



## RESERVE BANK OF INDIA

### RECRUITMENT OF JUNIOR ENGINEERS – 2019

#### INFORMATION HANDOUT FOR ONLINE EXAMINATION

This handout contains details pertaining to various aspects of the online exam you are going to undertake and important instructions about related matters. You are advised to study the handout carefully as it will help you in preparing for the examination.

The on-line examination will comprise the following objective type multiple choice tests as stated below :

Sr. No.	Name of Tests	No. of Qs.	Max. Marks	Time	Version
1	English Language	50	50	40 Minutes	Bilingual i.e. Hindi and English except English Language
2	Engineering Discipline Paper I	40	100	40 Minutes	
3	Engineering Discipline Paper II	40	100	40 Minutes	
4	General Intelligence and Reasoning	50	50	30 Minutes	
	TOTAL	180	300	150 Minutes	

The duration for the exam is 150 minutes; however you may have to be at the venue for approximately 200-250 minutes including the time required for logging in, collection of the call letters, going through the instructions etc. All tests except English Language will be provided in English and Hindi. Each test is separately timed. Candidates can attempt questions in a particular test during the time allotted for that test only. All the questions will have multiple choices. Out of the five answers to a question only one will be the correct answer. **You have to select the most appropriate answer and 'mouse click' that alternative which you feel is appropriate/ correct. The alternative/ option that you have clicked on will be treated as your answer to that question. There will be penalty for wrong answers marked by you. For every wrong answer marked by you, 1/4th of the marks assigned to that question will be deducted as penalty.**

The Scores of Online Examination will be obtained by adopting the following procedure :

- Number of questions answered correctly by a candidate in each objective test is considered for arriving at the Corrected Score after applying penalty for wrong answers.
- The Corrected Scores so obtained by a candidate are made equivalent to take care of the minor difference in difficulty level, if any, in each of the objective tests held in different sessions to arrive at the Equated Scores\*

\*Scores obtained by candidates on any test are equated to the base form by considering the distribution of scores of all the forms.

- Test wise scores and scores on total is reported with decimal points up to two digits.

Note : Cut offs may be applied in two stages :

- On scores in individual tests
- On Total Score

Please note that the types of questions in this handout are only illustrative and not exhaustive. In the actual examination you will find questions of a higher difficulty level on some or all of these types and also questions on the types not mentioned here.

Some sample questions are given below.

## ENGLISH LANGUAGE

This is a test to see how well you know English. Your English language ability would be tested through questions on grammar, vocabulary, sentence completion, synonyms, antonyms, comprehension of a passage, etc. Study and answer the sample questions given below :

**Q.1-2. Directions :** Pick out the most appropriate word from amongst the words given below each sentence to complete it meaningfully.

**Q.1.** He quickly glanced ..... the book to find what it said about the Indian economy.  
(1) at (2) through (3) in (4) to (5) over

**Q.2.** The counsel urged the court to ..... down the obnoxious law.  
(1) enact (2) enforce (3) cancel (4) strike (5) declare

**Q.3-4. Directions :** Read each sentence to find out whether there is any grammatical error in it. The error, if any, will be in one part of the sentence. The number of that part of the sentence is your answer. If there is no error, the answer is (5).

**Q.3.** I am twenty / two years old / when I first / joined the bank. No error  
(1) (2) (3) (4) (5)

**Q.4.** To the Hindus / the Ganga is / holier than / any other river. No error  
(1) (2) (3) (4) (5)

## ENGINEERING DISCIPLINE (PAPER I AND PAPER II)

Questions will be based on the syllabus given below.

### CIVIL ENGINEERING

The standard of questions in Engineering subjects will be approximately of the level of Diploma in Engineering (Civil) from recognized institute, Board or university recognized by All India Council for Technical Education. All the questions will be set in SI units. The details of the syllabus are given below :

#### Paper I :

Building materials, Estimating, Costing and Valuation, Surveying, Soil Mechanics, Hydraulics. Transportation Engineering. Environmental Engineering.

(i) Building Materials : Physical and chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), asbestos products, timber and wood based products, laminates, bituminous materials, paints, varnishes.

