MAIN FEATURES VOL-2

ESTABLISHMENT
- General conditions of service
- Recruitment and training :
- Leave rules, Pass rules
- D & Appeal Rules, 1968 :
- Retirement Benefits
- Industrial relations :
- Staff Welfare
- Labor laws :
- Scope of IT

FINANCE
- Financial overview
- Budget :
- Rules of allocation
- Works Programme :
- Control over Stores Expenditure
- Workshop accounts
- Tenders and Contracts :
- Audit and Draft paras
- Traffic account :
- Information Technology

STORES

RAJBHASHA

GENERAL KNOWLEDGE

MODEL PAPERS

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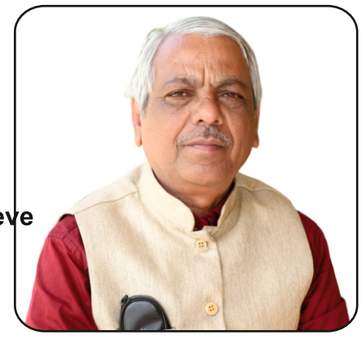

Er SURESH K SHEVRA

Author

Indian Railway Technical Books

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2025

How To Become A Railway Officer

VOL-1

SHEVRA 2025

VOLUME-1

How To Become A Railway Officer

For Railway Civil Engineering Examinations (ADEN/AXEN)

OBJECTIVE / MULTIPLE CHOICE QUESTIONS WITH ANSWERS

Based on Latest Guidelines of Railway Board

MAIN FEATURES

P. WAY
- USFD
- CWR, LWR, SWR
- Curves
- Points & Crossings
- Manual Maintenance
- Mechanised Maintenance
- Track Machine
- Level crossings
- Accidents,

BRIDGE & TUNNEL
- Bridge & Tunnel

WORKS
- Maintenance of Buildings
- Passenger Amenities
- Water Supply
- Drainage & Sewerage
- Garden & Plantations,
- Land management
- Building Material
- Concrete and R.C.C.
- Soil Mechanics
- Surveying
- Police Jurisdiction
- Schedule of Dimensions

2025

Er SURESH K SHEVRA

Blue Circle Publication India

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Er. Suresh Kumar Shevra
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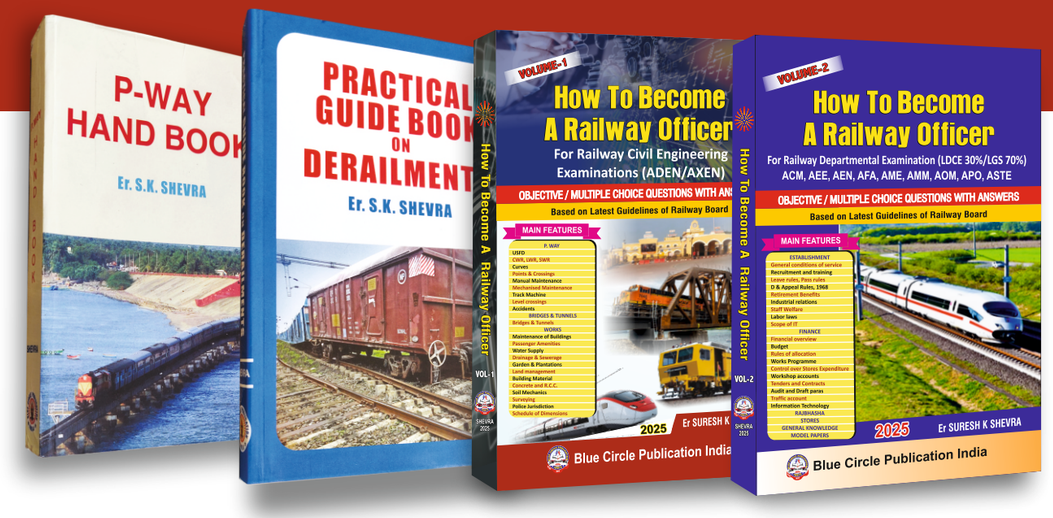

Practical Guide Book

The Chapters Covering in

Practical Guide Book on Derailments

CHAPTER 1
General Analysis Of Accident And Derailment
CHAPTER 2
Track Investigation
CHAPTER 3
Description And Defects Of Rolling Stock
CHAPTER 4
Description And Features Of Locomotives
CHAPTER 5
Description Of Traffic Features
CHAPTER 6
Description Of S & T Features

P-WAY HAND BOOK

Chapter 1	:	Introduction
Chapter 2	:	Rails
Chapter 3	:	Sleeper
Chapter 4	:	Ballast
Chapter 5	:	Fastening
Chapter 6	:	Point & Crossing
Chapter 7	:	Curve
Chapter 8	:	Level Crossing
Chapter 9	:	Swr
Chapter 10	:	LWR
Chapter 11	:	Manual Maintenance
Chapter 12	:	Mech. Maintenance
Chapter 13	:	Protection of Track
Chapter 14	:	Track Monitoring
Chapter 15	:	Track Tolerances
Chapter 16	:	Track Renewal
Chapter 17	:	Small Track Machine
Chapter 18	:	Patrolling of Railway Track
Chapter 19	:	USFD
Chapter 20	:	Rail Weld Failure
Chapter 21	:	Welding
Chapter 22	:	Accidents
Chapter 23	:	Bridge
Chapter 24	:	Establishment
Chapter 25	:	Finance
Chapter 26	:	G & S R
Chapter 27	:	Works
Chapter 28	:	Store
Chapter 29	:	P Way S & T and Works Tables
Chapter 30	:	Pipeline Track Crossing

HOW TO BECOME A RAILWAY OFFICER

FOR RAILWAY DEPARTMENT EXAMINATIONS (LDCE 30%, LGS 70%)
CIVIL ENGINEERING (ADEN / AXEN & JE)
OBJECTIVE / MULTIPLE CHOICE QUESTIONS WITH ANSWERS

Er. SURESH K SHEVRA
FORMER EXECUTIVE ENGINEER
CENTRAL RAILWAY

VOLUME-1

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SHEVRA
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सुरक्षा
सेवा
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सर्वश्रेष्ठ परीक्षा मार्गदर्शक

2025

SHEVRA
A SOLUTION OF HIGHER ENGINEERING VERSION FOR RAILWAY ACADMEY

First Edition 2021
First Reprint Edition 2022
Second Edition 2022
Second Reprint Edition 2022
Third Edition 2023
Fourth Edition 2024 (VOL-1)
Fifth Edition 2025 (VOL-1)

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1414, Civil Lines
Jhansi 284001
Mobile 9422296949,

