

**Indicative Syllabus for Computer Based Test (CBT) for Soil Conservation  
Discipline**

**I. Salient Points**

- a. **Pattern of question paper:** The question paper will be bilingual i.e. both in **English and Hindi, except the test of English knowledge(objective)**. All the questions will be objective type and shall have 4 options of which one option will be correct.
- b. **Duration of the computer-based test** – Total duration would be **2 hours** comprising of the General Aptitude Test (GAT) and Technical Knowledge Test (TKT)
- c. **No. of questions in each part i.e. in General Aptitude Test (GAT) and Technical Knowledge Test (TKT)** - There will be 30 numbers of General Aptitude Test (GAT) and 70 numbers of questions in Technical Knowledge Test (TKT) and. Thus, there will be **100 numbers** of questions.
- d. **Marks of each question and total marks of the question paper** – Each question would carry **1 mark** and the total marks of the paper (General Aptitude and Technical Knowledge) would be **100**.
- e. **Negative marking** - There will be a negative marking of **0.25 mark** for each wrong answer. However, no mark will be deducted for not attempting the question by candidate.

**II. Indicative Syllabus for Computer Based Test (CBT) for Soil Conservation Discipline.**

**Syllabus for General Aptitude Test (GAT)**

**A. General Intelligence & Reasoning:** The Syllabus for General Intelligence would include questions of both verbal and non-verbal type. The test may include questions on analogies, similarities, differences, space visualization, problem solving, analysis, judgment, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series, etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationships, arithmetical computations, and other analytical functions.

**B. General Awareness:** Questions will be aimed at testing the candidate's general awareness of the environment around him/ her and its application to society. Questions will also be designed to test knowledge of current events and of such matters of everyday observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighboring countries especially pertaining to History, Culture, Geography, Economic Scene, General Polity and Scientific Research, etc. These questions will be such that they do not require a special study of any discipline.

**C. General English:** English Language & English Grammar. Narration, Voice, Basic Sentence Patterns. Transformation of Sentences, Determiners and Preposition, Tenses, Prefix, Suffix, Parts Of Speech-Common errors (Noun, Pronoun, Articles, Adverb, Punctuation, Preposition etc.) , Modals, Phrases, Idioms, Vocabulary

## Syllabus for Technical Knowledge Test (TKT) Soil Conservation Discipline

Sl. no	Subtopic	Detail Description
1	<b>Soil and Water Conservation Engineering</b>	Hydrologic cycle, precipitation and its forms, rainfall measurement and estimation of mean rainfall, frequency analysis of point rainfall. Mass curve, hyetograph, depth- area-duration curves and intensity-duration-frequency relationship. Hydrologic processes- interception, infiltration -factors influencing, measurement and indices. Evaporation - estimation and measurement. Runoff - factors affecting, measurement, stage - discharge rating curve, estimation of peak runoff rate and volume, rational method, Cook's method and SCS curve number method.
2	<b>Soil and water erosion</b>	Introduction, causes and types, factors affecting and effects of erosion; Soil loss estimation – universal soil loss equation (USLE) and determination of their various parameters; application and limitations of USLE; Modified soil loss equation (MUSLE) and RUSLE; Rainfall erosivity – estimation of erosivity from rainfall data by KE <sub>&gt;25</sub> and EI <sub>30</sub> methods; Soil erodibility - topography, crop management and conservation practice factors; Measurement of soil erosion by runoff plots and by soil samples; Water erosion – mechanics and factors affecting erosion; forms of water erosion, Gullies and their classification, stages of gully development; Water erosion control measures– agronomical measures, tillage practices and conservation tillage; Mulching; Engineering measures and their planning and layout, Contour stonewall and trenching and their suitability for use, flow measuring structures.
3	<b>Gully and ravine reclamation</b>	Principles of gully control - vegetative measures, brush wood dams, loose rock fill dams; Temporary structures of gully control, permanent gully control structures; Grassed waterway Wind erosion and control measures, Land use capability classification objectives of classification, capability, limitation, land capability unit, land capability sub-classes; Land use capability classification by United States Department of Soil Conservation Service, limitations of different LUCC;
4	<b>Sedimentation in tanks and reservoirs</b>	Sedimentation, sources of sedimentation, factors responsible for sedimentation; effects of sedimentation, types of sediment load, sediment transportation, sediment delivery ratio, trap efficiency; Estimation of sedimentation, bed load estimation, suspended load sampling; Measurement of sedimentation - can type, bottle type, bed load sampling, box type, pan type, pit type; Sedimentation in reservoirs - factors affecting sedimentation, rate of reservoir sedimentation, silt monitoring and storage loss in tanks and reservoirs, reservoir sedimentation control.
5	<b>Water Harvesting and Soil conservation Structures</b>	Water harvesting - principles, importance, and issues. Water harvesting techniques – classification based on source, storage, and use. Runoff harvesting – short-term and long - terracing techniques. Short - term harvesting techniques – terracing and bunding, rock and ground catchments. Long-term harvesting techniques – purpose and design criteria. Structures – farm ponds – dug out and embankment reservoir types, tanks and subsurface dykes. Farm pond – components, site selection, design criteria, capacity, embankment, mechanical and emergency spillways, cost estimation and construction. Percolation pond – site selection, design and construction details. Design considerations of nala bunds. Soil erosion control structures – introduction, classification, and functional requirements. Permanent structures for soil conservation and gully control – check dams, drop, chute and drop inlet spillways – design requirements, planning for design, design procedures – hydrologic, hydraulic and structural design and stability analysis. Hydraulic jump and its application. Drop spillway – applicability, types – straight drop, box – type inlet spillways – description, functional use, advantages and disadvantages, straight apron and stilling basin outlet, structural components, and functions. Chute spillway – description, components, energy dissipaters, design criteria of Saint Antony Falls (SAF) stilling basin and its limitations. Drop inlet spillway – description, functional use and design criteria.