



## JAIPUR METRO RAIL CORPORATION LIMITED

# RECRUITMENT OF IMMEDIATE INTERIM MANPOWER, 2012 SCHEME OF EXAMINATION AND SYLLABUS

### A. SCHEME OF EXAMINATION

POST	Written Test	Psychometric Test	Interview	Medical Fitness Test
Station Controller/ Train Operator	√	√	√	√
Junior Engineers	√	×	×	√
Customer Relations Assistant	√	×	√	√
Maintainers	√	×	×	√

- a) The written test and other screening tests shall be aimed at testing the skills of the candidate in languages, general knowledge & awareness, general science, computer proficiency, quantitative aptitude, logical ability, reasoning and/or his/her domain knowledge, skills, competencies, personality traits and job-related specific abilities. Medical Fitness Test will form an integral part of the selection process.
- b) The screening process involves various stages of screening and a candidate will have to qualify at each stage (including Medical Fitness Test) as prescribed, before being selected/appointed. The screening process for each post is detailed below:

**a. For the Post of Station Controller/ Train Operator**

#### Stage – I

**Written Test – 90 marks:** The maximum time permitted for the written test shall be 135 minutes, and it shall carry 120 questions for a total of 90 marks. The questions shall be multiple choice objective type, with 0.75 marks being awarded for each right answer and 0.25 marks being deducted for each wrong answer. Minimum pass marks shall be 40 % for all candidates other than SC/ST Category candidates and 35 % for SC/ST Category candidates. The indicative scheme of the question paper (i.e., approximate number of questions  $\pm$  10%) shall be as follows:

- General Knowledge & Awareness, including General Science - 45 questions
- Quantitative Aptitude, Logical Ability and Reasoning – 45 questions
- Computer Awareness – 10 questions
- English Comprehension – 10 questions
- Hindi Comprehension – 10 questions

#### Stage – II

- (i) **Psychometric Test (Qualifying Test):** The Psychometric Test will measure specific abilities related to the job, such as reaction time, form perception, vigilance, speed anticipation and some selected attributes of personality. The Psychometric Test will be conducted before or after the interview, and passing of the Test shall be mandatory for the candidates called for interview. The candidates who do not pass the Psychometric Test may not be interviewed if results of the Test become available before the interview.
- (ii) **Interview – 10 marks:** The focus of interview will be on personality traits, including communication skills, of the candidates. There will be no minimum pass marks for the interview, but failure to appear in interview will disqualify the candidate.



(iii) **Medical Fitness Test (Qualifying Test):** All candidates called for interview and/or placed on the final merit list or panel of wait listed candidates shall have to undergo and pass medical fitness test as prescribed by JMRC.

**b. For the Posts of Junior Engineer (Civil), Junior Engineer (Electrical), Junior Engineer (Mechanical) and Junior Engineer (Electronics)**

**Stage – I**

**Written Test – 100 marks:** The maximum time permitted for the written test shall be 135 minutes, and it shall carry 100 questions for a total of 100 marks. The questions shall be multiple choice objective type, with 1 mark being awarded for each right answer and 0.25 marks being deducted for each wrong answer. Minimum pass marks shall be 40 % for all candidates other than SC/ST Category candidates and 35 % for SC/ST Category candidates. The indicative scheme of the question paper (i.e., approximate number of questions  $\pm$  10%) shall be as follows:

- i. Domain/Discipline related - 50 questions
- ii. General Knowledge & Awareness, including General Science - 20 questions
- iii. Computer Awareness – 10 questions
- iv. English Comprehension – 10 questions
- v. Hindi Comprehension – 10 questions

**Stage – II**

**Medical Fitness Test (Qualifying Test):** All candidates placed on the final merit list or panel of wait listed candidates, based on marks obtained in the written test, shall have to undergo and pass medical fitness test as prescribed by JMRC.