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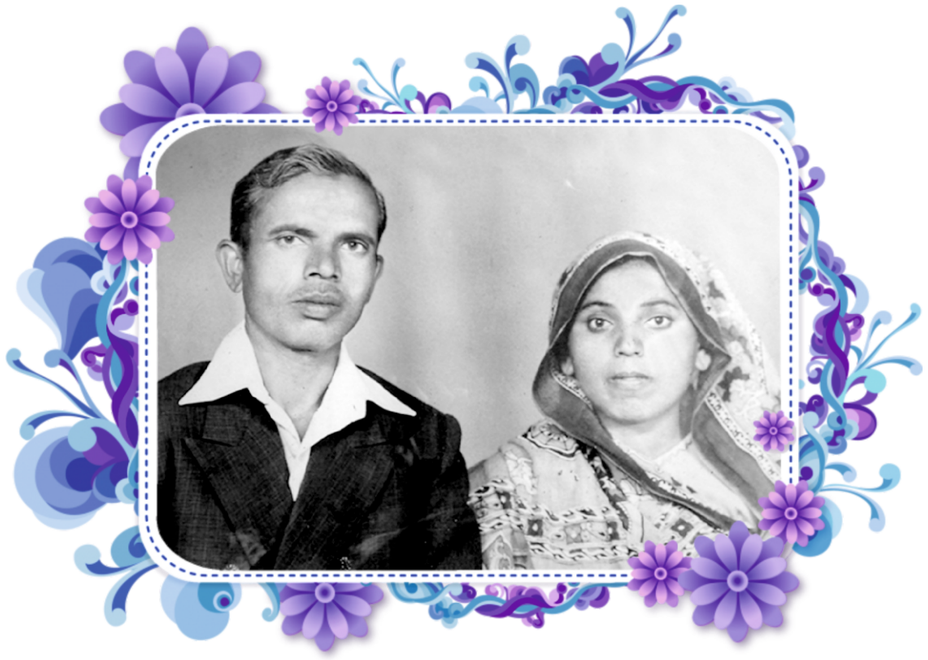
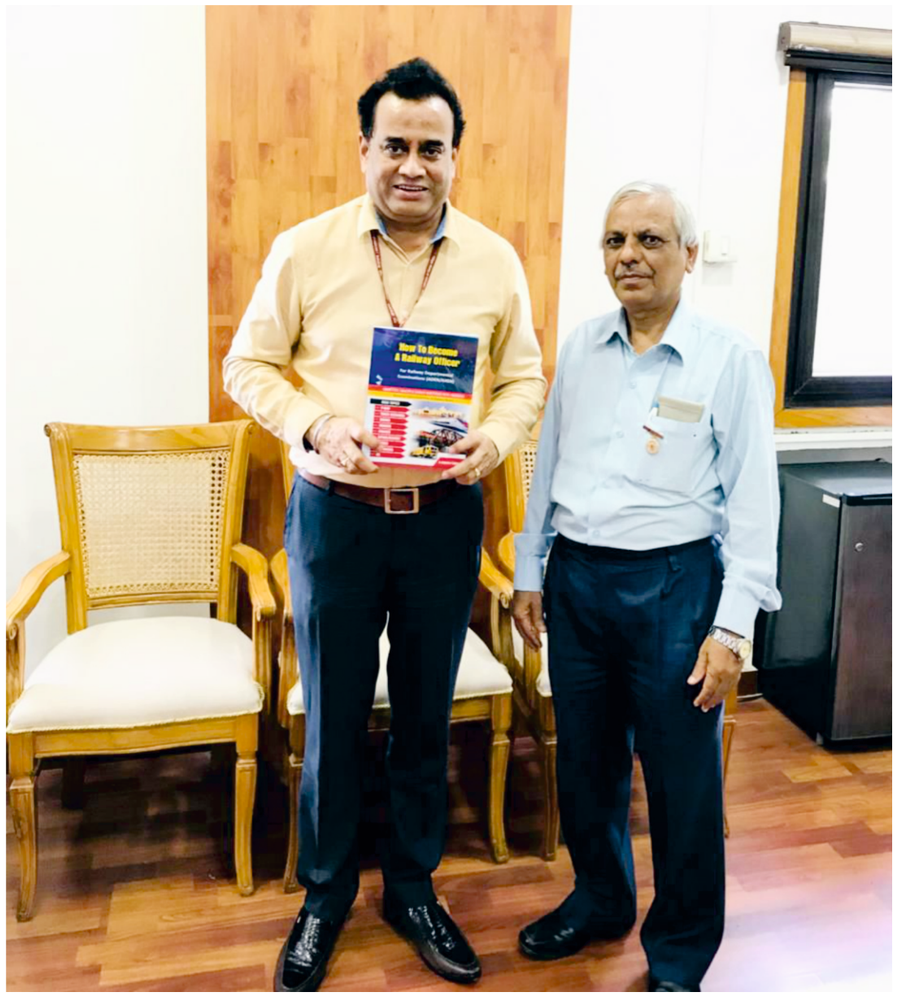
ISBN :ISBN : 978-93-5777-018-7



TO
SMT BENI BAI & SHRI CHHAKKI LAL SHEVRA
MOTHER & FATHER
WITH
LOVE & RESPECT



Hon'ble Shri Rajesh Argal Additional Member, Infrastructure Railway Board New Delhi (Left Side) along with the author Shri Suresh Kumar Shevra former Executive Engineer Central Railway (Right Side), inaugurating the How to Become Railway Officer Objective Book, at Rail Bhawan New Delhi on 20-07-2021

राम करण यादव
महानिदेशक
Rama Karan Yadav
Director General

सत्यमेव जयते

भारत सरकार, रेल मंत्रालय
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पुणे-**411001**
Government of India, Ministry of Railways
Indian Railways Institute of Civil Engineering,
PUNE 411 001

Foreword

I am pleased to note that **Er. SURESH. K. SHEVRA** retired Executive Engineer Central Railway is publishing 4th edition of "**HOW TO BECOME A RAILWAY OFFICER**, now in 2 volumes by expanded number of questions within 3 years.

Contents of the Volume-I have been divided into 3 Part i.e. P-Way, Bridge & Tunnel and Works and that of Volume-II in 5 parts i.e. Establishment, Finance, Stores, General Knowledge & Rajbhasha. In this edition Author stressed on thorough knowledge of each subject through Multiple Choice Objective questions with answers incorporated with latest correction slips of different Manuals and according to the latest instruction issued regarding CBT Exam for AEN by NAIR Vadodara and Railway Board. Volume-II is specially designed for other than technical subject which will be beneficial to other departments i.e. AEN, AME, ASTE, APO, ACM, AOM, AFA, AEE and AMM also.

The Author **Shri S.K. Shevra** Retired **Executive Engineer Central Railway** has over 30 years long rich experience of Civil Engineering fields in different capacities.

I wish to congratulate the author all success for his work.

Palace: Pune
Date: 3-10-2023

(R.K. Yadav)
Director General IRICEN Pune MH

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रेलवे Railway
Office : 62400
Fax (013) : 55860

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पी. रवि कुमार
P. Ravi Kumar
अपर महानिदेशक
Addl. Director General

FOREWORD

It is great pleasure that **"HOW TO BECOME A RAILWAY OFFICER", 4 th edition** in 2 volumes have been published by Blue Circle Publication for the benefits of those aspirants preparing for the 70% & 30% Computer Based objective type Tests (CBT) conducted by Railway Board.

VOLUME-I- consist of Professional Subject for Civil engineering which is further divided into three parts 1. P-Way (17 chapters), 2. Bridges & Tunnels, 3. Work (18 chapters).

Similarly, VOLUMES-II consists of other than Professional Subject divided into 5 parts 1. Establishment, 2. Finance, 3. Stores, 4. Raj bhasha, 5. GK & Computer and especially useful for all departments i.e., ACM, AEE, AEN, AFA, AME, AMM, AOM, APO, ASTE.

