

7. **DISQUALIFICATION**

(a)	No person	
	(i)	who has entered into or contracted a marriage with a person having spouse living, or
	(ii)	who is having a spouse living, has entered into or contracted a marriage with another person,
	shall be eligible for appointment to the Force, provided that the Central Government may, if satisfied that such marriage is permissible under the personal law applicable to such person and the other party to the marriage and there are other grounds for so to do, exempt any person from the operation of this rule.	
(b)	Conviction by any Court of Law.	
(c)	Dismissal from Government Service.	
(d)	Termination from BSF during probation.	

8. **SELECTION PROCEDURE**

The selection procedure will be as under:-

(a) **FIRST PHASE OF THE EXAMINATION**

The Written Examination will be conducted at the selection Centres.

There will be two papers of the following parts :-

(i) **First Paper**

(Objective Type with multiple choice) Time – 01 Hour 30 Minutes.

aa) General Intelligence & Reasoning - 25 Questions - 25 Marks

ab) General awareness - 25 Questions - 25 Marks

ac) General Engineering (Electrical) - 50 Questions - 50 Marks

Total - 100 Questions carrying- 100 Marks

Standard and Syllabus for Paper-I :- The Written examination of Paper-I shall be conducted from the following subject:-

(aa) 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, judgement, 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.

(ab) 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 neighbouring 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.

48/318/18

(ac) General Engineering (Electrical) :- Basic concepts, Circuit law, Magnetic Circuit, AC Fundamentals, Measurement and Measuring instruments, Electrical Machines, Fractional Kilowatt Motors and single phase induction Motors, Synchronous Machines, Generation, Transmission and Distribution, Estimation and Costing, Utilization and Electrical Energy, Basic Electronics.

Note :- During the written examination of Paper-I (OMR based answer sheet), candidates have to fill and shade (in OMR answer Sheet) their Name, Roll number, Date of birth, question booklet series code i.e. A B C D because these information are essential for evaluation of the Answer Sheet and publishing of result of qualified candidates. Circle as printed against each should be shaded correctly, otherwise candidate may be declared fail for which candidate himself will be responsible for such mistakes.

(ii) Second Paper (Conventional Type) Time – 02 Hours

aa) General Engineering (Electrical) -10 Questions - 100 Marks
(12 Questions will be given out of which 10 questions will be attempted)

ab) Standard and Syllabus for Paper-II :- The Written examination of Paper-II shall be conducted from the following subject:-

Basic concepts: Concepts of resistance, inductance, capacitance, and various factors affecting them. Concepts of current, voltage, power, energy and their units.

Circuit law : Kirchhoff's law, Simple Circuit solution using network theorems.

Magnetic Circuit : Concepts of flux, mmf, reluctance, Different kinds of magnetic materials, Magnetic calculations for conductors of different configuration e.g. straight, circular, solenoidal, etc. Electromagnetic induction, self and mutual induction.

AC Fundamentals : Instantaneous, peak, R.M.S. and average values of alternating waves, Representation of sinusoidal wave form, simple series and parallel AC Circuits consisting of R.L. and C, Resonance, Tank Circuit. Poly Phase system – star and delta connection, 3 phase power, DC and sinusoidal response of R-Land R-C circuit.

Measurement and measuring instruments : Measurement of power (1 phase and 3 phase, both active and re-active) and energy, 2 wattmeter method of 3 phase power measurement. Measurement of frequency and phase angel. Ammeter and voltmeter (both moving oil and moving iron type), extension of range wattmeter, Multimeters, Megger, Energy meter AC Bridges. Use of CRO, Signal Generator, CT, PT and their uses. Earth Fault detection.

Electrical Machines : (a) D.C. Machine – Construction, Basic Principles of D.C. motors and generators, their characteristics, speed control and starting of D.C. Motors. Method of braking motor, Losses and efficiency of D.C. Machines. (b) 1 phase and 3 phase transformers – Construction,

3/18/18

Principles of operation, equivalent circuit, voltage regulation, O.C. and S.C. Tests, Losses and efficiency. Effect of voltage, frequency and wave form on losses. Parallel operation of 1 phase /3 phase transformers. Auto transformers. (c) 3 phase induction motors, rotating magnetic field, principle of operation, equivalent circuit, torque-speed characteristics, starting and speed control of 3 phase induction motors. Methods of braking, effect of voltage and frequency variation on torque speed characteristics.

Fractional Kilowatt Motors and Single Phase Induction Motors : Characteristics and applications.

Synchronous Machines - Generation of 3-phase e.m.f. armature reaction, voltage regulation, parallel operation of two alternators, synchronizing, control of active and reactive power. Starting and applications of synchronous motors.

Generation, Transmission and Distribution – Different types of power stations, Load factor, diversity factor, demand factor, cost of generation, inter-connection of power stations. Power factor improvement, various types of tariffs, types of faults, short circuit current for symmetrical faults. Switchgears – rating of circuit breakers, Principles of arc extinction by oil and air, H.R.C. Fuses, Protection against earth leakage / over current, etc. Buchholtz relay, Merz-Price system of protection of generators & transformers, protection of feeders and bus bars. Lightning arresters, various transmission and distribution system, comparison of conductor materials, efficiency of different system. Cable – Different type of cables, cable rating and derating factor.

Estimation and costing : Estimation of lighting scheme, electric installation of machines and relevant IE rules. Earthing practices and IE Rules.

Utilization of Electrical Energy : Illumination, Electric heating, Electric welding, Electroplating, Electric drives and motors.

Basic Electronics: Working of various electronic devices e.g. P N Junction diodes, Transistors (NPN and PNP type), BJT and JFET. Simple circuits using these devices.

(iii) **The minimum qualifying marks of Written Examination in each paper :-**

For General/OBC Category Candidate	- 50%
For SC/ST Category Candidate	- 45%

However, number of candidates qualified in written examination will be restricted maximum ten times of number of vacancies or qualified candidates whichever is less for appearing in 2nd phase examination.

NOTE 1: There will be no re-evaluation of answer sheets.

NOTE 2 : Candidates are not permitted to use Mobile Phone, Calculator or any other electronic/electrical device for answering any paper (Test Booklets). Candidates must not therefore, bring Mobile Phone, Calculator or any other electronic electrical device inside the

42/31/8/18