

Learning Outcome based Question Paper Setting

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Outline

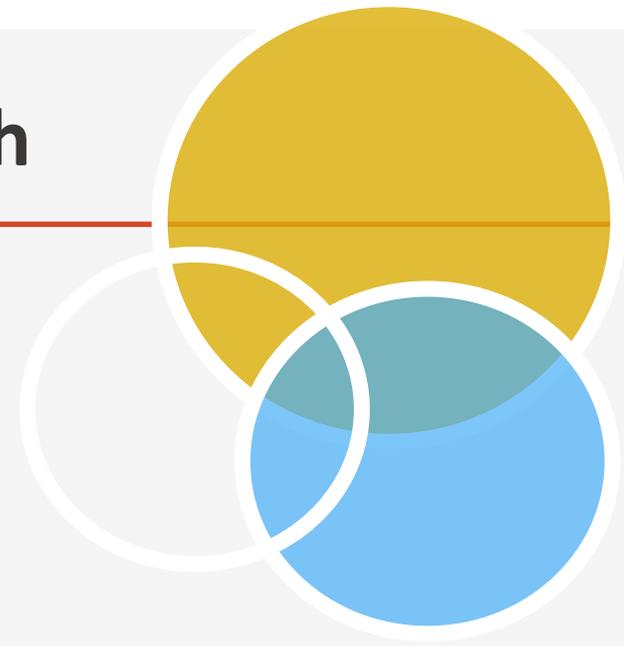
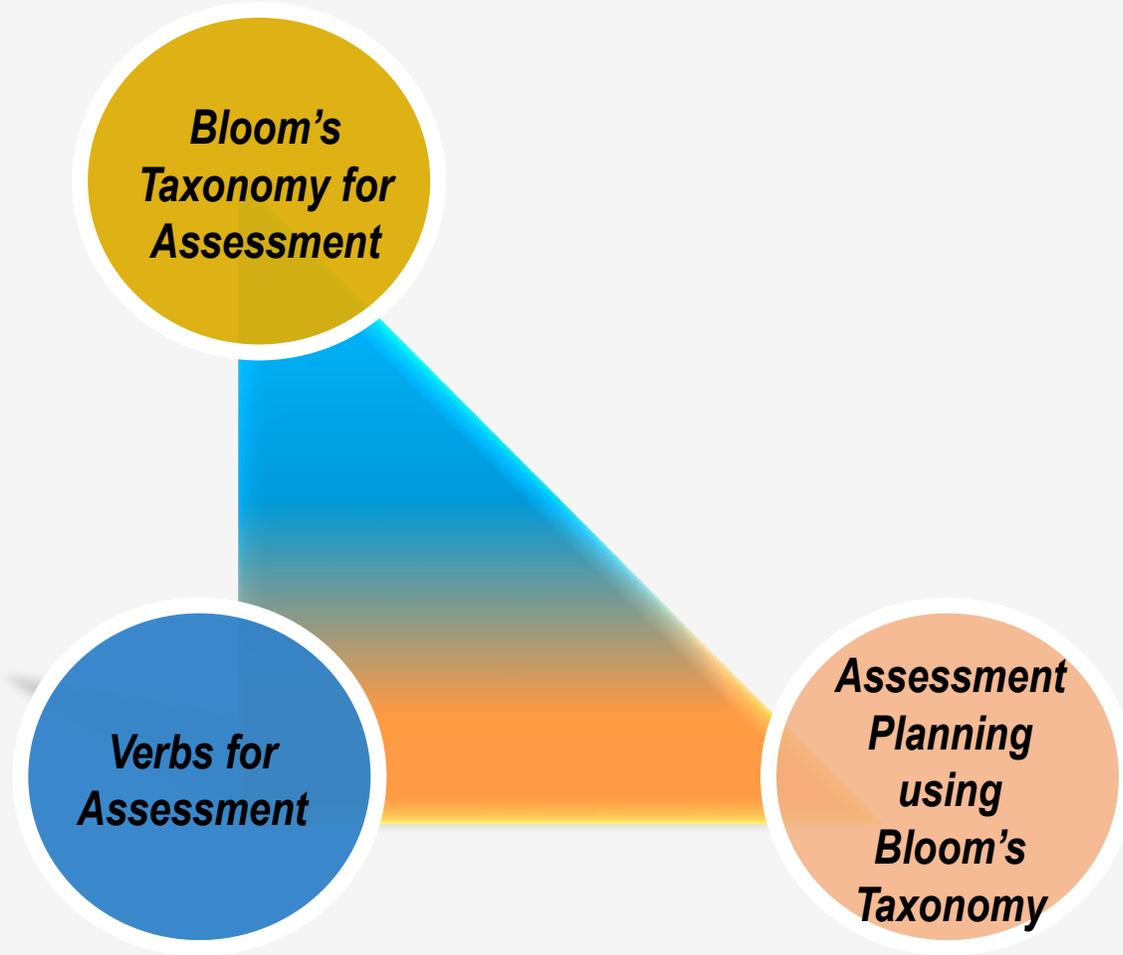
- **Assessment and Bloom's Taxonomy**
- **Developing a Course Outcome Based Question Paper**
- **Designing Rubrics**