I congratulate the Author Suresh K. Shevra and wish him all success with his work.

Palace: Jamalpur
Date: 31-10-2023

(P. Ravi Kumar)
Additional Director General
IRIMEE, Jamalpur

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Principal Chief Engineer

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मुम्बई-400001

Principal Chief Engineer's Office,
Chhatrapati Shivaji Maharaj Terminus,
MUMBAI-400001

FOREWORD

The book "HOW TO BECOME A RAILWAY OFFICER Volume - I & II" written by Shri Suresh K. Shevra former Executive Engineer Central Railway are a unique book in which it has been focused on syllabus issued by Railway Board for aspirant of, AEN, AME, ASTE, APO, ACM, AOM, AFA, AEE and AMM, Railway group B services. All the aspirant will be benefited those appearing centralized computer based objective type MCQ examination for 70% and 30% LDCEs for promotion to group 'B' post conducted by NAIR Vadodara.

The language has been kept simple, making the book extremely readable specific to all stream of Indian Railways.

Being a quite a comprehensive book, I have full confidence this edition will continue to be a valuable as a guide for CBT Exam as well as useful as a reference in day-to-day work in the field.

I compliment author Shri Suresh K Shevra former Executive Engineer Central Railway for his excellence work and hope for his success.

CST Mumbai CR
03-10-2023

3-X-23
(RAJESH ARORA)
Principal Chief Engineer, Central Railway

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निदेशक वित्त / मु.वित्त.अ.
HIRA BALLABH
DIRECTOR FINANCE / C.F.O.

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FOREWORD

'HOW TO BECOME A RAILWAY OFFICER' written by Shri Suresh K. Shevra in two volumes in a unique compilation. More than 5200 Multiple Choice Objective questions with answers are incorporated with latest correction Slips of different Manuals for aspirant of,ACM, AEN, AEE, AFA, AOM, AMM, AME, APO, ASTE, Railway Group 'B' services.

All the aspirants appearing for centralised computer based objective type MCQ examinaitons and for 70% and 30% LDCEs for promotion to group 'B' posts would be benefited. These volumes are also useful for other railway employees in their day-to-day working.

I compliment the author for this excellent work.

With Best Wishes.

Palace: NDLS
Date: 18-10-2023

(HIRA BALLABH)

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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
RAILWAY BOARD, RAIL BHAWAN
RAISINA ROAD, NEW DELHI-110001

सत्यमेव जयते

FOREWORD

I am pleased to note that Blue Circle Publication India is bringing out the updated version of 'HOWTO BECOME A RAILWAY OFFICER 2023'.

It would be stating the obvious to mention about the utility and popularity of this MCQ Book which is useful to all classes of Civil Engineers in the country for preparation of both professional and non-professional subjects. I am hopeful that this book will benefit candidates appearing for centralised computer based objective type examinations for 70% Selection and 30% LDCE for promotion to Group 'B' posts of Civil Engineering Department of Indian Railways.

I congratulate the author Shri Suresh K Shevra and wish him all success for his work.

(Atul B. Khare)
Pr. Executive Director/Civil Engg. (Plg.)
Railway Board

New Delhi, 30 November, 2022

प्रदीप कुमार गर्ग
PRADEEP KUMAR GARG
प्रमुख मुख्य इंजिनियर
PRINCIPAL CHIEF ENGINEER

सत्यमेव जयते

पश्चिम रेलवे
Western Railway
चर्चगेट, मुंबई – 400 020
Churchgate, Mumbai - 400 020.
Phone : (022) 22016893

FOREWORD

It gives me great pleasure that Blue Circle Publication India is bringing out the revised 3rd edition of **"HOW TO BECOME A RAILWAY OFFICER"** during December, 2022. The book covers professional as well as non professional subjects as per syllabus issued for aspirants of Group "C" to Group "B" Railway Civil Engineers by Railway Board and aspirant appearing for centralised computer based objective type examinations for 70% Regular and 30% LDCEs for promotion to group "B" post will be benefitted. I am confident that this MCQ Book will be very useful to Railway Civil Engineers.

I wish all the success to Shri Suresh Kumar Shevra, Author of the 3rd edition of **"HOW TO BECOME A RAILWAY OFFICER"**.

Churchgate
22 November, 2022

(PRADEEP KUMAR GARG)
PRINCIPAL CHIEF ENGINEER
WESTERN RAILWAY

बृजेन्द्र कुमार
BRIJENDRA KUMAR
प्रमुख मुख्य वाणिज्य प्रबन्धक
Principal Chief Commercial Manager

उत्तर मध्य रेलवे
NORTH CENTRAL RAILWAY

Office of the
Principal chief Commercial Manager
Ground Floor "E" Block
Subedarganj
Prayagraj-211015

Date : 20.11.2024

Foreword

It is great pleasure and pride to me that **Er. SURESH K. SHEVRA, Former** Executive Engineer Central Railway is publishing, 5th Edition of **"HOW TO BECOME A RAILWAY OFFICER 2025"** in 2 volumes for departmental examinations of Railways i.e, ACM, AEE, AEN, AFA, AME, AMM, AOM, APO, ASTE.

The design of the Volume-I, has been divided into 3 Parts i.e., P-Way, Bridge, Tunnel and Works whereas Volume-II has been divided into 5 parts i.e, Establishment, Finance, Stores, General Knowledge & Rajbhasha which will be especially useful for all aspirants those preparing for the LDCE/ LGS Exams and other Computer Based objective type Tests (CBT) conducted by NAIR.

I congratulate the Author Er. Suresh K Shevra and wish him all success for his work.

(BRIJENDRA KUMAR)

PREFACE FIFTH EDITION

As you would have observed from the book cover, you have just entered the portal of knowledge which will serve as a beacon of light throughout your professional life. The response to earlier edition of this book" **HOW TO BECOME RAILWAY OFFICER** "had been encouraging because of more than 6200 Multiple Choice Objective questions with answers (now increased chapter 12-A according to latest IRPWM 2024)also in corporated with latest correction Slips of different Manuals and according to the latest instruction issued by Railway Board .It is learnt with great pleasure about 50 % readers of this book have been qualified throughout the Indian Railway in last 4year AEN Exam conducted by NAIR Vadodara ,due to which constant demand for this book not only from Civil Engineering but also all other 8 departments officials of Indian Railways increased.

The book sets out to systematically provide a basic understanding of the many aspects of designing, constructing, maintaining and management of railways. Latest correction Slip No 01 of 13-11- 2024 for IRPWM 2024 now incorporated in this book and being increase of number of questions from 2900 to 6200 now it has been divided into 2 volumes.

Both VOLUME-I &VOLUME-II, has been consist of PROFESSIONAL SUBJECT & OTHER THAN PROFESSIONAL SUBJECT respectively. VOLUME-I - Professional Subject further divided three part 1.-P-Way (18 chapters) ,2-Bridges& Tunnels(1 Chapter),3- Work(18 chapters) and VOLUME-II- Other than Professional Subject divided in 5 parts 1-Establishment ,2-Finance, ,3-Stores, 4-Rajbhasha, 5- GK & Computer. Various sections in A-to-Z sequence to ensure that the contents in the book are self-sufficient, easy to search by having A-to-Z arrangements of chapters, not requiring cross-referencing. The aim is that the not only Engineers but also other than engineers i.e Supervisors are equipped with the right knowledge, so that they can aspire and accomplish success in any competitive exam.

