NOTIFICATION No. 91/GEN/DOP Date:27/06/2012

Rules for open competitive Examination to be conducted by the Sikkim Public Service Commission in 2012 for selection of candidates for appointment to the post of Assistant Engineer (Civil) are published for general information.

1) The number of vacancies to be filled up after the Examination will be specified in the Notice to be issued by the Sikkim Public Service Commission.
2) The Examination will be conducted by the Sikkim Public Service Commission according to syllabus and procedure as indicated in the **Appendix I** to these Rules.
3) The date and place of Examination will be fixed by the Sikkim Public Service Commission.
4) Candidate must write the answers in his/her own handwriting. Under no circumstance will he/she be allowed the help of an amanuensis to write the answers.
5) A candidate must pay fees as may be prescribed by the Commission.
6) The decision of the Commission as to the eligibility of a candidate for admission to the examination shall be final.
7) No candidate will be admitted to the examination unless he/she holds a certificate of admission issued by the Commission.
8) A Candidate who is or has been declared by the Commission to be guilty or any attempt on his/her part to obtain support for his/her candidature by any means shall render himself/herself liable to be disqualified for admission to the competitive examination.
9) The Commission shall have the discretion to fix the qualifying marks in any or all subjects in the written Examination.
10) The candidate must obtain the qualifying marks decided by Sikkim Public Service Commission in the written Examination. A candidate, who obtains such minimum qualifying marks in the written examination, as may be fixed by the Commission, shall be called for personality test. Personality test will be of 50 marks or as assigned by the Commission at its discretion.
11) The form and manner of announcement of results of the examinations shall be decided by the Commission. The Commission will not enter into any correspondence with any candidate regarding results.
12) After the examination and interview, the names of the successful candidates will be arranged by the Commission in the order of merit based on marks awarded to each candidate. Candidates shall be recommended for appointment to the available vacancies in the order in which their names appear in the list.
13) A candidate who is or has been declared by the Commission guilty of impersonation or of submitting false and fabricated documents which have been tampered with or of making statements which are incorrect or false or of

suppressing material information or of attempting to use unfair means in the examination hall or otherwise, or resorting to any or other irregular or improper means for obtaining admission to the examination hall may, in addition to rendering himself liable to criminal prosecution, be debarred:-

(a) By the Commission permanently or for specified period for admission to any examination or appearance at any of the interviews held by the Commission for selection of candidates,

(b) By the State Government from any employment under it.

14) Candidates already in Central or State Government service or in Central or State Government owned undertaking or other organizations, whether in permanent or temporary capacity or as work charged employee shall be required to submit their application along with No Objection Certificate from the employer.

15) Success in the examination confers no right to appointment unless Government is satisfied after such enquiry as may be considered necessary that a candidate having regard to his/her character and antecedents is suitable in all respect for appointment.

16) A candidate must be in good health and free from any physical defect likely to interfere with the discharge of his duties as an officer of the Service. A candidate who (after such medical examination as may be prescribed by the competent authority) is found not to satisfy these requirements will not be appointed.

17) If a candidate's handwriting is not legible, a deduction may be made in this account from the total marks otherwise accruing to him/her.

18) No travelling and daily allowance will be paid for the journey performed in connection with the examination, interview and medical examination. All other matters not specified or for which no provision has been made in these rules shall be regulated by rules and orders applicable to the Service to which recruitments are being made.

BY ORDER

ADDITIONAL SECRETARY
DEPARTMENT OF PERSONNEL,
ADMINISTRATIVE REFORMS, TRAINING AND
PUBLIC GRIEVANCES

Copy for information to:-

1. Secretary, SPSC, - (10 copies)
2. File & Guard File

APPENDIX I

SCHEME AND SYLLABUS OF EXAMINATION FOR THE PURPOSE OF FILLING UP THE POST OF ASSISTANT ENGINEER (CIVIL).

The Examination will consist of 4 papers:-

PAPERS	SUBJECT	FULL MARKS	TIME ALLOWED
PAPER – I	GENERAL ENGLISH	50	1 HOUR
PAPER - II	GENERAL KNOWLEDGE	50	1 HOUR
PAPER - III	CIVIL ENGINEERING-I	300	3 HOURS
PAPER – IV	CIVIL ENGINEERING-II	300	3 HOURS
VIVA-VOCE	80 MARKS		

SYLLABUS

PAPER – I GENERAL ENGLISH

i) Comprehension
ii) Composition and Grammar

PAPER –II GENRAL KNOWLEDGE

i) Current events of Local, National & International importance.
ii) National level Schemes & Projects undertaken by Government of India.