Assessment and Bloom's Taxonomy

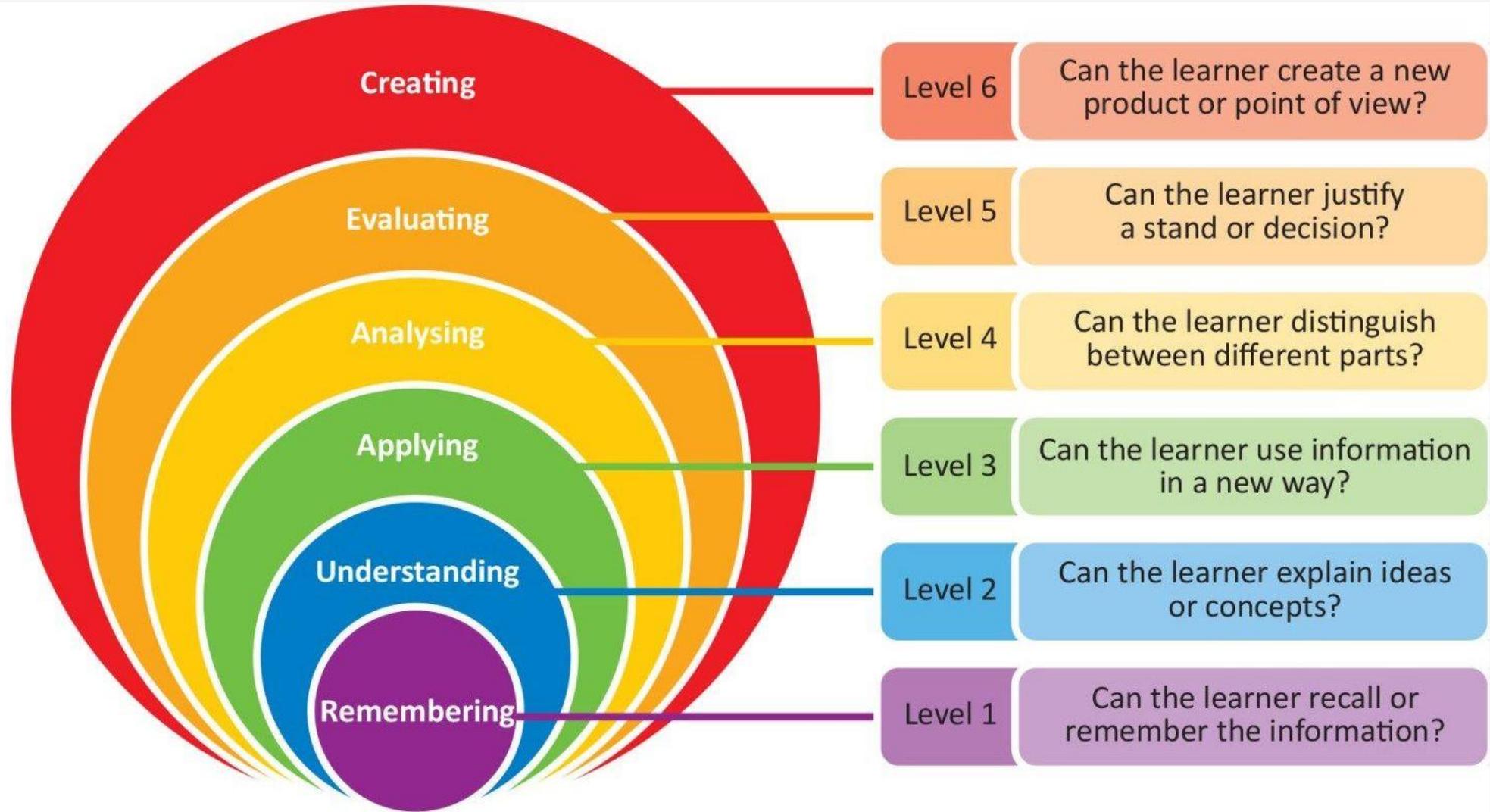
Linking CO and Assessment Criteria

- Should be an alignment between teaching methods, course outcomes and assessment criteria
- Correlation make the overall learning experience more transparent and meaningful

Assessment Planning: Effective Approach



Bloom's Taxonomy



Bloom's Taxonomy

Remembering

Verbs:

- Choose, Define, Find, Label, List, Match, Name, Recall, Relate, Select, Show, Spell, State, Write, Identify etc.

Examples:

- Define force
- State advantages and disadvantages of 4G over 3G
- Label the parts of lathe machine
- Name two types of soil foundation
- Give the full form of LAN, WAN
- Write the formula for calculating shear force
- Identify switch from the given objects
- Enlist the chemical properties of the given material

Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers

Bloom's Taxonomy

Understanding

Verbs:

- Classify, Compare, Contrast, Explain, Extend, Illustrate, Infer, Interpret, Outline, Relate, Rephrase, Show, Summarize, Translate Differentiate, etc.

Examples:

- Explain the concept of software
- Differentiate between digital and analog communication
- Differentiate between manual and automatic manufacturing processes
- Distinguish between teak and salwan wood
- Give examples of an array
- Interpret the relationship between stress and strain from the given graphical representation
- Project population of India in 2020 on the basis of given data

Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas

Bloom's Taxonomy

Applying

Verbs:

- Apply, Build, Choose, Construct, Develop, Determine, Identify, Interview, Calculate, Model, Organize, Plan, Select, Solve, Utilize, Demonstrate etc.

Examples:

- Calculate the cost of carpeting the room leaving two foot from each side given the length, breadth of the room and cost of carpeting per square foot
- Calculate transmission losses in a given locality
- Calculate the force the wall will exert on hand given the force exerted by hand on the wall
- Determine tensile stress in a given rod subjected to a given load
- Demonstrate the principle of inertia of moment

Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way

Bloom's Taxonomy

Analyzing

Verbs:

- Analyze, Assume, Categorize, Classify, Compare, Conclusion, Contrast, Discover, Dissect, Distinguish, Divide, Examine, Function, Inference, Inspect, List, Motive, Relationships, Simplify, Survey, Test for etc.

Examples:

- Identify causes for failure of a given machine
- Locate a fault in the given circuit diagram
- Locate mistakes in the given algorithm for achieving specified objectives
- Analyze the strengths and weaknesses of the given higher education system

Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations

Bloom's Taxonomy

Evaluating

Verbs:

- Agree, Appraise, Assess, Choose, Compare, Conclude, Criteria, Criticize, Decide, Deduct, Defend, Determine, Estimate, Evaluate, Explain, Importance, Influence, Interpret, Judge, Justify, Mark, Measure, Opinion, Prioritize, Prove, Rate, Recommend, Select, Support, etc.