The author has accumulated an enormous number of intellectual debts from all departments of Indian Railways. Shri Brij Bhushan Garg XEN (PL) BH NDLS NR , Shri V Trinadh ADEN ECOR VSKP Shri Shree Dhar SSE(Bridge) SC SCR ,Shri Dharmendra Kumar SSE(Works) AGC NCR ,Shri Gulshan Saili (P-Way) NDLS NR, Shri SK Hardah SSE wks(C) NDLS NR , Shri Manoj Singh SSE(P-Way) BH NDLS , Shri Sunder Ram Sr Instructor ZRTI TBM SR , Shri Deepankar Chatterji SSE(P-Way) DTC, Guwahati NFR , Shri A K Sinha SSE(Works) CCG WR , , Shri Mahothara Sarvana Pavan ADEN SR ,Smt Rekha Srinivas (DD) SC SCR , Shri Lallan Kumar Mishra SSE(TMC) Sini SER ,Shri Abdul Rashid SSE(WKS) Construction Indore WR ,Shri R.B Singh AOM Coaching SUR CR ,Shri V.P Singh instructor IREEN NK ,Shri Naresh Shinde APO (W/S) MMR CR Shri Hukum Singh Professor General services IREEN NK CR who had extended suggestions for this book popular over the years, for which the author also express his gratitude to all deserve all stream officials also express my thanks to all my well-wishers as well as those who helped me directly or indirectly including Shri Rahul TM and shri Deepak TM TKMGfor their cooperation.

The mistake which had crept in, has been eliminated in this edition. Every care has been taken to check mistakes and misprints, however it is difficult to claim perfection of any errors, if aspirants bring out omissions and suggestions for the improvement of this volume, gratefully acknowledged and incorporated in the next edition. we will appreciate my readers, who support me despite the digital invasion, I am fortunate to have so many readers who shower me with love and encourage me to do better

My family is a pillar of support in my life and I am thankful to my wife Smt Shyama Devi Shevra and children Deep, Abhinav, Priya, Chhaya & Priya Nandini from the core of my heart.

I am extremely grateful to Shri A.K. Lahoti Ex chairman & Chief Executive Officer RB New Delhi, Shri Atul B Khare EX PED (CE) Railway Board, New Delhi, Shri Ram Karan Yadav EX GM CR, Shri HK Bhagoriya CE (Const,) SC SCR, Shri HS Verma DG Safety RB , Shri Brijendra Kumar PCCM PRYJ NCR,Shri Hira Ballabh Director Finance /CFO DFCCIL NDLS NR who had encouraged and appreciated for this publication by which this book is possible to come out.

Nashik Road,
11 January 2025

SURESH.K.SHEVRA
FORMER EXECUTIVE ENGINEER CR
AUTHOR INDIAN RAILWAY TECHNICAL BOOKS

PREFACE FOURTH EDITION

As you would have observed from the book cover, you have just entered the portal of knowledge which will serve as a beacon of light throughout your professional life. The response to earlier edition of this book **"HOW TO BECOME RAILWAY OFFICER"** had been encouraging because of more than 2900 Multiple Choice Objective questions with answers (now increased more than 5786) incorporated with latest correction Slips of different Manuals and according to the latest instruction issued by Railway Board. It is learnt with great pleasure about 50 % readers of this book have been qualified throughout the Indian Railway in last 3 year AEN Exam conducted by NAIR Vadodara ,due to which constant demand for this book not only from Civil Engineering but also all other 8 departments officials of Indian Railways increased.

The book sets out to systematically provide a basic understanding of the many aspects of designing, constructing, maintaining and management of railways. Latest correction Slip No 15 of 23-10- 2023 for IRPWM June 2020 now incorporated in this book and being increase of number of questions from 2900 to 6200 now it has been divided into 2 volumes.

Both VOLUME-I & VOLUME-II, has been consist of PROFESSIONAL SUBJECT & OTHER THAN PROFESSIONAL SUBJECT respectively. **VOLUME-I, Professional Subject (Civil Engineering)** further divided three part 1-P-Way (17 chapters), 2-Bridges & Tunnels, 3-Work (18 chapters) and **VOLUME-II-Other than Professional Subject (for all Faculties i.e. ACM, AEE, AEN, AFA, AME, AMM, AOM, APO, ASTE, & JE)** divided in 5 parts 1-Establishment, 2-Finance, 3-Stores, 4-Rajbhasha, 5-GK & Computer. Various sections in A-to-Z sequence to ensure that the contents in the book are self-sufficient, easy to search by having A-to-Z arrangements of chapters, not requiring cross-referencing. The aim is that the not only Engineers but also other than engineers i.e for all Faculties Aspirants are equipped with the right knowledge, so that they can aspire and accomplish success in any competitive exam.

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Nashik Road,
22 November 2023

SURESH.K.SHEVRA
FORMER EXECUTIVE ENGINEER CR
AUTHOR INDIAN RAILWAY TECHNICAL BOOKS

PREFACE THIRD EDITION

As you would have observed from the book cover, you have just entered the portal of knowledge which will serve as a beacon of light throughout your professional life.

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The book sets out to systematically provide a basic understanding of the many engineering aspects of designing, constructing and maintaining railways.Latest correction Slip No 10 of Nov 2022 for IRPWM June 2020 now incorporated in this book and logically divided into various sections in A-to-Z sequence to ensure that the contents in the book are self-sufficient, easy to search by having A-to-Z arrangements of chapters. not requiring cross-referencing. The aims that the Engineers are equipped with the right knowledge, so that they can aspire and accomplish success in any Engineering competitive exam.

I am extremely grateful to Shri A.K. Lahoti GM CR, IRICEN Pune, Shri Atul B Khare PED (CE) Railway Board, New Delhi, Shri Ram Karan Yadav CAO(Const.) Churchgate WR Shri HK Bhagoriya CE (Const,) SC SCR, Shri HS Verma CCM (FS) SWR, Shri Brijendra Kumar CCM WCR who had encouraged and appreciated for this publication by which this book is possible to come out.

The author has accumulated an enormous number of intellectual debts from Civil Railway Engineers Shri Brij Bhushan GargXEN (PL) BH NDLS NR , Shri V Trinadh ADEN ECOR VSKPShri Shree Dhar SSE(Bridge) SC SCR ,Shri Dharmendra Kumar SSE(Works) AGC NCR ,Shri Gulshan Saili(P-Way) NDLS NR, Shri Dushyant K Sharma SSE(PL) NDLS NR , Shri Manoj Singh SSE(P-WayBH NDLS , Shri S. Muthalgan Sr Instructor ZRTI TBM SR , Shri Deepankar Chatterji SSE(P-Way) Gohati NFR , Shri A K Sinha SSE(Works) CCG WR , , Shri Mahothara Sarvana Pavan (P-Way) SR ,Smt Rekha Srinivas (DD)SC SCR , Shri Sanjay Kumar Mishra SSE(TMC) LKO NR who had extended suggestions for this book popular over the years, for which the author also express his gratitude to all deserve engineers.