(ii) Estimating. Costing and Valuation: estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, item of works-earthwork, Brickwork (Modular & traditional bricks), RCC work, shuttering, Timber work, Painting, flooring and plastering, Boundary wall, Brick building, Water tank, septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezoidal formula, Simpson's rule. Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Steel Truss, Piles and Piles caps. Valuation-value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

(iii) Surveying : Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Leveling, Definition of terms used in leveling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of contouring. uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.

(iv) Soil Mechanics : Origin of soil, phase diagram, Definitions-void ratio, porosity, degree of saturation, water content. specific gravity of soil grains, unit weights, density index and interrelationship of different parameters. Grain size distribution curves and their uses. Index properties of soils, Atterberg's limits, 151 soil classification and plasticity chart. Permeability of soil, coefficient of permeability, determination of coefficient of permeability, Unconfined and confined aquifers, effective stress, quick sand, consolidation of soils, Principles of consolidation. degree of consolidation. pre-consolidation pressure normally consolidated soil, e-log p curve, computation of ultimate settlement, Shear strength of soils, direct shear test, Vane shear test, Triaxial test. Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, earth pressure theories, active and passive earth pressures, bearing capacity of soils, plate load test, standard penetration test.

(v) Hydraulics : Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes. flow in open channels, weirs, flumes, spillways, pumps and turbines.

(vi) Transportation Engineering : High Way Engineering-cross sectional elements, geometric design, types of pavements, pavement materials -aggregates and bitumen, different tests, Design of flexible and rigid pavements -Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement joint, pavement maintenance, Highway drainage.

(vii) Environmental Engineering : Quality of water, source of water supply, purification of water, distribution of water, need of sanitation. sewerage systems, circular sewer, oval sewer. sewer appurtenances. sewage treatments. Surface water drainage. Solid waste management -types, effects, engineered management system. Air pollution - pollutants, causes, effects, control. Noise pollution -cause, health effects, control.

## **Paper II :**

Theory of structures. Concrete technology, RCC design and Steel design

(i) Theory of structures : Elasticity constants, types of beams-determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rectangular and circular sections, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, Torsion of circular section.

(ii) Concrete Technology : Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting. repair and maintenance of concrete structures.

(iii) RCC Design : RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams. T-beams, lintels. One way and two way slabs. isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks (RCC design questions may be based on both Limit State and Working Stress methods).

(iv) Steel Design : Steel design and construction of steel columns, beams roof trusses plate girders.

## **ELECTRICAL ENGINEERING**

### **Paper I :**

1. Basics of Electrical Engineering.
2. Lighting design of office areas
3. Transformers. Working principles, protection types, preventive maintenance
4. Pumping systems.
5. Various type of motors, various starting methods of various types of motors
6. Substation design and layout including DG set installations.
7. Type of earthing, testing, lightning arrestor, etc.

**Paper II :**

1. Basic knowledge of air conditioning & refrigeration.
2. Inverters, rectifiers, UPS systems.
3. Energy conservation techniques
4. LT distribution system, cabling/internal wiring system, panel design and fault finding, preventive maintenance, etc.
5. Testing of electrical installation.
6. Basics of elevators, design, electrical safeties, protections controllers, etc.
7. Basics of CCTV system, Fire and Smoke Alarm system, UPS.
8. Knowledge of Indian Electricity Rules
9. Switchgears & protection used in HT/L T installations.

**GENERAL INTELLIGENCE AND REASONING**

**Directions :** In each of the following questions, there are five letter groups or words in each question. Four of these letter groups or words are alike in some way, while one is different. Find the one which is different.

- Q.1.** (1) BC (2) MN (3) PQ (4) XZ (5) ST  
**Q.2.** (1) Mango (2) Apple (3) Orange (4) Guava (5) Rose

**Directions :** In each of the following questions, there is a question mark in which only one of the five alternatives given under the question satisfies the same relationship as is found between the two terms to the left of the sign :: given in the question. Find the correct answer.