Examples:

- Judge the appropriateness of circular iron stairs for a given residential building
- Evaluate the effectiveness of communication system in a given organization
- Select an appropriate reinforcement technique for a given bridge
- Determine the relevance of MOOCs for Technical education in the context of digital divide

Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria

Bloom's Taxonomy

Creating

Verbs:

- Adapt, Build, Change, Choose, Combine, Compile, Compose, Construct, Create, Delete, Design, Develop, Discuss, Elaborate, Estimate, Formulate, Happen, Imagine, Improve, Invent, Minimize, Modify, Originate, Plan, Predict, Propose, Solve, Suppose, Test, Theory etc.

Examples:

- Prepare a plan to convert a given city into a smart city
- Design a component for a machine
- Write a programme in C++ as per the requirements of an institution
- Design a website for a given institution
- Formulate a career development plan for the employees of a given organization

Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions

Developing a Course Outcome Based Question Paper

Question Paper Setting

Common Drawbacks

- Inadequate coverage of content
- Stress on testing lower level abilities
- Asking trivial things
- Incorrect framing of questions
- Repetition of questions
- Grammatical mistakes in questions
- Asking irrelevant questions
- Inordinately lengthy
- Inappropriate mark allocation

Steps in Question Paper Setting

List the Topics & Course Outcomes

- Boolean Algebra
- Logic Gates
- Minimization of Boolean Expressions

Steps in Question Paper Setting

Determine the weightages to be assigned to various topics

| Topic | Weightage |
|-------------------------------------|-----------|
| Boolean Algebra | |
| Logic Gates | |
| Minimization of Boolean Expressions | |

Total Marks: 30

Steps in Question Paper Setting

Determine the weightages to be assigned to various topics

| Topic | Instructional Time | Weightage (Time/ Total Instructional time) x Marks | Final Weightage |
|-------------------------------------|--------------------|---|-----------------|
| Boolean Algebra | 4 | 8 | 8 |
| Logic Gates | 4 | 8 | 10 |
| Minimization of Boolean Expressions | 7 | 14 | 12 |