The mistake which had crept in, have been eliminated in this edition. every care has been taken to check mistake and misprints, however it is difficult to claim perfection any errors, if aspirants bring out omission and suggestions for the improvement of this volume, gratefully acknowledge and incorporated in the next edition. we will appreciate my readers, who support me despite the digital invasion, I am fortunate to have so many readers who shower me with love and encourage me to do better.

My family -a pillar of support in my life. My wife Smt Shyama Devi Shevra and children Deep, Abhinav, Priya, Chhaya & Priya Nandini for her constant support and encouragement, thank you for being there.

Nashik Road,
01 January 2023

SURESH.K.SHEVRA
FORMER EXECUTIVE ENGINEER CR
AUTHOR INDIAN RAILWAY TECHNICAL BOOKS

PREFACE SECOND EDITION

The response to earlier edition of this book had been encouraging because of more than 2700 Multiple Choice Objective questions with answers incorporated with latest correction slips of different Manuals due to which constant demand for this book from all the section of Civil Engineering officials of Indian Railways.

Up to correction Slip No. 7 of IRPWM 2020 incorporated in this book and logically divided into various sections in A-to-Z sequence to ensure that the contents in the book are self-sufficient, easy to search by having A-to-Z arrangements of chapters. not requiring cross-referencing. The aims that the Engineers are equipped with the right knowledge, so that they can aspire and accomplish success in any Engineering competitive exam.

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Nashik Road,
14 Aprll 2022

SURESH.K.SHEVRA
FORMER EXECUTIVE ENGINEER CR
AUTHOR INDIAN RAILWAY TECHNICAL BOOKS

PREFACE FIRST EDITION

The author feels a great pleasure in presenting Book on **"HOW TO BECOME A RAILWAY OFFICER"** in the hands of Civil Railway Engineers preparing for departmental competitive examinations. The book, contains 25 chapters (including 5 subchapters) contained more than 2500 Multiple Choice Objective questions with answers. Focus has been kept on in-depth understanding of professional subjects at basic and advanced level of Civil Railway Engineering and nonprofessional subject through Part-1 & Part-2 respectively. The chapters have segregated topic-wise to disseminate all kind of exposure to engineers in terms of quick learning and performing in examinations tobe get selected. The book is in line with recent examination scheme issued by the Railway Board.

The chapter of IRPWM 2020 logically divided into various sections in A-to-Z sequence to ensure that the contents in the book are self-sufficient, easy to search by having A-to-Z arrangements of chapters. not requiring cross-referencing. The aims that the Engineers are equipped with the right knowledge, so that they can aspire and accomplish success in any Engineering competitive exam.

Attempt has been made to bring out all kind of probable competitive examination questions asked over various Railways for the aspirants preparing for JE, SSE, ADEN, level LDCE/LGS Exams conducted by the Railways more over Part-2 has been designed in such a way which can be suitable for other department 's examination also. The book ensures threshold level of learning without external assistance. Wide range of MCQ practice questions provided which is very much essential to boost the confidence level during examinations, and ultimately to succeed. It has been ensured from objective books to have broad coverage of subjects as per COURSE OF STUDY(CH-20) at chapter level in a simple and effective way which can be understood even by a person not having formal Engineering Degree/Diploma.

Every effort has been made to make the entire book error free thus making the reading a pleasure because of clarity in printing and figures. We will appreciate, if aspirants bring out corrections required and, communicate by any media to the author. Author will be obliged to receive comments, suggestions and opinions from readers to enhance the utility of the book.

I am extremely grateful to Shri Santosh Kumar Agarwal, D.G IRICEN Pune, Shri O.P. Singh, A.M (L&A) Railway Board ,New Delhi ,Shri Ram Karan Yadav CAO (Const.) Gorakhpur NER who have encouraged and appreciated for publication of this edition by which this book possible to come out

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The author also wishes to record his gratitude to his wife Smt. Shyama Devi Shevra for her constant support and encouragement without which this book could not come out for publication of this first edition.

Nashik Road,
14 Aprll 2021

SURESH.K.SHEVRA
FORMER EXECUTIVE ENGINEER CR
AUTHOR INDIAN RAILWAY TECHNICAL BOOKS

INDEX HBRO 2025 VOLUME-1
(PROFESSIONAL SUBJECT)

1- ALL PERMANENT WAY OFFICIAL DUTIES

1 All form of trolley inspection should be done under block protection on ----------Routes

A

A) Routes having speed above 110 Kmph
B) Routes having Multiple Line
C) Routes having speed upto 110 Kmph
D) All type of yards lines

2 Gang Mate shall inspect the entire Gang length once a ---------.

A

A) a week
B) a fortnight
C) after noon daily
D) a month

3 ADEN shall carryout inspection of office and stores of Way & Works Engineers under his charge at least once in a

D

A) month
B) quarter
C) half year
D) year

4 Inspection of Gang to be done Once in -- by JE /SSE /P.Way (Sectional)

B

A) a year
B) a week
C) a fortnight
D) a month

5 As per Indian Railways Works Manual. periodicity of inspection of encroachment by SSE/P.Way(In-charge) is once in __months.

D

A) 12
B) 9
C) 6
D) 3

6 A Mobile Watchman is posted, till period of consolidation is over, on stretches where after maintenance operation, rail temperature has exceeded --- during the period of consolidation

B

A) td - 15°C
B) td + 20°C
C) td + 15°C
D) td - 20°C

7 As per IRPWM 2020 Push Trolley Inspection having speed above 110 Kmph and Multiple Line routes should be carried out by Sr.DENs/DENs once in ---------

B

A) Fortnight
B) 6 Month
C) year
D) None

12-A - EMERGING TRACK TECHNOLOGY

1 For better riding quality, increased service life and enhanced safety ----------turnout introduced recently.

A

A) Canted B) Plain
C) Fan shaped D) ordinary

2 ----------in Tunnels/Viaducts/Station Yards/formation in cuttings due to lesser maintenance efforts and economical life cycle costs.

B

A) Ballasted track B) Ballast less track
C) Rubberized track D) Tube track

3 There is no need of disconnection and removal of point machines from the track for tamping of turnouts where ---------- are provided

C

A) Ordinary point machine B) Unimatepoint machine
C) In-Sleeper point machines D) t-28 machine

4 composite sleepers may be used in place of ----------

D

A) Steel Channel sleepers B) H-Beam Sleepers
C) Special location D) All are correct

5 PAUT is an advanced non-destructive ultrasonic technique that permits the shaping and steering of the ultrasonic beam angles and enhanced beam coverageover conventional ultrasonic, since it shows defect representation in----------and S-Scan

D

A) A-Scan B) B-Scan
C) C-Scan D) A,B & C Scan

6 High Performance Rail Clamps may be used for permitting speeds of -------- kmph and higher on track discontinuities

C

A) 30 B) 40
C) 50 D) 60

7 The self-propelled Rail Inspection Vehicle (RIV) can be installed with Rail Head Profile Inspection & Analysis System to facilitate advance digital inspection of rails for selection of an optimum rail grinding program.

