \times 2 = 188 + 2 = 190,$$

$$190 \times 2 = 380 + 2 = 382.$$

So the missing number is 382.

7. Arithmetico –Geometric Series :

As the name suggests, Arithmetico –Geometric series is formed by a peculiar combination of Arithmetic and Geometric series. An important property of Arithmetico- Geometric series is that the differences of consecutive terms are in Geometric Sequence.

Example: 1, 4, 8, 11, 22, 25, ?

Solution:

Series Type +3 , X2 (i.e Arithmetic and Geometric Mixing)

$$1 + 3 = 4, 4 \times 2 = 8, 8 + 3 = 11, 11 \times 2 = 22, 22 + 3 = 25, 25 \times 2 = 50$$

8. Geometrico –

Arithmetic Series is the reverse of Arithmetico - Geometric Series. The differences of suggestive terms are in Arithmetic Series.

Example: 1, 2, 6, 36, 44, 440, ?

Solution:

Series Type - X 2, + 4, X 6, +8 , X 10

$$1 \times 2 = 2, 2 + 4 = 6, 6 \times 6 = 36, 36 + 8 = 44, 44 \times 10 = 440, 440 + 12 = 452$$

9. Twin/Alternate Series :

As the name of the series specifies, this type of series may consist of two series combined into a single series. The alternating terms of this series may form an independent series in itself.

Example: 3, 4, 8, 10, 13, 16, ?

Solution:

As we can see, there are two series formed

Series 1 : 3, 8, 13 with a common difference of 5

Series 2 : 4, 10, 16 with a common difference of 6

So, next two terms of the series should be 18 & 22 respectively.

Percentage

Concept with tricks

A decimal fraction is one in which the denominator of the fraction is a power of 10 i.e. 10, 100, 1000 etc. That decimal fraction which has 100 as its denominator is known as Percentage. The numerator of such a fraction is known as Rate Per Cent.

15 % and 15/100 mean one and the same quantity.

Any number written in the form of a fraction with 100 as the denominator is a percentage.

For example: $13 = 1300/100 = 1300\%$

$3/5 = 60/100 = 60\%$

$62.5/100 = 62.5\%$

Alternatively, X% of a number Y = $(X \times Y)/100$

For example: $16(2/3) \% \text{ of } 300 = (50/3) \times (300/100) = 50$

A. Conversion from a Fraction to Percent and vice versa

1. Fraction to Percent: Multiply the fraction by 100 to convert it into a percent.

E.g.: $0.5 = 0.5 \times 100 = 50 \%$

$5/8 = 5/8 \times 100 = 62.5 \%$

2. Percent to Fraction: Reversing the earlier operation converts a percent to a fraction - i.e. divide the percent by 100.

e.g. $60 \% = 60/100 = 0.6$

$65 \% = 65/100 = 0.65 = 65:100$

B. Percentage Increase or Decrease of a Quantity:

Here, one point is to be noted, that the increase or the decrease is always on the original quantity.

If the increase or decrease is given in absolute and the percentage increase or decrease is to be calculated, then the following formula is applied to do so.

$\% \text{ increase /decrease} = 100 \times \text{Quantity increase or decrease} / \text{original quantity}$

The point worth remembering is that the denominator is the ORIGINAL QUANTITY.

Example: The salary of a Rakesh goes up from Rs 100 to Rs 135. What is the percentage increase in his salary?

Increase = $135 - 100 = \text{Rs. } 35$.

$\therefore \% \text{ increase} = 35/100 \times 100\% = 35 \%$

Alternatively, if the salary of the man had been reduced from Rs. 145 to Rs 100, what is the percentage decrease in his salary?

Decrease = $145 - 100 = \text{Rs. } 45$

$\therefore \% \text{ decrease} = 45/145 \times 100\% = 31.03 \%$.

Note that for the same quantity of increase or decrease the % increase and % decrease have two different answers. The change in the denominator i.e. the original value changes in the above two situations and hence the difference.

C. To Increase a Number by y %:

If a number is increased by 10 %, then it becomes 1.1 times of itself.

If a number is increased by 30 %, then it becomes 1.3 times of itself.

D. To Decrease a Number by y %:

If a number is decreased by 10 %, then it becomes 0.90 times of itself.

If a number is decreased by 30 %, then it becomes 0.70 times of itself.

E. Income/Weight/Salary More

If Pankaj's salary is R % more than Rohan, then Rohan's salary is less than that of Pankaj by $100 \times R / (100 + R) \%$.

F. Income/Weight/Salary Less

If P's income is R% less than Q, then Q's income is more than that of P by $100 \times R / (100 - R) \%$

Given below are some important results in that context:

- If A is $16\frac{2}{3} \%$ less than B, then B is 20 % more than A.
- If A is 20% less than B, then B is 25 % more than A.
- If A is 25 % less than B, then B is $33\frac{1}{3} \%$ more than A.

Note: If the question is - the price of a commodity is increased by R %, by what percent should its consumption be decreased, so that the total expenditure remains the same. Then the way to solve such question is the same. I.e., if the price is increased then consumption should be decreased by $100 \times R / (100 + R)$. If the price is decreased, then consumption should be increased by $100 \times R / (100 - R)$.

G. Increase and Decrease by the same % age.

If a number is increased by $R\%$, and then it is decreased by $R\%$, then in total there would be a decrease of $R^2/100\%$.

H. Increase and Decrease by different % age.

If a number is decreased by $X\%$, and then it is increased by $Y\%$. Then the total increase in the no. will be $X + Y + XY/100$.

The above-mentioned formula is very important. It has its application in so many other questions. In case instead of increase, there is a decrease, simply put a negative value in its place. You will get the right answer, even when both the decreases are given. What you will get after solving the formula, if it is positive, there is an increase, and if it is negative, there is a decrease.

I. Compound Growths.

Typically compound growths are used in investment growth analysis (compound interest) or in population growth (things like cattle population, steel production output growth). In this section, we will be primarily concerned with compound growth related to population.