PAPER III Civil Engineering

1. BUILDING MATERIALS

Timber : Different types and species of structural timber, density-moisture relationship, strength in different directions, defects, influence of defects on permissible stress, preservation, dry and wet rots, codal provisions for design, Plywood.

Bricks : Types, Indian Standard classification, absorption, saturation factor, strength in masonry, influence of morter strength on masonry strength.

Cement : Compounds of, different types, setting times, strength.

Cement Mortar : Ingredients, proportions, water demand, mortars for plastering and masonry.

Concrete : Importance of W/C Ratio, Strength, ingredients including admixtures, workability, testing for strength, elasticity, non-destructive testing, mix design methods.

2. SOLID MECHANICS

Elastic constants, stress, plane stress, Mohr's circle of stress, strains, plane strain, Mohr's circle of strain, combined stress; Elastic theories of failure; Simple bending, shear; Torsion of circular and rectangular sections and simple members.

3. STRUCTURAL ANALYSIS

Analysis of determinate structures - different methods including graphical methods.

Analysis of indeterminate skeletal frames - moment distribution, slope-deflection, stiffness and force methods, energy methods, Muller-Breslau principle and application.

Plastic analysis of indeterminate beams and simple frames - shape factors.

4. DESIGN OF STEEL STRUCTURES

Principles of working stress method. Design of connections, simple members, Built-up sections and frames, Design of Industrial roofs. Principles of ultimate load design. Design of simple members and frames.

5. DESIGN OF CONCRETE AND MASONRY STRUCTURES

Limit state design for bending, shear, axial compression and combined forces. Codal provisions for slabs, beams, walls and footings. Working stress method of design of R.C. members.

Principles of prestressed concrete design, materials, methods of prestressing, losses. Design of simple members and determinate structures. Introductions to prestressing of indeterminate structures.

Design of brick masonry as per I.S. Codes.

6. CONSTRUCTION PRACTICE, PLANNING AND MANAGEMENT

Concreting Equipment:

Weight Batcher, Mixer, vibrator, batching plant, concrete pump.

Cranes, hoists, lifting equipment.

Earthwork Equipment :

Power shovel, hoe, dozer, dumper, trailers and tractor, rollers, sheep foot rollers, pumps.

Construction, Planning and Management :

Bar chart, linked bar chart, work-break down structures, Activity - on - arrow diagrams. Critical path, probabilistic activity durations; Event-based networks.

PERT network: Time-cost study, crashing; Resource allocation.

PAPER IV Civil Engineering

1. (a) FLUID MECHANICS, OPEN CHANNEL FLOW, PIPE FLOW:

Fluid Properties, Pressure, Thrust, Buoyancy; Flow Kinematics; Integration of flow equations; Flow measurement; Relative motion; Moment of momentum; Viscosity, Boundary layer and Control, Drag, Lift; dimensional Analysis, Modelling; Cavitation; Flow oscillations; Momentum and Energy principles in Open channel flow, Flow controls, Hydraulic jump, Flow sections and properties; Normal flow, Gradually varied flow; Surges; Flow development and losses in pipe flows, Measurements; Siphons; Surges and Water hammer; Delivery of Power Pipe networks.

(b) HYDRAULIC MACHINES AND HYDROPOWER:

Centrifugal pumps, types, performance parameters, scaling, pumps in parallel; Reciprocating pumps, air vessels, performance parameters; Hydraulic ram; Hydraulic turbines, types, performance parameters, controls, choice; Power house, classification and layout, storage, pondage, control of supply.

2. (a) HYDROLOGY :

Hydrological cycle, precipitation and related data analyses, PMP, unit and synthetic hydrographs; Evaporation and transpiration; Floods and their management, PMF; Streams and their gauging; River morphology; Routing of floods; Capacity of Reservoirs.

(b) WATER RESOURCES ENGINEERING :

Water resources of the globe: Multipurpose uses of Water: Soil-Plant-Water relationships, irrigation systems, water demand assessment; Storages and their yields, ground water yield and well hydraulics; Waterlogging, drainage design; Irrigation revenue; Design of rigid boundary canals, Lacey's and Tractive force concepts in canal design, lining of canals; Sediment transport in canals; Non-Overflow and overflow sections of gravity dams and their design, Energy dissipators and tailwater rating; Design of headworks, distribution works, falls, cross-drainage works, outlets; River training.