A

A) Rail Head Profile Inspection B) Web Profile Inspection
C) Foot Profile Inspection D) Complete Rail Profile Inspection

13- BRIDGES & TRACK STRUCTURE

1 In IR JE/SSE/Bridges is responsible for inspection and maintenance of steel girder bridges of span

B

A) Less than 12.2m
B) Greater than or equal to 12.2m
C) Steel girders of major & important
D) All steel girder bridges

2 Girder bridges with camber loss are called

B

A) Under-stressed bridges B) Over-stressed bridges
C) Incapable bridges D) Not usable bridges

3 In-charge SSE/Bridges shall carry detailed inspection of Superstructure of Steel/RCC/PSC/Composite girdersat the frequency of once in:

A

A) 5 years B) 3 years
C) 2 years D) Every year

4 Inspection of PSC girders is the responsibilityof

C

A) SSE/works B) SSE/P.Way
C) SSE/bridges D) Any of the above

5 All composite girder bridges are to be inspected by

C

A) SSE/works B) SSE/P.Way
C) SSE/bridges D) Any of the above

6 Erection and maintenance of RH girders and crib staging is done by

C

A) SSE/works B) SSE/P.Way
C) SSE/bridges D) Any of the above

7 RH girder should be stacked at a minimum distance from centre of track

C

A) 2435 mm B) 2515 mm
C) 2360 mm D) 2630 mm

PART-C WORKS
14-Duties of SSE/JE/Works

1 Each blank muster sheet before issue should be initialed on the top by the

C

A) Office clerk in charge B) S E (Pway /Works /Bridge)
C) ADEN/AXEN D) Dy. Chief Engineer

2 Section Engineer should inspect all the buildings, water supply installations etc, once in….months

D

A) 6 B) 3
C) 1 D) 12

3 Structures situated along side running lines are to be inspected by section Engineer once in… months.

C

A) 6 B) 3
C) 1 D) 12

4 Section Engineer/Works shall maintain …… books at all stations buildings and other important buildings.

B

A) Building register B) Petty Repair
C) SMR D) Inspection register

5 Section Engineer/works shall examine all tools and plant with the artisans once in ……month.

D

A) 6 B) 3
C) 12 D) 1

6 SSE/W shall ensure testing of yield of tube wells ____ in co-ordination with electrical staff, when the ground water table is at its lowest.

A

A) Once in a year B) Once in a month
C) Once in 2 year D) Once in 6 months

7 As per IRWM, no. of transfer of charge statements to be prepared is _____.

C

A) 1 B) 2
C) 3 D) 4

32-Syllabus and Model Papers

CIVIL ENGINEERING DEPARTMENT FOR LIMITED DEPARTMENTAL COMPETITIVE (LDCE) & LIMITED GENERAL SENIORITY (LGS) EXAM FOR PROMOTION FROM CLASS III TO CLASS II

CHAPTERS	SYLLABUS FOR 70% SELECTION FOR PROMOTION TO GR. B POST OF AEN IN CIVIL ENGINEERING DEPARTMENT. (PROFESSIONAL SUBJECTS)	SYLLABUS FOR 30% LDCE FOR PROMOTION TO GR. B POST OF AEN IN CIVIL ENGINEERING DEPARTMENT (PROFESSIONAL SUBJECTS)
(A) CIVIL ENGINEERING (GENERAL)		
1- Surveying	**A. Types** **1. Surveying basics** Basic principles; base lines; check lines: perpendicular and oblique offsets; conventional signs; plotting of survey; true and magnetic bearings; open and closed traverses; recording plotting of traverse, closing errors. **2. Surveying equipment** Auto level, Total station, DGPS, LIDAR. **3. Leveling –** Level Lines - datum, bench marks, simple leveling, fly leveling; recording the levels in field book; method of reducing levels; arithmetical check; longitudinal and cross section contouring. **4. Theodolite Survey –** **a**. Types of theodolites; measurement of horizontal angles, vertical angles, magnetic bearings and deflection angles; prolonging a straight line; traversing by method of included angles; balancing the survey - closing errors; calculations of latitude and departure. **b Curves-** Elements of simple circular curves, setting out simple circular curves. **c. Set out works -** Setting out buildings, culverts, Central line of Railway alignment. Usage of GPS technology in setting out Centre line of Railway alignments.	**A. Types** **1. Surveying basics** Basic principles; base lines; check lines: perpendicular and oblique offsets; conventional signs; plotting of survey; true and magnetic bearings; open and closed traverses; recording plotting of traverse, closing errors. **2. Surveying equipment** Auto level, Total station, DGPS, LIDAR. **3. Leveling –** Level Lines - datum, bench marks, simple leveling, fly leveling; recording the levels in field book; method of reducing levels; arithmetical check; longitudinal and cross section contouring. **4. Theodolite Survey –** **a**. Types of theodolites; measurement of horizontal angles, vertical angles, magnetic bearings and deflection angles; prolonging a straight line; traversing by method of included angles; balancing the survey - closing errors; calculations of latitude and departure. **b Curves-** Elements of simple circular curves, setting out simple circular curves. **c. Set out works -** Setting out buildings, culverts, Central line of Railway alignment. Usage of GPS technology in setting out Centre line of Railway alignments.
2- Strength of Materials, Structural Designs & Drawings	**a) Strength of Materials:** Stress, strain, Hooke's law, working stress, factor of safety; bending moment and shear force in simply supported beams and cantilevers; simple theory of bending. **b) Structural Design & Drawing Drawings** Different sizes of paper, folding and storage of drawing, plan, elevation, sections, isometric view. **c) RCC Structures** RCC, methods of design, Working Stress Method and Limit State Method. IRS Code of Practice for RCC (Concrete Bridge Code). **d) Steel Structures** Rivets and welds. Sketch and detailing of	**a) Strength of Materials:** Stress, strain, Hooke's law, working stress, factor of safety; bending moment and shear force in simply supported beams and cantilevers; simple theory of bending. *Moving loads on simply supported beams; influence lines for bending moment and shear force in statically determinate beams; short columns, long columns - empirical formulae.* **b) Structural Design & Drawing Drawings** Different sizes of paper, folding and storage of drawing, plan, elevation, sections, isometric view. **c) RCC Structures** RCC, methods of design, Working Stress Method and Limit State Method. Design of singly and