- Q.3.** Day : Night :: Kind : ?  
(1) Dark (2) Bright (3) Cruel (4) Generous (5) Gratitude
- Q.4.** Hut : Mansion :: Rabbit : ?  
(1) Hole (2) Carrot (3) Elephant (4) Small (5) Rat
- Q.5.** If 'A " B' means 'add B to A', 'A ' B' means 'subtract B from A', 'A # B' means 'divide A by B' and 'A † B' means 'multiply A by B; which of the following gives the average sales of two days where S<sub>1</sub> and S<sub>2</sub> are the sales of the first and the second day respectively ?  
(1) (S<sub>1</sub> ' S<sub>2</sub>) # 2 (2) 2 # (S<sub>1</sub> " S<sub>2</sub>) (3) (S<sub>1</sub> " S<sub>2</sub> # 2)  
(4) (S<sub>1</sub> † S<sub>2</sub>) # (S<sub>1</sub> " S<sub>2</sub>) (5) Other than those given as options
- Q.6.** In each question below are given two statements followed by two conclusions numbered I and II. You have to take the two given statements to be true even if they seem to be at variance from commonly known facts, consider the two conclusions; together and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.  
Statements : All machines are windows. All windows are clouds.  
Conclusions : I. All machines are clouds.  
II. All clouds are machines.  
(1) None follows (2) Only I follows (3) Both I & II follow  
(4) Only II follows (5) Either I or II follows

**Q.7-8.** In the following questions a group of numbers and symbols is to be coded by the letter code as per the given scheme and conditions. You have to find out the sr2.no. of the letter code group which correctly represents the number symbol combination. The sr. no. of that letter code group is your answer. If none of the letter code groups is correct then mark (5) i.e other than those given as options.

Number/Symbol	:	2	\$	@	7	6	#	8
Letter Code	:	Q	B	H	L	F	M	T

**Condition :**

1. If the first as well as the last element is a symbol both are to be coded as 'A'.
2. If the first element is even digit and last element is a symbol their codes are to be inter changed.

**Q.7.** 67@2#  
(1) FLHQM (2) MLHQF (3) MLQHE (4) FLQHM (5) Other than those given as options

**Q.8.** \$687#  
(1) AFTLA (2) AFTLM (3) BFTLA (4) BFTLM (5) Other than those given as options

**(A) Details of the On-line Examination Pattern**

- (1) The examination would be conducted on-line i.e. on a computer.
- (2) The tests except English Language will be provided in English and Hindi.
- (3) All the questions will have multiple choices. Out of the five answers to a question only one will be the correct answer. **The candidate has to select the most appropriate answer and 'mouse click' that alternative which he/ she feels is appropriate/ correct. The alternative/ option that is clicked on will be treated as the answer to that question. Answer to any question will be considered for final evaluation, only when candidates have submitted the answers by clicking on "Save & Next" or "Mark for Review & Next".**
- (4) The clock has been set at the server and the countdown timer at the top right corner of your screen will display the time remaining for you to complete the test(s). When the clock runs out the exam ends by default - you are not required to end or submit your exam.
- (5) The question palette at the right of screen shows one of the following statuses of each of the questions numbered:

 You have not visited the question yet.

 You have not answered the question.

 You have answered the question.

 You have NOT answered the question, but have marked the question for review.

 The question(s) "Answered and Marked for Review" will be considered for evaluation.

The Marked for Review status simply acts as a reminder that you have set to look at the question again. *If an answer is selected for a question that is Marked for Review, the answer will be considered in the final evaluation.*

- (6) To select a question to answer, you can do one of the following :
- (a) Click on the question number on the question palette at the right of your screen to go to that numbered question directly. Note that using this option **does NOT save your answer** to the current question.
  - (b) Click on **'Save & Next'** to save answer to current question and to go to the next question in sequence.
  - (c) Click on **'Mark for Review and Next'** to save answer to current question, mark it for review, and to go to the next question in sequence.
- (7) To select your answer, click on one of the option buttons.
- (8) To change your answer, click another desired option button.
- (9) To save your answer, you **MUST** click on **Save & Next**.
- (10) To deselect a chosen answer, click on the chosen option again or click on the **Clear Response** button.
- (11) To mark a question for review click on **Mark for Review & Next**. *If an answer is selected for a question that is Marked for Review, the answer will be considered in the final evaluation.*
- (12) To change an answer to a question, first select the question and then click on the new answer option followed by a click on the **Save & Next** button.
- (13) Questions that are saved or marked for review after answering will ONLY be considered for evaluation.**
- (14) The candidates are requested to follow the instructions of the "Test Administrator" carefully. If any candidate does not follow the instructions / rules, it would be treated as a case of misconduct/ adoption of unfair means and such a candidate would be liable for debarment from appearing for examinations for a period as decided by RBI.
- (15) The candidates may ask the Test Administrator about their doubts or questions only before the commencement of the test. No query shall be entertained after the commencement of the examination.
- (16) After the expiry of the entire test duration, the candidates will not be able to attempt any question or check their answers. The answers of the candidate would be saved automatically by the computer system even if he/ she has not clicked the "Submit" button.
- (17) Please note :**
- (a) Candidates will not be allowed to "finally submit" unless they have exhausted the actual test time.**
  - (b) Under no circumstances should a candidate click on any of the 'keyboard keys' once the exam starts as this will lock the exam.**