If P is the population of a country and it grows at $r\%$ per annum, then the population after n years will be:

$$A = P [(100+r) / 100]^n$$

Profit and Loss

Concept with tricks

As the profit and loss questions are very common and integral part of competitive exams, you can remember the following profit loss formula to solve problems on profit and loss. Each profit and loss formula explained below will help in solving questions on the same.

- **Equal % profit & loss on the same selling price of 2 articles:**

If two items are sold at Rs X each, one at a loss of $p\%$ and the other at a gain of $p\%$, then the two transactions have resulted in an overall loss of $(p^2/100)\%$. This is the loss in percentage.

The absolute value of the loss = Rs $(2.p^2.X)/(100^2-p^2)$

- **Equal % profit & loss on the same cost price of 2 articles:**

If the cost price of two items are X , and one is sold at a loss of $p\%$ and the other at a profit of $p\%$, then the two transactions have resulted in no loss or no gain.

- **Trade Discount:**

It is a common practice to announce a discount on the marked price of an article so as to attract customers.

Note: The discount is always taken as % of the marked price unless otherwise specified.

E.g. suppose the list price of an article is Rs. 450. A discount of 5 % on its list price is announced. Therefore, the new selling price = $450 - 5\% \text{ of } 450$ i.e. $450 - 22.5 = \text{Rs } 427.5$.

- **Cash Discount:**

In addition to trade discount, the manufacturer may offer an additional discount called the Cash Discount if the buyer makes full payment within a certain specified time.

Cash Discount is usually offered on the net price (the price after subtracting trade discount from the marked price). So, $\text{Cash Price} = \text{Net Price} - \text{Cash Discount}$

Note: The cash discount is always calculated on net price, unless otherwise specified.

- **Wrong Weight:**

When a trader professes to sell at the cost price, but uses a false weight, then the percentage profit earned = $100 \times \frac{\text{Error}}{\text{True Weight} - \text{Error}}$

- **Successive Discounts:**

When a tradesman offers more than one discount to the customer, then sometimes you are required to calculate the single discount, which is equivalent to the two discounts given. There you can apply the method of decimals learned in the concepts of percentages. The successive discounts are a part of our daily lives as well as basic profit and loss mathematics.

E.g. a tradesman offers two successive discounts of 20% & 10%. Which single discount is equal to these two successive discounts?

Here you can assume the marked price to be 100. A discount of 20% will leave $100 - 20 = \text{Rs. } 80$ behind. Now after that there is a further discount of 10%, a discount of 10% on Rs. 80 will leave $80 - 8 = \text{Rs. } 72$ behind. Now for a Rs. 100 product the final price paid is Rs. 72. The total discount is $100 - 72 = 28$. As the base or the marked price is Rs. 100 only, the discount percentage is $100 \times \frac{28}{100} = 28\%$. Here this 28% is the single discount equivalent to two successive discounts of 20% and 10%. You can apply the following percentage formula to find the single equivalent discount as well.

- **Single discount, which is equal to two successive discounts of $m\%$ and $n\%$ = $M + N + \frac{MN}{100}$.**

But do remember in this case to take the values of discounts as negative as this formula is for change in values, which could be positive or negative. As discount is something, which will always reduce the marked price, its value should always be taken in negative only. Let us solve the above mentioned example with the help of this formula. This formula for profit and loss is very important.

$M + N + \frac{MN}{100} \Rightarrow (-20) + (-10) + \frac{(-20)(-10)}{100} \Rightarrow -20 - 10 + 2 = -28$. Hence, the single equivalent discount is 28%.

When the SP of x articles is equal to CP of y articles, what is the earned profit in percentage?

Profit percent = $100 \times \frac{\text{difference in } x \text{ and } y}{x}$

Probability (Principle of counting)

Concept with tricks

Just like permutation and combination, the probability word problems appear frequently in the competitive exams. In this article, we will cover basic probability theory and probability equations.

A classic definition of probability is the chance or the likelihood that an event will occur, which means the ratio of the number of favorable cases to the total number of possible cases, provided that all cases are equally likely. Probability always lies between 0 and 1.

If the probability of happening of an event is 0, then it is an impossible event.

If the probability of happening of an event is 1, then it is a sure event.

Probability of happening of any event $P(A) = \frac{\text{fav. number of cases}}{\text{Total no. of cases}} = \frac{n}{N}$

Now while solving probability in math, we have to use some specific definitions of the topic, which are given below.

Types of Experiment:

While studying probability theory, we will frequently use the term 'experiment' which means an operation which can produce well defined outcome(s). There are two types of experiments:

- (i) **Deterministic Experiment:** The experiments whose outcome is same when done under exact conditions are called Deterministic experiment. E.g. all experiments are done in chemistry lab.
- (ii) **Random Experiment:** The experiments whose outcomes are more than 1 when done under exact conditions are called Random Experiment. E.g. if a coin is tossed we may get a head or a tail.

Events in Probability:

When we perform any experiment, there are some outcomes which are called events. Let us study the different types of events can occur

.

Trial and Elementary Events: If we repeat a random experiment under exact conditions, it is known as trial and all the possible outcomes are known as elementary events. E.g. if we throw a dice it is called a trial and getting 1, 2, 3, 4, 5 or 6 is called elementary event.

Compound Event: When two or more elementary events are combined it is known as compound event. When we throw a dice, getting a prime number is compound event as we can get 2, 3, 5 and all are elementary.

Exhaustive Number of Cases: It is the total possible outcome. When we throw a dice total number of cases are 6. When we throw a pair of dice exhaustive number of cases is 36.

Mutually Exclusive Events: It means simultaneous occurrence is not possible. In case of tossing a coin, either head will come or tail will come. So, both are mutually exclusive events.

Equally Likely Cases: It means chances are equal. When we throw a dice, each outcome has equal chance. So it is case of equally likely.

Total Number of Cases: As the name suggests, the total number of elementary events of a trial are known as total number of cases.