	connections different types of joints and strength determination. IRS Steel Bridge Code.	doubly reinforced rectangular beams including T and L beams. Design of slabs, design of column, IRS Code of Practice for RCC (Concrete Bridge Code). **d) Steel Structures** Rivets and welds. Sketch and detailing of connections different types of joints and strength determination. Design of tension member and compression member. Plate Girders, IRS Steel Bridge Code.
3- Construction material:	Description, specification, properties and uses of building materials - stones, sand, timber, bricks, cement, lime, building hardware, paints varnishes, glasses, and tiles. Concrete mix design, placing, compaction and durability.	Description, specification, properties and uses of building materials - stones, sand, timber, bricks, cement, lime, building hardware, paints varnishes, glasses, and tiles. Concrete mix design, placing, compaction and durability.
4- Foundation & Construction Engineering	**a) Soil Mechanics** Different type of Soils, Three phase diagram and their relationships, IS classification of soil, index and engineering properties of soil, compaction, consolidation, shear strength, earth pressure theories, slope stability. Specification and construction of earthwork in embankment and cuttings. **b) Foundation Engineering** Functions of foundation, different type of foundations - open foundations; well foundations and pile foundations, determination of safe bearing capacity, stress and settlement analysis, method of reducing differential settlements.	**a) Soil Mechanics** Different type of Soils, Three phase diagram and their relationships, IS classification of soil, index and engineering properties of soil, compaction, consolidation, shear strength, earth pressure theories, slope stability. Specification and construction of earthwork in embankment and cuttings. **b) Foundation Engineering** Functions of foundation, different type of foundations - open foundations; well foundations and pile foundations, determination of safe bearing capacity, stress and settlement analysis, method of reducing differential settlements.
5- Hydrology and Hydraulics:		**a) Hydraulics** Elements of hydraulics - Open Channel flow; flow in pipes, frictional loss, empirical formulae. **b) Hydrology** Rainfall and run-off; rainfall statistics; rain gauges, run--off calculations by empirical methods, flood discharge estimation; measurement of flood discharge-current meter. **c) Hydraulic structures** Design of bridges - alignment, number of spans; economic spans; waterway calculations; scour depth, afflux; clearance; depth of foundations; BOX and Pipe Culverts, estimation of design discharge based on para 4.3.4 of sub structure code namely using RDSO report RBF-16 for catchment size less than 25 sqkm and using flood estimation report (Synthetic unit hydrograph concept) for catchment size .25 sqkm, to 2500 sqkm.

(B) CIVIL ENGINEERING (RAILWAYS)		
1- Railway Surveys & Construction	Provisions in Engineering Code regarding - Classification of Surveys, Terms of Reference, Principles governing Railway alignment, Ruling gradients, Grade compensation for curves, Horizontal and vertical curves, Hill Surveys, Catch sidings, Tunnels, preparation of various maps and drawings, preparation of Survey reports for RECT, PECT and FLS, Project estimates.	Provisions in Engineering Code regarding - Classification of Surveys, Terms of Reference, Principles governing Railway alignment, Ruling gradients, Grade compensation for curves, Horizontal and vertical curves, Hill Surveys, Catch sidings, Tunnels, preparation of various maps and drawings, preparation of Survey reports for RECT, PECT and FLS, Project estimates.
2- Railway Track.	**A) Track Structure and Components.** a) Classification of Lines, Track Structure, Rail and Rail fastenings, Sleepers & Fastenings, Ballast - Specifications, Ballast Profile / Section / Depth of Cushion, Formation- Classification of Formation Requiring Treatment and Remedial Measures Suggested, Insulated joints & Switch expansion joints, Track structure on Bridges. **B) Duties.** Duties of ADEN, Duties of SSE/P.Way (In-charge), Duties of JE/ SSE/ P.Way (sectional), Duties of JE/ SSE/ P.Way (Other than sectional), Duties of Gang mates, Keymen, Patrolmen, Gateman and Track maintainer. **C) Maintenance of Permanent way.** Regular track maintenance, Handling and maintenance of rails, sleepers, fastenings & other misc. Items, Works incidental to regular track maintenance, Record keeping, Maintenance of track in track circuited areas, Maintenance of track in electrified areas. **D) Special Maintenance Works.** Alumino Thermit welding of rails, Flash-Butt welding of rails, Short welded Rails, Long welded Rails. USFD. **E) Curves and Turnout.** Curves, Realignment of curves, Points and Crossing. **F) Track tolerances and Track Monitoring.** **G) Schedule of dimensions.** Schedule-I Standard dimensions, Station Yards and extra clearance on curve. **H) CRS sanction for works affecting passenger running lines.** **I) Training and Competency of Permanent Way Staff.** **J) Permanent Way renewals.** **K) Engineering Restrictions and Indicators.** **L) Level Crossings and Gateman.** **M) Working of Trollies, Lorries and Material trains etc.** **N) Track Management System.** **O) General:** Reference to G & SR; types of signals and their significance; rules for working of trains; block working rules - types, Introduction of temporary single line working.	**A) Track Structure and Components.** a) Classification of Lines, Track Structure, Rail and Rail fastenings, Sleepers & Fastenings, Ballast- Specifications, Ballast Profile / Section / Depth of Cushion, Formation- Classification of Formation Requiring Treatment and Remedial Measures Suggested, Insulated joints & Switch expansion joints, Track structure on Bridges. **B) Duties.** Duties of ADEN, Duties of SSE/P.Way (In-charge), Duties of JE/ SSE/ P.Way (sectional), Duties of JE/ SSE/ P.Way (Other than sectional), Duties of Gang mates, Keymen, Patrolmen, Gateman and Track maintainer **C) Maintenance of Permanent way.** Regular track maintenance, Handling and maintenance of rails, sleepers, fastenings& other misc. Items, Works incidental to regular track maintenance, Record keeping, Maintenance of track in track circuited areas, Maintenance of track in electrified areas **D) Special Maintenance Works.** Alumino Thermit welding of rails, Flash-Butt welding of rails, Short welded Rails, Long welded Rails. USFD. **E) Curves and Turnout.** Curves, Realignment of curves, Points and Crossing. **F) Track tolerances and Track Monitoring.** **G) Schedule of dimensions.** Schedule-I Standard dimensions, Station Yards and extra clearance on curve. **H) CRS sanction for works affecting passenger running lines.** **I) Training and Competency of Permanent Way Staff.** **J) Permanent Way renewals.** **K) Engineering Restrictions and Indicators.** **L) Level Crossings and Gateman.** **M) Working of Trollies, Lorries and Material trains etc.** **N) Track Management System.** **O) General:** Reference to G & SR; types of signals and their significance; rules for working of trains; block working rules - types, Introduction of temporary single line working.