**c. For the Post of Customer Relations Assistant**

**Stage – I**

**Written Test – 90 marks:** The maximum time permitted for the written test shall be 135 minutes, and it shall carry 120 questions for a total of 90 marks. The questions shall be multiple choice objective type, with 0.75 marks being awarded for each right answer and 0.25 marks being deducted for each wrong answer. Minimum pass marks shall be 40 % for all candidates other than SC/ST Category candidates and 35 % for SC/ST Category candidates. The indicative scheme of the question paper (i.e., approximate number of questions  $\pm$  10%) shall be as follows:

- i. General Knowledge & Awareness, including General Science - 60 questions
- ii. Quantitative Aptitude, Logical Ability and Reasoning – 30 questions
- iii. Computer Awareness – 10 questions
- iv. English Comprehension – 10 questions
- v. Hindi Comprehension – 10 questions

**Stage – II**

(i) **Interview – 10 marks:** The focus of interview will be on personality traits, including communication skills, of the candidates. There will be no minimum pass marks for the interview, but failure to appear in interview will disqualify the candidate.

(ii) **Medical Fitness Test (Qualifying Test):** All candidates called for interview and/or placed on the final merit list or panel of wait listed candidates shall have to undergo and pass medical fitness test as prescribed by JMRC.



**d. For the Posts of Maintainer (Fitter), Maintainer (Electrician), Maintainer (Electronics) and Maintainer (Refrigeration & AC)**

**Stage – I**

**Written Test – 100 marks:** The maximum time permitted for the written test shall be 135 minutes, and it shall carry 100 questions for a total of 100 marks. The questions shall be multiple choice objective type, with 1 mark being awarded for each right answer and 0.25 marks being deducted for each wrong answer. Minimum pass marks shall be 40 % for all candidates other than SC/ST Category candidates and 35 % for SC/ST Category candidates. The indicative scheme of the question paper (i.e., approximate number of questions  $\pm$  10%) shall be as follows:

- i. Trade related (including pictorial/ problem-solving questions covering the practical aspect of ITI training) – 65 questions
- ii. General Knowledge & Awareness, including General Science - 20 questions
- iii. Computer Awareness – 5 questions
- iv. English Comprehension – 5 questions
- v. Hindi Comprehension – 5 questions

**Stage – II**

**Medical Fitness Test (Qualifying Test):** All candidates placed on the final merit list or panel of wait listed candidates, based on marks obtained in the written test, shall have to undergo and pass medical fitness test as prescribed by JMRC.

- c) The call list for Interview/Psychometric Test, for each post these have been prescribed for, would be limited to the number of candidates who have obtained minimum pass marks in the written test, subject to a maximum of 5 times the number of vacancies in each category, in order of marks obtained in the written test.

**Note:** If more than one candidate is placed at the cut-off point (rounded off to two decimal points) of the merit list of written test, all such candidates would be included in the call list for Interview/Psychometric Test.

- d) Category-wise final merit list for each post shall be prepared from among candidates who have obtained minimum pass marks in the written test, as under:
- i) For the posts of Station Controller/Train Operator and Customer Relations Assistant: in order of the total marks obtained in written test and interview, and after disqualifying candidates who have not passed the psychometric test (where applicable) or the medical fitness test or have not appeared in the interview. If more than one candidate is placed at the cut-off point (without any rounding off) of the final merit list, the candidate who is senior in age would be preferred.
  - ii) For the posts of Junior Engineers and Maintainers: in order of the total marks obtained in written test, subject to their passing the medical fitness test. If more than one candidate is placed at the cut-off point (without any rounding off) of the final merit list, the candidate who is senior in age would be preferred.

A Panel of Wait Listed Candidates may also be prepared on these very lines.

- e) Dates of written test, results of written test and all other recruitment related information shall be available on JMRC website. Candidates are required to regularly visit the website and check for updates.
- f) All questions papers shall be bilingual (i.e., in Hindi and English). However, Hindi Comprehension Questions shall only be in Hindi and English Comprehension Questions shall only be in English.



## B. INDICATIVE SYLLABUS

In the written tests, the standard of domain/discipline/trade related questions will be commensurate with the technical qualification specified for the concerned post. The standard of other questions would also be such as may be reasonably expected of a candidate having educational qualification specified for the post.