Favorable Events: Desired outcome of an elementary event is called Favorable event. E.g. when we throw a dice and it is asked that what is the probability of getting a multiple of 3? In this case favorable cases are 2 (3 and 6) and total cases are obviously 6.

Independent Events: Two events are called independent if outcome of one event is not affecting the outcome of other. If we toss a coin and throw a dice then outcome of coin is independent of outcome of dice, both are independent events.

Formulas

Probability in simple language is defined as ratio of favorable cases to the total number of cases.

Probability of happening of any event $P(A) = \frac{\text{fav. number of cases}}{\text{Total no. of cases}} = \frac{n}{N}$

If p is the probability of happening of an event A , then the probability of not happening of that event is $P(\bar{A}) = 1 - p$

Probability Equations: $P(A) \leq 1$, $P(A) + P(\bar{A}) = 1$.

Addition theorem: $P(X \text{ or } Y) = P(X) + P(Y) - P(X \cap Y)$

or $P(X \cup Y) = P(X) + P(Y) - P(X \cap Y)$

Mutually exclusive events: Two events are mutually exclusive if they cannot occur simultaneously. For n mutually exclusive events, the probability is the sum of all probabilities of these events:

$$p = p_1 + p_2 + \dots + p_{(n-1)} + p_{(n)}$$

or

$P(A \text{ or } B) = P(A) + P(B)$ where A and B denote mutually exclusive events.

Independent events: Two events are independent if the occurrence of one event does not influence the occurrence of other events. Therefore, for n independent events, the probability is the product of all probabilities of independent events:

$$p = p_1 \times p_2 \times \dots \times p_{(n-1)} \times p_{(n)}$$

or $P(X \text{ and } Y) = P(X) \times P(Y)$, where X and Y denote independent events

Odds in favor of certain event = No. of successes: No. of failures

Odds against of an event = No. of failures: No. of successes

Permutation and Combination

Concepts with tricks

Permutations and combinations, the various ways in which objects from a set may be selected, generally without replacement, to form subsets. This selection of subsets is called a permutation when the order of selection is a factor, a combination when order is not a factor.

- Use permutations if a problem calls for the number of arrangements of objects and different orders are to be counted.
- Use combinations if a problem calls for the number of ways of selecting objects and the order of selection is not to be counted.
- Summary of formula to use

Order	Repetition	Formula
Permutation	Yes	n^r
Permutation	No	nPr
Combination	Yes	$r + n - 1Cr$
Combination	No	nCr

Example 1: Different ways to arrange (with repetition)

Question

In how many ways can the letters of the word 'LEADER' be arranged?

Options:

1. 720
2. 360
3. 200
4. 120

Solution

Letter 'E' appears twice and all other letters 1 L, 1 A, 1 D and 1 R appears once in the word.

Required number of ways = $2+1+1+1+1$

$$= 6!/2!$$

$$= \{6 \times 5 \times 4 \times 3 \times 2 \times 1\} / \{2 \times 1\}$$

$$= 720/2$$

$$= 360$$

Correct option: 2

Example 2: Different ways to arrange (without repetition)

Question

How many different ways are there to arrange your first three classes if they are Math, English, and Hindi?

Options:

1. 4
2. 6
3. 120
4. 36

Solution

We know that,

$$P_r = n!$$

$$P_3 = 3!$$

$$P_3 = 6$$

Correct option: 2

Example 3: Different ways to select (with repetition)

Question

In a shop there are 4 types of sweets. In how many ways can Shekhar buy 19 sweets?

Options:

1. 480
2. 540
3. 720
4. 1540

Solution

$${}^{r+n-1}C_r = {}^{19+4-1}C_{19} = {}^{22}C_{19}$$

We know that, ${}^nC_r = \frac{n!}{(n-r)! r!}$

$${}^{22}C_{19} = \frac{22!}{(22-19)! 19!} = \frac{22!}{3! 19!} = 1540$$

Correct Option: 2

Example 4: Different ways to select (without repetition)

Question

How many different 4-digit numbers can be formed using the digits 2,3,4,5,6,7,8 no digit being repeated in any number

Options:

1. 720
2. 120
3. 24
4. 840

Solution: The thousand places can be filled in 7 ways, the hundredth place can be filled in 6 ways, the tens place can be filled in 5 ways, and the ones place can be filled in 5 ways.

Total ways = $7 \times 6 \times 5 \times 4 = 840$

Correct option: 4

Logical Reasoning

Concept

A logical reasoning test is a fundamental part of any placement interview or fresher assessment exam. As a fresh college graduate, you should be well prepared to crack a logical reasoning test in your interview. Practice these 65 questions and gear up with sector-specific abilities. Develop better verbal and numerical reasoning abilities you're your peers right here. Few examples with an explanation are as follows.

Number Series

Q1. Look at this series: 12, 11, 13, 12, 14, 13, ... What number should come next?

- A. 10
- B. 16
- C. 13
- D. 15

Answer: Option D. This is an alternating number of subtraction series. First, 1 is subtracted, then 2 is added.

Q2. Look at this series: 36, 34, 30, 28, 24, ... What number should come next?

- A. 22
- B. 26
- C. 23
- D. 20

Answer: Option A. This is an alternating number of subtraction series. First, 2 is subtracted, then 4, then 2, and so on.

Q3. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?

- A. 7
- B. 12
- C. 10
- D. 13

Answer: Option C. Its an alternating addition and subtraction series. 3 is added in the first pattern, and then 2 is subtracted.

Q4. Look at this series: 2, 1, (1/2), (1/4), ... What number should come next?

- A. (1/3)
- B. (1/8)
- C. (2/8)
- D. (1/16)

Answer: Option B. It's a division series. Every number is half of the previous number. The number is divided by 2 successively to get the next result. $4/2 = 2$. $2/2 = 1$. $1/2 = \frac{1}{2}$. $(1/2)/2 = \frac{1}{4}$. $(1/4)/2 = \frac{1}{8}$ and so on.