**B] General Instructions :**

- (1) Please note date, time and venue address of the examination given in the call letter.
- (2) You may visit the venue one day before the Online Examination to confirm the location so that you are able to report **on time** (as printed on the call letter) on the day of the examination. Late comers will not be allowed.
- (3) The call letter should be brought with you to the examination venue along with your recent passport size photograph duly pasted on it. (Preferably the same photograph as was as uploaded).

- (4) You must scrupulously follow the instructions of the Test Administrator and RBI Representative at the examination venue. If you violate the instructions you will be disqualified and will be asked to leave the examination venue.
- (5) No use of calculators (separate or with watch), books, note books or written notes, or any other electronic device will be allowed during the examination. **After AarogyaSetu status display at the entry gate, candidates will be required to switch off their mobile phones, and deposit it at the designated location, to be collected while exiting.**
- (6) Please bring the call letter with your photograph affixed thereon, currently valid Photo identity proof in original and a photocopy of the same ID proof which you bring in original - THIS IS ESSENTIAL. **The call-letter along with photocopy of photo identity proof duly stapled together are to be submitted at the end of exam by putting it in the designated drop-box.** Currently valid photo identity proof may be PAN Card/Passport/Permanent Driving Licence/Voter's Card with photograph /Bank Passbook with photograph/Photo Identity proof issued by a Gazetted Officer on official letterhead alongwith photograph/Photo Identity proof issued by a People's Representative on official letter head along with photograph/Valid recent Identity Card issued by a recognized College/University/Aadhaar Card/E-Aadhaar Card with a photograph/Employee ID/Bar Council Identity card with photograph. **Please Note - Ration Card and Learner's Driving License will not be accepted as valid ID proof.** Please note that your name as appearing on the call letter (provided by you during the process of registration) should exactly match the name as appearing on the photo identity proof. Female candidates who have changed first/last/middle name post marriage must take special note of this. If there is any mismatch between the name indicated in the Call Letter and Photo Identity Proof you will not be allowed to appear for the exam. In case of candidates who have changed their name will be allowed only if they produce Gazette notification/their marriage certificate/affidavit.
- (7) Your responses (answers) will be analyzed with other candidates to detect patterns of similarity of right and wrong answers. If in the analytical procedure adopted in this regard, it is inferred/concluded that the responses have been shared and scores obtained are not genuine/valid, your candidature may be cancelled. Any candidate who is found copying or receiving or giving assistance or engaging in any behaviour unbecoming of a candidate will not be considered for assessment. The RBI may take further action against such candidates as deemed fit by it.
- (8) You should bring with you a ball-point pen. A sheet of paper will be provided which can be used for rough work or taking down the question number you would like to review at the end of the test before submitting your answers. After the test is over you **MUST** drop this sheet of paper, Call Letter along with photocopy of photo identity proof in the designated drop-box.
- (9) The possibility of occurrence of some problem in the administration of the examination cannot be ruled out completely which may impact test delivery and/or result from being generated. In that event, every effort will be made to rectify such problem, which may include movement of candidates / delay in test. Conduct of a re-exam is at the absolute discretion of test conducting body. Candidates will not have any claim for a re-test. Candidates not willing to move or not willing to participate in the delayed process of test delivery shall be summarily rejected from the process.
- (10) The scores across various sessions will be equated to adjust for slight differences in difficulty level of different test batteries used across sessions. More than one session are required if the nodes capacity is less or some technical disruption takes place at any centre or for any candidate.

- (11) Anyone found to be disclosing, publishing, reproducing, transmitting, storing or facilitating transmission and storage of test contents in any form or any information therein in whole or part thereof or by any means verbal or written, electronic or mechanical or taking away the papers supplied in the examination hall or found to be in unauthorised possession of test content is likely to be prosecuted.
- (12) Instances for providing incorrect information and/or process violation by a candidate detected at any stage of the selection, process will lead to disqualification of the candidate from the selection process and he/she will not be allowed to appear in any RBI recruitment process in the future. If such instances go undetected during the current selection process but are detected subsequently, such disqualification will take place with retrospective effect.