Total Marks: 30

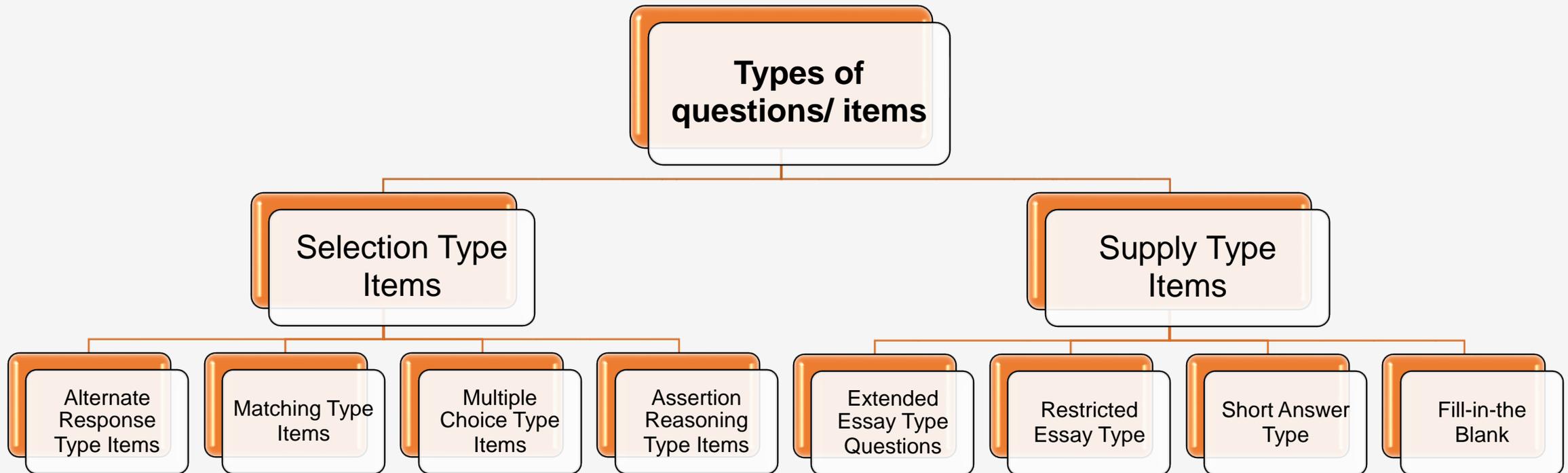
Steps in Question Paper Setting

Prepare a Table of Specification

| Topic | R | U | A | HA | Total Marks |
|-------------------------------------|---|---|---|----|-------------|
| Boolean Algebra | 2 | 2 | 4 | | 8 |
| Logic Gates | - | 2 | 4 | 4 | 10 |
| Minimization of Boolean Expressions | 2 | 4 | - | 6 | 12 |

Steps in Question Paper Setting

Select the types of questions/items to be set



Write Questions/ Items

Edit/ Review/ Edit

Steps in Question Paper Setting

Course Outcomes and Evaluation Techniques

| Technique of Evaluation | Cognitive Domain | | | | | |
|-----------------------------------|------------------|---------------|----------|-----------|------------|----------|
| | Remembering | Understanding | Applying | Analyzing | Evaluating | Creating |
| Open Book Examination | | | Yes | Yes | Yes | Yes |
| Closed Book Examination | | | | | | |
| Supply Type Questions | | | | | | |
| • Extended Essay Type Questions | X | X | Yes | Yes | Yes | Yes |
| • Restricted Essay Type Questions | Yes | Yes | Yes | Yes | Yes | X |
| • Short Answer Type Questions | Yes | Yes | X | X | X | X |
| • Fill in the blanks | Yes | Yes | X | X | X | X |
| Selection Type Questions | | | | | | |
| True/False Items | Yes | Yes | X | X | X | X |
| Matching Type Items | Yes | Yes | X | X | X | X |
| Multiple Choice Type Items | Yes | Yes | Yes | Yes | Yes | X |
| Assertion & Reasoning Type Items | X | X | Yes | Yes | Yes | X |

Steps in Question Paper Setting

Template

| Q.No | Questions | Marks | CO | BL |
|------|---|-------|-----|----|
| 1(a) | Explain the steps involved in solving a problem using computer. | 08 | CO1 | L2 |
| 1(b) | Write an algorithm to find roots of a quadratic equation $ax^2 + bx + c = 0$ reading the values of a, b and c. | 12 | CO2 | L3 |
| 2(a) | Compare if-else-if and switch statement giving examples for their relevant use. | 08 | CO2 | L2 |
| 2b | Write a C program that reads a given integer number and checks whether it a palindrome. A palindrome is a number that has same value even when it is reversed. Eg: 12321 is a palindrome. | 12 | CO3 | L3 |
| 3a | Compare the working of three looping constructs of C language giving their syntax. | 08 | CO3 | L2 |

Steps in Question Paper Setting

Assemble

- Parts of Question Paper
 - General Information
 - Instructions
 - Questions/Items
 - Mark distribution

Steps in Question Paper Setting

General Information

- Name of College/University
- Branch
- Year/Semester
- Course
- Course Code
- Total Marks
- Time Allowed

Steps in Question Paper Setting

Instructions

- Complete
- Concise
- Correct
- Simple
- Section-wise
- Grammatically correct

Steps in Question Paper Setting

Questions/Items

- Relevant
- Measure significant outcome
- Correctly framed as per the guidelines of writing Question/Items
- Properly sequenced
- Grammatically correct

Steps in Question Paper Setting

Mark distribution

- Proper allocation of marks to each question/item
- Distribution of marks for sub- sections/parts
- Higher ability level assigned more marks
- Difficult questions assigned more marks
- Marking scheme to be provided

Thank You