Q5. Look at this series: 80, 10, 70, 15, 60, ... What number should come next?

- A. 20
- B. 25
- C. 30
- D. 50

Answer: Option A. This is an alternating addition and subtraction series. In the first pattern, 10 is subtracted from each number to arrive at the next. In the second, 5 is added to each number to arrive at the next.

Verbal Classification

Q6. Which word does NOT belong with the others?

- A. index
- B. glossary
- C. chapter
- D. book

Answer: D. Book. Rest are all parts of a book.

Q7. Which word is the odd man out?

- A. trivial
- B. unimportant
- C. important
- D. insignificant

Answer: C. Important. Remaining are synonyms of each other.

Q8. Which word does NOT belong with the others?

- A. wing
- B. fin
- C. beak
- D. rudder

Answer: C. Beak. Rest are parts of an aero plane.

Q9. Which word is the odd man out?

- A. hate
- B. fondness
- C. liking
- D. attachment

Answer: A. hate. Rest are positive emotions.

Q10. Pick the odd man out?

- A. just
- B. fair
- C. equitable
- D. biased

Answer: D. Biased. The others signify honesty.

Logical Reasoning Questions on Analogies

Q11. CUP: LIP :: BIRD : ?

- A. GRASS
- B. FOREST
- C. BEAK
- D. BUSH

Answer: C. BEAK. You drink out of a cup with your lips. Similarly, birds bite grass with their beaks.

Q12. Paw: Cat: Hoof: ?

- A. Lamb
- B. Horse
- C. Elephant
- D. Tiger

Answer: B. Horse. Cat's feet are called paws and horse's are called hoofs.

Q13. Safe: Secure: Protect:

- A. Lock
- B. Guard
- C. Sure
- D. Conserve

Answer: B. Guard

Q14. Melt : Liquid :: Freeze :

- A. Ice
- B. Solid
- C. Condense
- D. Push

Answer: B. Solid

Q15. Parts : Strap :: Wolf :

- A. Flow
- B. Animal
- C. Wood
- D. Fox

Answer: Flow

Logical Reasoning Questions on Verbal Reasoning

Q16. The 'A' state government has chalked out a plan for the underdeveloped 'B' district where 66% of the funds will be placed in the hands of a committee of local representatives.

Courses of action:

I. The 'A' state government should decide guidelines and norms for the functioning of the committee.

II. Other state government may follow similar plan if directed by the Central government.

A. If only I follows

B. If only II follows

C. If either I or II follows

D. If neither I nor II follows

E. If both I and II follow

Answer: A

Q17. The car dealer found that there was a tremendous response for the new XYZ's car booking with long queues of people complaining about the duration of business hours and arrangements.

Courses of action:

I. People should make their arrangement of lunch and snacks while going for car XYZ's booking and be ready to spend several hours.

II. Arrangement should be made for more booking desks and increase business hours to serve more people in less time.

A. If only I follows

B. If only II follows

C. If either I or II follows

D. If neither I nor II follows

E. If both I and II follow

Answer: B

Q18. The 'M' state government has decided hence forth to award the road construction contracts through open tenders only. Courses of action:

I. The 'M' state will not be able to get the work done swiftly as it will have to go through tender and other procedures.

II. Hence forth the quality of roads constructed may be far better.

A. If only I follow

B. If only II follows

C. If either I or II follows

D. If neither I nor II follows

E. If both I and II follow

Answer: D

Q19. Alert villagers nabbed a group of bandits armed with murderous weapons. Courses of action:

I. The villagers should be provided sophisticated weapons.

II. The villagers should be rewarded for their courage and unity.

A. If only I follow

B. If only II follows

C. If either I or II follows

D. If neither I nor II follows

E. If both I and II follow

Answer: B

Q20. 10 coaches of a passenger train have got derailed and have blocked the railway track from both ends. Courses of action:

I. The railway authorities should immediately send men and equipment and clear the spot

II. All the trains running in both directions should be diverted immediately via other routes.

A. If only I follow

B. If only II follows

C. If either I or II follows

D. If neither I nor II follows

E. If both I and II follow

Answer: E

Letter and Symbol Series

Q21. FAG, GAF, HAI, IAH, ____

A. JAK

B. HAL

C. HAK

D. JAI

Answer: Option A

Explanation:

The middle letters are static, so concentrate on the first and third letters. The series involves an alphabetical order with a reversal of the letters. The first letters are in alphabetical order: F, G, H, I, J. The second and fourth segments are reversals of the first and third segments. The missing segment begins with a new letter.

Q22. Look at this series: 53, 53, 40, 40, 27, 27, ... What number should come next?

A. 12

B. 14

C. 27

D. 53

Answer: Option B

Explanation:

In this series, each number is repeated, then 13 is subtracted to arrive at the next number.

Q23. Blueberries cost more than strawberries.

Blueberries cost less than raspberries.

Raspberries cost more than both strawberries and blueberries.

If the first two statements are true, the third statement is

A. true

B. false

C. uncertain

Answer: Option A

Explanation:

Because the first two statements are true, raspberries are the most expensive of the three.

Q24. Statements: All bags are cakes. All lamps are cakes.

Conclusions:

- I. Some lamps are bags.
- II. No lamp is bag.
- A. Only conclusion I follows
- B. Only conclusion II follows
- C. Either I or II follows
- D. Neither I nor II follows
- E. Both I and II follow

Answer: Option C

Explanation:

Since the middle term 'cakes' is not distributed even once in the premises, no definite conclusion follows. However, I and II involve only the extreme terms and form a complementary pair. So, either I or II follows.

Q25. Statements: Some dogs are rats. All rats are trees. Some trees are not dogs.

Conclusions:

- A. Some trees are dogs.
- B. All dogs are trees.
- C. All rats are dogs.
- D. No tree is dog.

Answer: Option B

Explanation:

Some dogs are rats. All rats are trees.