The written test for various posts would mainly cover the subjects/topics indicated as follows:

### 1) STATION CONTROLLER/TRAIN OPERATOR

- i) **General Knowledge & Awareness** – Current Affairs, Economy, Culture, History, Geography and Natural Resources of India, with special focus on Rajasthan.
- ii) **General Science** – Live processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Natural resources and Environment.
- iii) **Quantitative Aptitude** - Ratio and Proportion, Percentages and Averages, Profit and Loss, Speed and Distance, Time and Work, LCM and HCF, Simple and Compound Interest.
- iv) **Logical Ability and Reasoning** - Data Interpretation, Venn Diagram, Inductive Logic, Puzzles, Coding and decoding, Number Series, Blood Relations, Arrangements.
- v) **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- vi) **English Comprehension** - Comprehension passage in English with questions in English only.
- vii) **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.

### 2) JUNIOR ENGINEER (CIVIL)

- i) **Civil Engineering** - Strength of Materials and Mechanics of Structures, Building Material & Construction, Hydraulics and Fluid Mechanics, Design of RCC structures, Design of steel structures, Estimation and costing, Surveying.
- ii) **General Knowledge & Awareness**– Current Affairs, Economy, Culture, History, Geography, Natural Resources and Environment of India, with special focus on Rajasthan.
- iii) **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Nuclear Physics, Management of natural resources, Sources of energy, Environment.
- iv) **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- v) **English Comprehension** - Comprehension passage in English with questions in English only.
- vi) **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.



### 3) JUNIOR ENGINEER (ELECTRICAL)

- i) **Electrical Engineering** - PN Junction Diodes, Bipolar Junction Transistors (BJT), Field Effect Transistors, Network Theorems, Polyphase Circuits, DC generators, DC motors, Transformers, Measuring Instruments, Potentiometers, Measurement of Resistances.
- ii) **General Knowledge & Awareness**– Current Affairs, Economy, Culture, History, Geography, Natural Resources and Environment of India, with special focus on Rajasthan.
- iii) **General Science** - Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Nuclear Physics, Management of natural resources, Sources of energy, Environment.
- iv) **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- v) **English Comprehension** - Comprehension passage in English with questions in English only.
- vi) **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.

### 4) JUNIOR ENGINEER (MECHANICAL)

- i) **Mechanical Engineering** - Strength of materials, Fluid mechanics, CADD CAM, CIM, Measurements, Robotics, Mechanics of machines, Manufacturing process, Thermodynamics, Materials, Automobiles.
- ii) **General Knowledge & Awareness** – Current Affairs, Economy, Culture, History, Geography, Natural Resources and Environment of India, with special focus on Rajasthan.
- iii) **General Science** - Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Nuclear Physics, Management of natural resources, Sources of energy, Environment.
- iv) **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- v) **English Comprehension** - Comprehension passage in English with questions in English only.
- vi) **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.

### 5) JUNIOR ENGINEER (ELECTRONICS)

- i) **Electronics/ Electronics & Communication Engineering** - Semiconductor Physics, Small Signal Amplifiers at Low Frequency, Network Theorems and Elements, Electronic Instruments for Measuring Basic Parameters, Digital Signal Processing, Control System, Instrumentation Techniques, Biomedical Electronics, Artificial Neural Networks, Digital Electronics, Analogue Electronic Circuit, Mobile Communication System, Satellite Communication System, Radar System, Optical Fibre Communication.

- ii) **General Knowledge & Awareness** – Current Affairs, Economy, Culture, History, Geography, Natural Resources and Environment of India, with special focus on Rajasthan.
- iii) **General Science** - Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Nuclear Physics, Management of natural resources, Sources of energy, Environment.
- iv) **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- v) **English Comprehension** - Comprehension passage in English with questions in English only.
- vi) **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.

#### 6) CUSTOMER RELATIONS ASSISTANT

- i. **General Knowledge & Awareness**– Current Affairs, Economy, Culture, History, Geography, Natural Resources and Environment of India, with special focus on Rajasthan.
- ii. **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live Processes, Control and co-ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Work, Force, Nuclear Physics, Natural resources and Environment.
- iii. **Quantitative Aptitude** - Ratio and Proportion, Percentages and Averages, Profit and Loss, Speed and Distance, Time and Work, LCM and HCF, Simple and Compound Interest.
- iv. **Logical Ability and Reasoning** - Data Interpretation, Venn Diagram, Inductive Logic, Puzzles, Coding and decoding, Number Series, Blood Relations, Arrangements.
- v. **Computer Awareness** - Input and Output devices, Latest trends in IT, Computer Networks, Operating System, E- Mail and Internet, MS-Office.
- vi. **English Comprehension** - Comprehension passage in English with questions in English only.
- vii. **Hindi Comprehension** –Comprehension passage in Hindi with questions in Hindi only.

