SEMESTER – I

CPS 2a - Part I -PEDAGOGY OF MATHEMATICS

Credits: 4 **Internal: 40 marks**

Hours/Week: Theory-4hrs & Practical- 4hrs **External: 60 marks**

Total: 100 marks

Course Learning Outcomes:

At the end of the course, the student-teachers will be able to

- explain the nature and scope of Mathematics;
- formulate the aims and objectives of teaching Mathematics;
- integrate the teaching skills effectively in the classroom;
- identify the diverse needs of learners in Mathematics;
- explore the various methods of teaching and learning Mathematics;
- organize the utility of various learning resources;
- observe the classes of subject experts and reflect on the demonstration of concepts in Mathematics; and
- prepare mini teaching lessons and Educational Technology record.

Unit I: Nature and Scope of Mathematics

Meaning, Definition and Scope of Mathematics - Importance of learning Mathematics - Structure, Abstractness, Symbolism, Precision - Mathematics as a science of measurement and quantification - Aesthetic sense in Mathematics - Mathematics and its relationship with other disciplines.

Unit II: Aims and Objectives of Teaching Mathematics

Goals and Objectives of teaching Mathematics with reference to Revised Bloom's Taxonomy of Educational Objectives - General and Specific Objectives of teaching Mathematics –

Writing Objectives in behavioral terms- Aims of teaching Mathematics at different levels: Primary, Secondary and Higher Secondary.

Unit III: Development of Skills through Mini Teaching

Mini Teaching: Meaning, Characteristics, Phases of Mini Teaching, Teaching Skills : Skill of Set Induction, Skill of Explaining, Skill of Blackboard Writing, Skill of Illustrating with Examples, Skill of Probing Questions, Skill of Fluency in Questioning, Skill of Stimulus Variation, Skill of Reinforcement, Skill of Achieving Closure, Advantages and Limitations of Mini Teaching.

Unit IV: Exploring Learners in Teaching and Learning Mathematics

Gifted children in Mathematics - Nature, Characteristics and Enrichment Activities, NTSE, Mathematics Olympiad - Slow learners in Mathematics – Meaning and Definition, Characteristics, Distinguishing slow learners from mentally retarded and learning disabled, Causes and Remedial Programmes.

Unit V: Methods of Teaching Mathematics

Inductive, Deductive, Analytic, Synthetic, Heuristic, Project, Problem Solving and Laboratory methods of teaching Mathematics- Activity Based Learning (ABL), Augmented and Virtual Reality - Simplified Active Learning Methods (SALM) - Applications of ABL and SALM - Format of a typical lesson plan based on SALM - Introduction; Evocation, Recall, Survey - Understanding; Concept, Teacher and Individual Problem solving - Group Work, Presentation - Evaluation: Reinforcement, Homework, Remedial measures.

U**nit VI: Teaching Aids in Mathematics**

Edgar Dale’s cone of experience - Instructional material or teaching aids employed in Mathematics teaching : SMART Interactive Whiteboard, Chalk Board, Bulletin Board, Flannel Board, Pictures, Graphs, Charts, Diagrams, Photographs, Cartoons, Posters, Flash cards, Newspapers, Models, Dioramas, Slides, Filmstrips, Transparencies, Scrap Book, Epidiascope, Projectors Radio, Tape Recorder, Television, Closed Circuit Television (CCTV), Video Tape

or Cassette Recorder (VCR), DVD, MP-3,VCD, Motion Pictures and Computers. Importance of TLMs in classroom transaction - No cost and low cost materials- Contextual and local - specific TLMs - Collection, preparation, storing and use of TLMs- E-Content Development and Digital tools for Online Teaching and Learning - LMS:Google Classroom, Digital Tool: Kahoot.

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