ENVIRONMENTAL ENGINEERING

3. (a) WATER SUPPLY ENGINEERING :

Sources of supply, yields, design of intakes and conductors; Estimation of demand; Water quality standards; Control of Water-borne diseases; Primary and secondary treatment, detailing and maintenance of treatment units; Conveyance and distribution systems of treated water, leakages and control; Rural water supply; Institutional and industrial water supply.

(b) WASTE WATER ENGINEERING:

Urban rain water disposal; Systems of sewage collection and disposal; Design of sewers and sewerage systems; pumping; Characteristics of sewage and its treatment, Disposal of

products of sewage treatment, streamflow rejuvenation Institutional and industrial sewage management; Plumbing Systems; Rural and semi-urban sanitation.

(c) SOLID WASTE MANAGEMENT

Sources, classification, collection and disposal; Design and Management of landfills.

(d) AIR AND NOISE POLLUTION AND ECOLOGY:

Sources and effects of air pollution, monitoring of air pollution; Noise pollution and standards; Ecological chain and balance, Environmental assessment.

4 (a) SOIL MECHANICS:

Properties of soils, classification and interrelationship; Compaction behaviour, methods of compaction and their choice; Permeability and seepage, flow nets, Inverted filters; Compressibility and consolidation; Shearing resistance, stresses and failure; soil testing in laboratory and in-situ; Stress path and applications; Earth pressure theories, stress distribution in soil; soil exploration, samplers, load tests, penetration tests.

(b) FOUNDATION ENGINEERING :

Types of foundations, Selection criteria, bearing capacity, settlement, laboratory and field tests; Types of piles and their design and layout, Foundations on expansive soils, swelling and its prevention, foundation on swelling soils.

5. (a) SURVEYING :

Classification of surveys, scales, accuracy; Measurement of distances - direct and indirect methods; optical and electronic devices; Measurement of directions, prismatic compass, local attraction; Theodolites - types; Measurement of elevations - Spirit and trigonometric levelling; Relief representation; Contours; Digital elevation modelling concept; Establishment of control by triangulations and traversing - measurements and adjustment of observations, computation of coordinates; Field astronomy, Concept of global positioning system; Map preparation by plane tabling and by photogrammetry; Remote sensing concepts, map substitutes.

(b) TRANSPORTATION ENGINEERING :

Planning of highway systems, alignment and geometric design, horizontal and vertical curves, grade separation; Materials and construction methods for different surfaces and maintenance: Principles of pavement design; Drainage.

Traffic surveys, Intersections, signalling: Mass transit systems, accessibility, networking.

Tunnelling, alignment, methods of construction, disposal of muck, drainage, lighting and ventilation, traffic control, emergency management.

Planning of railway systems, terminology and designs, relating to gauge, track, controls, transits, rolling stock, tractive power and track modernisation; Maintenance; Appurtenant works; Containerisation.

Harbours - layouts, shipping lanes, anchoring, location identification; Littoral transport

with erosion and deposition; sounding methods; Dry and Wet docks, components and operational Tidal data and analyses.

Airports - layout and orientation; Runway and taxiway design and drainage management; Zoning laws; Visual aids and air traffic control; Helipads, hangers, service equipment.

VIVA – VOCE

The test is intended to judge the mental caliber of candidate. In broad terms this is really an assessment of not only his intellectual qualities but also social traits and his interest in current affairs, mental alertness, critical powers of assimilation, care and logical exposition, balance of judgment, variety and depth of interest.

APPENDIX – II

CONDITIONS OF ELIGIBILITY FOR APPEARING IN THE EXAMINATION.

In order to be eligible to appear in the Competitive Examination, a candidate must satisfy the following conditions, namely:-

(a)Minimum Educational Qualification	Degree in Civil Engineering from a recognized University with three years of field experience in Engineering discipline under Central/State Government or under any registered Organisation/Company.
(b) Age	Should have attained the age of 21-30 years. (In case of Govt. servant, not more than 40 years). The maximum age limit is relaxable by five (5) years in the case of SC/ST/BL candidates and four (4) and three (3) years for MBC/OBC candidates, respectively.
(c) Other Requisites	(1) Preference will be given to Sikkim Government stipendaries/ seat reserved for State of Sikkim. (2) Should be conversant with the Custom and usages of Sikkim. (3) Should have knowledge of any of the State languages. (4) Should have valid Local Employment Card.

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