Since one premise is particular, the conclusion must be particular and should not contain the middle term. So, it follows that 'Some dogs are trees'. I is the converse of this conclusion and so it holds.

All rats are trees. Some trees are not dogs.

Since the middle term 'trees' is not distributed even once in the premises, no definite conclusion follows.

General Knowledge

Question No. 1: general knowledge about health

When was the first successful kidney transplantation made in Nepal?

Right Answer:

The first successful kidney transplantation made in Nepal in 24 Shrawan, 2065 (TU Teaching Hospital, Maharajgunj)

Question No. 2: general knowledge about the geography of Nepal

Where is the tallest bridge of Nepal?

Right Answer:

The tallest bridge of Nepal is over the Modi Khola, Parvat (135 m high from water level, joins Kushma with Katuwachaupari)

Question No. 3: general knowledge about the geography of Nepal

What portion of the world is occupied by the wetland?

Right Answer:

6.2% portion of the world is occupied by the wetland.

Question No. 4: general knowledge about the politics of Nepal

When did Krishna Prasad Bhattarai, a founder leader of the Nepali Congress and former Prime Minister pass away?

Answer: Krishna Prasad Bhattarai, a founder leader of the Nepali Congress and former Prime Minister pass away in the 20 Falgun, 2067.

Question No. 5: general knowledge about the geography of Nepal

How many places of Nepal have been declared wetlands (*simsar*) now?

Right Answer:

9 places of Nepal have been declared wetlands (*simsar*) now.

Question No. 6: general knowledge about the environment

Where is the Biodiversity Information established?

Right Answer:

The Biodiversity Information established in Tikauui, Chitwan.

Question No. 7: general knowledge about religion

When did Sai Baba, a famous spiritual guru of India pass away?

Right Answer:

Sai Baba, a famous spiritual guru of India passed away on 24 April 2011.

Question No. 8: general knowledge about the pride of Nepal

When did Tul Bahadur Pun, a Victoria Cross winner, pass away?

Right Answer:

Tul Bahadur Pun, a Victoria Cross winner, passed away in 7 Baishakh, 2068 (Aged 92, in Myagdi).

Question No. 9: general knowledge about society

What has the government of Nepal declared to observe the year 2010 AD as?

Right Answer:

The government of Nepal declared to observe the year 2010 AD as Year against violence on sex.

Question No. 10: general knowledge about arts and paintings of Nepal

Who is the artist to create a world record by filling color on a 123 m long canvas on a single day?

Right Answer:

Kiran Manandhar (13 Baishakh, 2065) is the artist to create a world record by filling color on a 123 m long canvas on a single day.

Question No. 11: general knowledge about Public Service Commission

Where is the central office of the Public Service Commission transformed to from Kamalpokhari?

Right Answer:

The central office of the Public Service Commission transformed from Kamalpokhari in the Anamnagar.

Question No. 12: Questions and Answers About Nepal untouchability, social crime

When did the then House of Representatives declare Nepal as a nation free from untouchability?

Right Answer:

the then House of Representatives declared Nepal as a nation free from untouchability 21 Jeth, 2063.

Question No. 13: general knowledge about culture

With an objective of conserving the culture and tradition of the Tamang people, where was the Tamang Museum established?

Right Answer:

With an objective of conserving the culture and tradition of the Tamang people, Rasuwa was the Tamang Museum established.

Question No. 14: general knowledge about the martyr

Where is the Martyr and Civil Park (*Shahidatatha Nijamati Park*) going to be constructed?

Right Answer:

the Martyr and Civil Park (*Shahidatatha Nijamati Park*) going to be constructed in the Jagadol, Gokarna.

Question No. 15: general knowledge about the conservation area

Which is the conservation area first established in Nepal?

Right Answer:

Annapurna Conservation Area (2049 BS) is the conservation area first established in Nepal.

Question No. 16: general knowledge about the history of Nepal

Who was the founder of Doy state?

Right Answer:

Nanyadev is the founder of Doy state.

Question No. 17: Questions and Answers About Nepal the history of Nepal

When was the Amali system eradicated?

Right Answer:

The Amali system eradicated in 1968 BS.

Question No. 18: general knowledge about the history of Nepal

From where did Damodar Shah rule as the agent of Girvan Yuddha Bikram?

Right Answer:

Damodar Shah rule as the agent of Girvan Yuddha Bikram in Nuwakot.

Question No. 19: general knowledge about religion

From which Veda did music originate?

Right Answer: SamaVed is the Ved from which Veda music originates.

Question No. 20: general knowledge about productivity

Into how many categories is the land classified based on productivity?

Right Answer:

Four (Abbal, Doyam, Sim, and Chahar) categories are the land classified based on productivity

Question No. 21: general knowledge about sports

Which are the international sports competitions that are held only in Nepal?

Right Answer:

Elephant polo is an international sports competition that is held only in Nepal.

Question No. 22: general knowledge about Ranas

Who was the father of Rana Prime Minister Mohan Shumsher?

Right Answer:

Chandra Shumsher was the father of Rana Prime Minister Mohan Shumsher.

Question No. 23: general knowledge about the history of Nepal

Who was the prime minister of Nepal when the Kot Massacre took place?

Right Answer:

Fattejungh Shah was the prime minister of Nepal when the Kot Massacre took place

Question No. 24: general knowledge about census

According to the 2058 census, which caste of Nepal is in the least minority?

Right Answer:

According to the 2058 census, the Kusunda caste of Nepal is in the least minority.

Question No. 25: Questions and Answers About Nepal the laws of Nepal

According to the MulukiAin 2020, what was the maximum interest rate allowed in Nepal?

Right Answer:

According to the MulukiAin 2020, 10% per annum was the maximum interest rate allowed in Nepal.