### **SOCIAL DISTANCING MODE CONDUCT OF EXAM RELATED INSTRUCTIONS**

- 1 Candidate is required to report at the exam venue strictly as per the time slot mentioned in the Call Letter AND/OR informed via SMS/Mail on their registered mobile number/mail prior to exam date. It is expected that candidate strictly adhere to this time slot – as entry into the exam venue will be provided based upon the individual’s time slot ONLY. Candidates should report at least 15 minutes before the Reporting time indicated on the call Letter.**
- 2 Mapping of ‘Candidate Roll Number and the Lab Number’ will NOT be displayed outside the exam venue, but the same will be intimated to the candidates individually at the time of entry of the candidate to the exam venue.**
- 3 Items permitted into the venue for Candidates**

Candidates will be permitted to carry only certain items with them into the venue.

  - a. Mask (WEARING A MASK is COMPULSORY)
  - b. Gloves
  - c. Personal transparent water bottle (Candidate should bring his / her own water bottle)
  - d. Personal hand sanitizer (50 ml)
  - e. A Ball point pen and a stamp pad.
  - f. Exam related documents (Call Letter and Photocopy of the ID card stapled with it, ID Card in Original.)
  - g. Call Letter should be brought with the Photocopy of the Photo ID stapled with it. Original ID (same as Photocopy) is also to be brought for verification. The name on the ID and on the Call Letter should be exactly the same.
  - h. In case of Scribe Candidates - Scribe form duly filled and signed with Photograph affixed.

**No other Items are permitted inside the venue.**
- 4 Candidate should not share any of their personal belonging/material with anyone**
- 5 Candidate should maintain safe social distance with one another.**
- 6 Candidate should stand in the row as per the instructions provided at venue.**
- 7 If candidate is availing services of a scribe, then scribe also should bring their own Gloves, N95 Mask, sanitizer (50ml) and transparent water bottle. Wearing a mask is compulsory. Both candidate and Scribe will require to be wearing N95 Mask.**
- 8 A Candidate must have AarogyaSetu App installed on his mobile phone. The AarogyaSetu status must show candidate’s risk factor. A candidate will have to display this status to the Security Guard at the entry into the exam venue. In case a candidate does not have a smart phone, he/she will have to bring in a signed declaration to this effect (declaration is provided along with this Call Letter) and show the same to the Security Guard at the entry into the exam venue. Candidates with Moderate or High Risk Status on AarogyaSetu App will not be allowed entry. In case any of the responses in declaration suggest COVID 19 infection/symptoms, the candidate will not be permitted inside the exam venue. (If candidate is availing services of a Scribe, then Scribe should also follow the same instructions.)**

- 9 After Aarogya Setu status display at the entry gate, candidates will be required to switch off their mobile phones, and deposit it at the designated location, to be collected while exiting.
- 10 All candidates (and Scribe, if applicable) will be checked with Thermo guns at the entry point for temperature. In case, any person is observed to be having above normal temperature ( $> 99.14^{\circ}$  F) or displaying any symptoms of the virus, they will not be allowed entry into the venue.
- 11 **Candidate registration:**
  - a. Candidate registration will be done through photo capture. Photo captured will be matched with the photo uploaded by you in the application (as printed in the call letter). You must NOT change your appearance from the photo uploaded by you.
  - b. Photograph will be taken while candidate is standing.
  - c. Seat number will be given to the candidate.
- 12 **Rough sheet, call letter and ID proof management**
  - Rough sheet(s) kept at each candidate desk will be used by candidate.
  - Candidate must follow the instructions related to dropping the rough sheet, call letter with the ID proof copy in the boxes provided at the exit of lab/venue while leaving or at the designated place. Those candidates who avail the services of Scribe should submit Scribe form also along with the Call Letter and ID proof copy
  - Candidate must drop the rough sheets, call letter, ID proof copy in the boxes provided at the exit of lab/venue while leaving or at the designated place indicated by Exam officials.
- 13 **Post Examination Controls**
  - On completion of examination, the candidates should move out in an orderly manner without crowding as instructed by the venue staff.

**WISH YOU GOOD LUCK**