#### 7) MAINTAINER (FITTER)

- i. **Fitter Trade Related** – As per standard of NCVT (DG E&T) - Machines, Machine accessories, Workshop practice, Workshop calculation, Measuring tools / hand tools / cutting tools, Power transmission, Limits and fits, Lubricants, Fasteners and fastening methods, Heat treatment, Safety precautions, Engineering Drawing.
- ii. **General Knowledge & Awareness** – Current Affairs, Economy, Culture, History, Geography and Natural Resources of India, with special focus on Rajasthan.
- iii. **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and co-

ordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Work, Force, Management of natural resources, Sources of energy, Environment.

- iv. **Computer Awareness** - Input and Output devices, Latest trends in IT, Operating System, E-Mail and Internet, MS-Office.
- v. **English Comprehension** - Comprehension passage in English with questions in English only.
- vi. **Hindi Comprehension** – Comprehension passage in Hindi with questions in Hindi only.

#### 8) MAINTAINER (ELECTRICIAN)

- i. **Electrician Trade Related** – As per standard of NCVT (DG E&T) – Measuring & Testing Instruments, Electrical hand tools, Various safety measures involved in industry, Fundamentals of electricity, Cells & batteries, D.C. Machines, A.C. Machines, Transformer, Earthing, Overhead Transmission, Introduction to basic electronics, Electrical wiring & wiring systems, House wiring, Circuit signs & symbols, Workshop calculation.
- ii. **General Knowledge & Awareness** – Current Affairs, Economy, Culture, History, Geography and Natural Resources of India, with special focus on Rajasthan.
- iii. **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and coordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Work, Force, Management of natural resources, Sources of energy, Environment.
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- v. **English Comprehension** - Comprehension passage in English with questions in English only.
- vi. **Hindi Comprehension** –Comprehension passage in Hindi with questions in Hindi only.

#### 9) MAINTAINER (ELECTRONICS)

- i. **Electronic Mechanic Trade Related** – As per standard of NCVT (DG E&T) – Basic Electronic components, Component testing, Measuring and testing equipment, Diodes, Field Effect Transistor, Thyristors, Amplifiers, Oscillators, Basic logic gates, Number system, D.C. Motor, Circuit signs & symbols, Workshop calculation.
- ii. **General Knowledge & Awareness**– Current Affairs, Economy, Culture, History, Geography and Natural Resources of India, with special focus on Rajasthan.
- iii. **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and coordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Work, Force, Management of natural resources, Sources of energy, Environment.



- iv. **Computer Awareness** - Input and Output devices, Latest trends in IT, Operating System, E-Mail and Internet, MS-Office.
- v. **English Comprehension** - Comprehension passage in English with questions in English only.
- vi. **Hindi Comprehension** –Comprehension passage in Hindi with questions in Hindi only.

#### 10) MAINTAINER (REFRIGERATION & AC)

- i. **Mechanic (Refrigeration and Air-Conditioner) Trade Related** – As per standard of NCVT (DG E&T) – Workshop practice, Workshop calculation, Basic electricity, Basic electronics, Basic refrigeration & air conditioning, Instruments, Accessories & controls, Automobile air-conditioning, Central air-conditioning, Maintenance of refrigeration & A.C. equipment, Safety precautions, Engineering drawing.
- ii. **General Knowledge & Awareness**– Current Affairs, Economy, Culture, History, Geography and Natural Resources of India, with special focus on Rajasthan.
- iii. **General Science** – Acids, Bases and Salts, Chemical Reactions, Metals and Non-metals, Carbon compounds, Periodic classification of elements, Live processes, Control and coordination in animals and plants, Reproduction, Heredity and Evolution, Electric current, Potential difference and Electric current, Magnetic effects of current, Reflection of light, Refraction, Refraction of light through prism, Work, Force, Management of natural resources, Sources of energy, Environment.
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### **IMPORTANT**

JMRC has not authorised any publisher/website to sell text-books, guide books or other examination/test related material. The candidate shall be solely responsible for implications arising from the use of any such information/material.