Question No. 26: general knowledge about World Heritage Sites

When was the Sagarmatha National Park included in the World Heritage Sites? –

Right Answer:

1979 AD (Chitwan National Park: 1984 AD) was the Sagarmatha National Park included in the World Heritage Sites.

Question No. 27: general knowledge about Nepal Rastra Bank

Which body used to issue currencies in Nepal before the Nepal Rastra Bank? –

Right Answer:

Sadar (Central) Mulukikhana used to issue currencies in Nepal before the Nepal Rastra Bank

Question No. 28: general knowledge about the third pole

What kind of climate is taken to be the climate of the cold desert and the third pole?

Right Answer:

Tundra climate, a kind of climate is taken to be the climate of the cold desert and the third pole.

Question No. 29: general knowledge about climate

What type of climate is found in the areas above 5000 m?

Right Answer:

Tundra climate, type of climate is found in the areas above 5000 m

Question No. 30 general knowledge about climate

If the average annual rainfall in the tropical monsoon region is 200 cm, what is the average annual rainfall of the warm temperate climate?

Right Answer:

If the average annual rainfall in the tropical monsoon region is 200 cm, 125 cm is the average annual rainfall of the warm temperate climate.

Question No. 31 general knowledge about climate

How many seasons are there in Nepal according to the weather conditions?

Right Answer:

– 6 seasons are there in Nepal according to the weather conditions.

Question No. 32: Questions and Answers About Nepal climate

How long does the monsoon rainfall last in Nepal?

Right Answer:

4 months long the monsoon rainfall lasts in Nepal.

Question No. 33: general knowledge about climate

What climate has a feature of dry winter and wet summer?

Right Answer:

Monsoon climate has a feature of dry winter and wet summer.

Question No. 34: general knowledge about climate

What place is known as the Cherapunji of Nepal?

Right Answer:

Pokhara (Lumle) is known as the Cherapunji of Nepal

Question No. 35: general knowledge about climate

What is the maximum summer temperature in the area of tropical monsoon climate in common?

Right Answer:

— 38°C -42°C is the maximum summer temperature in the area of tropical monsoon climate in common.

Question No. 36: general knowledge about climate

What is the origin of the hot wind 'loo' that hits the western Terai?

Right Answer:

The Thar Desert, India is the origin of the hot wind 'loo' that hits the western Terai.

Question No. 37: general knowledge about climate

Into how many types is the vegetation of Nepal classified?

Right Answer:

5 types of vegetation of Nepal are classified.

Question No. 38: general knowledge about climate

At what altitude is the tropical evergreen forest found in Nepal?

Right Answer:

Up to 1200 m from the sea level, altitude is the tropical evergreen forest found in Nepal

Question No. 39: general knowledge about climate

Where is the tropical evergreen forest found?

Right Answer:

The tropical evergreen forest found in Teari, Bhavar, Dun, and Chure range.

Question No. 40: Questions and Answers About Nepal climate

Between 1200 m and 2100 m, in upper Chure, midland, and lower part of the Mahabharat range, what kind of vegetation is found?

Right Answer:

Between 1200 m and 2100 m, in upper Chure, midland, and lower part of the Mahabharat range, the Temperate deciduous (*Patltjhar*) forest is found.

Question No. 41: general knowledge about the geography of Nepal

Between 2100 m and 3300 m, in upper altitudes of the Mahabharat range and lower Himalayas, what kind of vegetation is found?

Right Answer:

Between 2100 m and 3300 m, in upper altitudes of the Mahabharat range and lower Himalayas, Temperate coniferous (*kondhari*) forest is found.

Question No. 42: general knowledge about the palace

Which is the tallest palace of Nepal?

Right Answer:

Nautale Durbar, Basantapur is the tallest palace of Nepal.

Problem No. 43: general knowledge about temples

Which is the tallest temple of Nepal?

Solution:

Nyatapola, Bhaktapur is the tallest temple of Nepal

Problem No. 44: general knowledge about the Himalayas

What is the other name of Gaurishankar Himal?

Solution:

Pathibhara is the other name of Gaurishankar Himal.

Problem No. 45: general knowledge about climate

Which place is known as the desert of Nepal?

Solution:

Mustang is known as the desert of Nepal

Problem No.46: general knowledge about mountain

Which is the longest mountain range in the world?

Solution:

The Himalayas is the longest mountain range in the world.

Problem No. 47: general knowledge about Himal

In which range does Machhapuchchhre peak is situated?

Solution:

Machhapuchchhre peak is situated in the Annapurna range.

Problem No. 48: general knowledge about Ilam

What is the new name of *Shriantu Danda* of Ilam?

Solution:

Dipendra Shikhar is the new name of *Shriantu Danda* of Ilam.

Problem No. 49: general knowledge about Taplejung

If Singhlila mountain lies in Taplejung, where is Mukutchuren Himal?

Solution:

Mukutchuren Himal is in Dhaulagiri.

Problem No. 50: Questions and Answers About Nepal killer mountain

Which mountain is understood by 'Killer Mountain'?

Solution:

Manaslu mountain is understood by 'Killer Mountain'

Sample Questions

Subject: English (40 Questions)

1. She is very good ----- swimming.

- a) at b) on c) of d) for

2. Ravi will have arrived home ----- 8 pm tomorrow.

- a) in b) at c) by d) on

3. Rita is ----- honest and diligent student.

- a) a b) an c) this d) no article

4. The passive version of “Who did it?” is:

- a) Who was it done? b) Who was it done by? c) Who was done it? d) Who had it done by?

5. We had to stop ---- the entrance for the security check.

- a) in b) on c) at d) for

6. Using a ----- cleaner is the best way for avoiding the dust pollution.

- a) vaccum b) vacume c) vacuum d) vacuume

7. The plural form of “ox” is:

- a) oxen b) oxes c) oxez d) none

8. The feminine form of deer is:

- a) deeress b) doe c) stag d) none

9. If I had known about your arrival, I ----- to receive you at the airport.

- a) would come b) would came c) would have come
d) had come

10. At midnight, all the goats were -----.

- a) bleating b) howling c) roaring d) mowing

11. The question tag of "They have already arrived," is

- a) Have they? b) Haven't they? c) Weren't they? d) Did they?

12. Please ----- the cigarette. It irritates me.

- a) put down b) put out c) put away d) put in

13. As Gretel's father could not do anything, he gave-----.

- a) away b) out c) in d) into

14. I have eaten nothing for hours. I am ----- hungry.

- a) quiet b) quit c) quite d) quit

15. The synonym of recurring is:

- a) occurring repeatedly b) happening rarely
c) occurring once a week d) occurring seldom

16. The antonym of "on" is:

- a) of b) un c) off d) out

17. ----- he was very popular among common people; he could not win the election.

- a) Because b) So c) Although d) Therefore

18. The indirect speech of “Are you sure? She said to me”, is:

- a) She asked me if I was sure.
- b) She wanted to know was I sure.
- c) She inquired if I am sure.
- d) She asked him if I was sure.

19. In the night bus yesterday, I had my purse _____.

- a) steal
- b) stole
- c) stolen
- d) to steal

20. I am looking forward to ----- you very soon again.

- a) see
- b) seen
- c) seeing
- d) be seen.

21. I bought this pen from the ----- store.

- a) stationery
- b) stationary
- c) stationnary
- d) stantianory

22. This bed is not _____ for two people to sleep in.

- a) as wide as
- b) wide enough
- c) wider enough
- d) quite wider

23. The fault in the engine is _____ this time than it was the last time.

- a) more serious
- b) seriouser
- c) very serious
- d) serious than

24. You will find the photograph of mine ----- page 13.

- a) at
- b) on
- c) of
- d) with

25. Reeta can dance ----- of all in this class.

- a) the best
- b) better
- c) best
- d) more better

26. Hurry up and use the fire -----, the house is on fire.

- a) extincer
- b) extinguisher
- c) extinguishing
- d) extinguish

27. The tag question of “I am an engineer,” is:

- a) Aren't I?
- b) Am not I?
- c) Don't I?
- d) Ain't I ?

28. I am in a state of dilemma. That means I am -----.

- a) dazzled b) tired c) puzzled d) not sure

29. She undergoes a strange experience of seeing something not present in front of her. In other words, she is suffering from -----.

- a) hallucination b) bronchitis c) tonsillitis d) psychosis

30. She can play tennis, but she is ----- at it than her friend.

- a) badly b) worse c) more badly d) worsley

31. Sulav sold his plot of land in the village so that he ----- buy a new house in the city.

- a) could b) can c) need d) would

32. If you teased the dog, it ----- bite you.

- a) will b) would c) did d) can

33. She is so ____ that she easily catches cold.

- a) Sincere b) sensitive c) sensible d) sober

34. The synonym of purgatory is:

- a) polluted city b) hell c) heaven d) sky

35. The synonym of creek is:

- a) pond b) late c) rivulet d) tributary

36. No sooner had I left the room, the bomb ----- exploded.

- a) had b) could be c) would be d) none of the above

37. Sarita plays chess ----- than her sister.

- a) more better b) better c) well d) best

38. I am looking forward to ----- you soon.

- a) seeing b) see c) be seen d) seen

39. Because of the heavy rain, they decided to call ----- the cricket match.

- a) out b) up c) off d) down

40. Cholera broke ----- in Jajarkot ten years ago.

- a) out b) down c) up d) into

Mathematics (50 Questions)

41. Which one of the following numbers has a remainder of 4 when it is divided by 6?

- a) 8 b) 12 c) 22 d) 29

42. The sum of the product and quotient of 4 and 4 is ____.

- a) 16 b) 15 c) 8 d) 17

43. The average of all even numbers between -4 and 5 is ____.

- a) 1 b) 0.5 c) -1 d) none of these

44. The sum of first five prime numbers is:

- a) 11 b) 18 c) 26 d) 28

45. The value of $\sum_{n=10} (-1)^n$ is:

- a) 1 b) -1 c) 10 d) 0

46. The product of two consecutive even number is 224. Then the numbers are:

- a) 16, 18 b) 12, 14 c) 14, 16 d) 18, 20

47. If 5 is added to the square of a number, then the result is 14. What is the value of that number?

- a) 3 b) 5 c) 7 d) 9

48. If three spoons equal to one glass, two glasses equal to one plate, then how many spoons equals to one plate?

- a) 3 b) 6 c) 9 d) 2

49. If a matrix is of order 5×7 , then each column will contain ____ elements.

- a) 5 b) 12 c) 35 d) 7

50. If the equations are $3x + 4y = 7$ and $4x - y = 3$, after solving these equations the value of x and y will be:

- a) 1, 1 b) 1, 2 c) 2, 1 d) 2, 2

51. What is the value of x in series 1, 9, 25, x, 81, 121?

- a) 100 b) 36 c) 49 d) 64

52. If $a + b = c$, then what is the average value of a, b, and c?

- a) $(a+b)/3$ b) $c/3$ c) $2c/3$ d) $c/3$

53. If x is an integer and $y = -2x - 8$, what is the least value of x for which y is less than 9?

- a) -8 b) -9 c) -10 d) -11

54. The slope of line which equation is $2x - 4y = 9$ is:

- a) 2 b) $\frac{1}{2}$ c) $-\frac{1}{2}$ d) 3

55. What is the slope of horizontal line?

- a) >1 b) <0 c) 0 d) 1

56. The difference between $\frac{3}{5}$ of 80 and 30% of 80 is:

- a) 20 b) 14 c) 15 d) 24

57. Gautam spent Rs. 40/-, which is 5% of his daily wage, then his total daily wage is:

- a) Rs.400/- b) Rs.600/- c) Rs.800/- d) Rs. 1000/-

58. If 1254376 represents the CENTURY, then what represents 735?

- a) NUT b) RUT c) RUN d) YET

59. Find the missing value in [

2 7 6

9 5 1

4 3?

].

- a) 5 b) 8 c) 7 d) 9

60. There are 48 students in a computer class. If number of boys are twice than girls, then how

many girls are there?

- a) 16 b) 18 c) 32 d) 28

61. Find the number x, which is equal to (80% of x) plus 5.

- a) 20 b) 30 c) 40 d) 25

62. If the ratio of two numbers is 2:3 and sum of these numbers is 30, then which are these numbers?

- a) 14, 16 b) 10, 20 c) 12, 18 d) 18, 12

63. If the age of five girls are 15, 16, 17, 18, 19 respectively then what is the average age of girls?

a) 15

b) 17

c) 18

d) 19

64. How many triangles in this figure?

a) 6

b) 7

c) 8

d) 9

65. What is the value of $\cos 60^\circ$?

a) 1

b) $\frac{1}{2}$

c) 0

d) $\sqrt{3}$

66. Find the value of x in series 1, 1, 2, 3, 5, 8, 13, x.

a) 21

b) 22

c) 19

d) 23

67. If 'n' is an integer, which of the following must be even?

a) $n + 1$

b) $n + 2$

c) $2n + 1$

d) $2n$

68. The largest prime factor of 255 is:

a) 45

b) 25

c) 17

d) 5

69. The sum of first n natural number is:

a) $(n+1)$

2

b) $(n+1)(2n+1)$

2

c) $(n+1)2$

2

d) none of these

70. The root of the equation $3x^2$

$- 8x + 16 = 0$ are

a) real & equal b) real & unequal c) imaginary & unequal d) none of these

71. If $x + y = 12$ and $x - y = 6$ then, the value of $x^2 - y^2$ is:

a) 18 b) 36 c) 60 d) 72

72. If $x - 5 = 2$, then the value of $x + 12$ is:

a) 15 b) 17 c) 19 d) 18

73. The value when simplified $(6^4 - 6^3)/5$ is:

a) $1/5$ b) 63 c) $6/5$ d) 64

74. If $4/a + 4/a + 4/a + 4/a = 16$ then, $4a$ is:

a) 4 b) 8 c) 12 d) 16

75. The slope of line x

a

$+ y$

b

$= 1$ is:

a) $-\left(\frac{a}{b}\right)$

a

b

b) $-\left(\frac{b}{a}\right)$

b

a

c) ab d) $-\left(\frac{1}{ab}\right)$

1

ab

)

76. If $x = 4y$, what percent of $2x$ is $2y$?

a) 20% b) 40% c) 30% d) 25%

77. If the cost of 9 kg sugar is Rs. 270/-, how much sugar can be purchased for Rs. 390/-?

- a) 11 b) 12 c) 13 d) 14

78. If 3 bananas cost 50 cents, how many bananas can be bought for 20 dollars?

- a) 120 b) 115 c) 110 d) 130

79. If $5:7 = 15:x$, then the value of x is:

- a) 35 b) 21 c) 27 d) 18

80. By selling 150 apples, the seller gains the selling price of 30 apples, then gain percentage is:

- a) 25% b) 30% c) 12% d) 20%

81. A vendor purchases lemons at Rs. 5/- per lemon, at what price vendor will sell lemon to gain

20% profit?

- a) Rs. 4/- b) Rs. 5/- c) Rs. 6/- d) Rs. 7/-

82. What is the population doubling time if population growth rate is 2% per annum?

- a) 50yrs b) 30yrs c) 40yrs d) none of these

83. The cardinal number of a vowel set $V = \{a, e, i, o, u\}$ is:

- a) 4 b) 5 c) 6 d) 7

84. If $\log_a 81 = 4$, then the value of 'a' is:

- a) 4 b) 3 c) 5 d) none of these

85. The value of $\sqrt{18} \sqrt{72}$ is:

- a) a rational number b) an irrational number

c) an imaginary number d) none of these

86. If $\frac{5}{7}$ of a number is 1025, then $\frac{3}{7}$ of number is:

a) 735 b) 430 c) 615 d) 560

87. The number of seconds in 1

1

3

hours is:

a) 4800 b) 4700 c) 4900 d) 5000

88. The 4m wide carpet is used for carpeting a room of 8m long and 3m wide, then what is the length of carpet?

a) 5m b) 6m c) 2m d) 3m

89. Hari ranks seventh from the top and twenty sixth from the bottom in a class. Then the total number of students in a class are:

a) 36 b) 35 c) 31 d) 32

90. If three girls write 3 pages in 3 minutes, in how many minutes can one girl write one page?

a) 4 min b) 5 min c) 3 min d) 6 min

General Knowledge

91. Nepal was hit by the 7.8 magnitude Earthquake on:

- a) 2072 Baisakh 10 b) 2072 Baisakh 11 c) 2072 Baisakh 12 d) 2072 Baisakh 13

92. The new constitution of Nepal, "Nepal KoSambidhan" was released on:

- a) 2072 Asoj 4 b) 2072 Asoj 3 c) 2072 Asoj 2 d) 2072 Asoj 1

93. Who is the writer of Novel EkChihan ?

- a) Hriday chandra singh Pradhan b) Krishna chandra singh Pradhan
c) Bijay bahadur Malla d) Parijat

94. Kusti is played on:

- a) Ground b) Court c) Ring d) Akhada

95. Who is considered as the father of computer?

- a) Charles Babbage b) Bill Gates c) Mark Jukerberg d) Chris
Hughes

96. Which one of the following is the database program?

- a) MySQL b) MS-Excel c) MS-Word d) MS-
Outlook

97. What is the full form of LCD?

- a) Light and Clear Display b) Liquid Cristal Display
c) Light Cristal Display d) Liquid Clear Display

98. Which is the first bank in Nepal?

- a) Nepal Bank Limited b) Rastriya Banijya Bank
c) Nepal Investment Bank d) Nepal Rastra Bank

99. Which of the following field is not awarded by Noble Prize?

- a) Computer Science b) Physics c) Economics d) Literature

100. How many provinces (Pradesh) are in Nepal according to the new constitution?

a) 5

b) 7

c) 8

d) 9