	P) Accidents: Action during accidents including breaches, Restoration of through running, Premonsoon precautionary measures.	**P) Accidents:** Action during accidents including breaches, Restoration of through running, Premonsoon precautionary measures.
3- Maintenance of Bridges	**A) Maintenance of bridges:** Responsibility of the Engineering officials, action to be taken after inspection of bridges; maintenance of substructure - abutments, piers, wing walls and return walls, maintenance of arches, dismantling of arches. Details of common repair techniques - cement pressure grouting, epoxy grouting, shotcreting / Guniting. Maintenance of RCC & PSC super structures - periodical maintenance, common defects and repair / strengthening techniques; maintenance of super structure (steel) girders - loss of camber in steel girders, cracks in steel works, strengthening of weak girders, replacement of loose rivets; maintenance of HSFG bolts, corrosion and its prevention, protective coatings by painting - periodicity and precautions, patch painting, ordinary paints - for severe and no severe corrosion, metallising & epoxy based paints, Maintenance of welded girders; maintenance of composite girders. Various defects in bed blocks and their remedies; maintenance of bearings; Precautions while carrying out maintenance works on bridges. **B) Inspection of bridges:** Classification of bridges - major, minor, important; Inspection of Bridges by Permanent Way and Works Inspectors, by Bridge Inspectors (SSE/JE- P. Way, Works, Bridges) – Periodicity/ schedule and details of inspection, record of bridge Inspection, registers to be maintained by the Bridge Inspectors, Certificate of inspection. Inspection by Assistant Divisional Engineers - Bridge Inspection Register, Numerical Rating System (NRS), Unique Rating Number, Condition Rating Number, Overall Rating Number, Certificate by the Assistant Engineer. Details of Inspection of Bridge –foundations, Flooring, masonry in substructure, under-water substructure inspection, arch bridges, protection works and water ways, girder alignment and seating, structural condition of girders, track on the bridge and its approaches, trolley and safety refuges, foot paths, painting, marking HFL and danger level, providing foundation particulars and bridge name boards, flood records at important bridges, road over/under bridges, concrete bridges, special Inspection during Monsoon, equipment required for inspection of bridges. painting of steelworks, laying of bridge sleepers; replacing cracked bed blocks.	**A) Maintenance of bridges:** Responsibility of the Engineering officials, action to be taken after inspection of bridges; maintenance of substructure - abutments, piers, wing walls and return walls, maintenance of arches, dismantling of arches. Details of common repair techniques - cement pressure grouting, epoxy grouting, shotcreting/ Guniting. Maintenance of RCC & PSC super structures - periodical maintenance, common defects and repair / strengthening techniques; maintenance of super structure (steel) girders - loss of camber in steel girders, cracks in steel works, strengthening of weak girders, replacement of loose rivets; maintenance of HSFG bolts, corrosion and its prevention, protective coatings by painting - periodicity and precautions, patch painting, ordinary paints - for severe and no severe corrosion, metallising & epoxy based paints, Maintenance of welded girders; maintenance of composite girders. Various defects in bed blocks and their remedies; maintenance of bearings; Precautions while carrying out maintenance works on bridges. **B) Inspection of bridges:** Classification of bridges - major, minor, important; Inspection of Bridges by Permanent Way and Works Inspectors, by Bridge Inspectors (SSE/JE- P. Way, Works, Bridges) – Periodicity/ schedule and details of inspection, record of bridge Inspection, registers to be maintained by the Bridge Inspectors, Certificate of inspection. Inspection by Assistant Divisional Engineers -Bridge Inspection Register, Numerical Rating System (NRS), Unique Rating Number, Condition Rating Number, Overall Rating Number, Certificate by the Assistant Engineer. Details of Inspection of Bridge –foundations, Flooring, masonry in substructure, under-water substructure inspection, arch bridges, protection works and water ways, girder alignment and seating, structural condition of girders, track on the bridge and its approaches, trolley and safety refuges, foot paths, painting, marking HFL and danger level, providing foundation particulars and bridge name boards, flood records at important bridges, road over/under bridges, concrete bridges, special Inspection during Monsoon, equipment required for inspection of bridges. painting of steelworks, laying of bridge sleepers; replacing cracked bed blocks.

4- Rehabilitation of Bridges	Reasons for Rehabilitation, special Strengthening, Imposition of speed restriction, Priority for rehabilitation of bridges, Special Inspection, Site Data, Execution of rehabilitation works, Precautions when working on bridges; rebuilding or alterations to bridges - design and execution of bridge works; temporary arrangements; false work for erection of girders; assembly and erection of girders; cranes for erection of girders; testing of girders; proposal for strengthening existing girder spans: methods of regirdering major bridges, Strengthening of foundations, Strengthening / rebuilding of substructure, shaken / displaced / cracked bed blocks, distressed arch bridges, replacement of nonstandard girders, replacement of pipe culverts, distress in parapets, replacement of small opening, distress in superstructure.	Reasons for Rehabilitation, special Strengthening, Imposition of speed restriction, Priority for rehabilitation of bridges, Special Inspection, Site Data, Execution of rehabilitation works, Precautions when working on bridges; rebuilding or alterations to bridges - design and execution of bridge works; temporary arrangements; false work for erection of girders; assembly and erection of girders; cranes for erection of girders; testing of girders; proposal for strengthening existing girder spans: methods of regirdering major bridges, Strengthening of foundations, Strengthening / rebuilding of substructure, shaken / displaced / cracked bed blocks, distressed arch bridges, replacement of nonstandard girders, replacement of pipe culverts, distress in parapets, replacement of small opening, distress in superstructure.
5- Rivers & Floods	Behavior of rivers; past history of bridges, danger level at bridges, watchman at important bridges, duties and equipment of bridge watchmen; special inspection during monsoon, action to be taken in the case of weather warning, pitching stone, boulder and monsoon reserve; vigilance during floods; flood records during and after the monsoon; survey of the course of river. Rivers and flood register, Flood Reports, rainfall data, provision of anemometer on bridges. River training works, Guide Bunds, Spurs (Groynes), Marginal Bunds, Closure Bunds, Assisted Cut-Offs, Boulder crates, Protection of approach banks, drop wall & curtain wall i.e. protection measures for minor bridges.	Behavior of rivers; past history of bridges, danger level at bridges, watchman at important bridges, duties and equipment of bridge watchmen; special inspection during monsoon, action to be taken in the case of weather warning, pitching stone, boulder and monsoon reserve; vigilance during floods; flood records during and after the monsoon; survey of the course of river. Rivers and flood register, Flood Reports, rainfall data, provision of anemometer on bridges. River training works, Guide Bunds, Spurs (Groynes), Marginal Bunds, Closure Bunds, Assisted Cut-Offs, Boulder crates, Protection of approach banks, drop wall& curtain wall i.e. protection measures for minor bridges.
6- Inspection and Maintenance of Tunnels and Deep Cuttings:	**A) Tunnels -** Inspection by Engineering officials, items to be covered in the Inspection, record of inspection, mobile staging for inspection, details of tunnel inspection, ventilation of tunnels, leakage in tunnels and methods of correction, works connected with the maintenance of tunnels. **(B) Deep Cuttings** - General, inspection register of vulnerable cuttings, points to be noted during Inspection of cuttings, action to be taken in the case of boulder drops, action to be taken after inspection of cutting, guarding of vulnerable cuttings.	**A) Tunnels -** Inspection by Engineering officials, items to be covered in the Inspection, record of inspection, mobile staging for inspection, details of tunnel inspection, ventilation of tunnels, leakage in tunnels and methods of correction, works connected with the maintenance of tunnels. **(B) Deep Cuttings** - General, inspection register of vulnerable cuttings, points to be noted during Inspection of cuttings, action to be taken in the case of boulder drops, action to be taken after inspection of cutting, guarding of vulnerable cuttings.
7- Inspection and Maintenance of Building and Structures (Other than Bridges)	**(A)** Inspection & Maintenance of buildings & structures (including steel structures). **(B)** Building Registers **(C)** Periodical maintenance of Works including repairs to leaky roof/water proofing of roofs. **(D)** Standard Measurement Registers for Buildings. **(E)** Dismantling of buildings/structures. **(F)** Retro-fitting / structural repairs of existing weak buildings/structures.	**(A)** Inspection & Maintenance of buildings & structures (including steel structures). **(B)** Building Registers **(C)** Periodical maintenance of Works including repairs to leaky roof/water proofing of roofs. **(D)** Standard Measurement Registers for Buildings. **(E)** Dismantling of buildings/structures. **(F)** Retro-fitting / structural repairs of existing weak buildings/structures.

8- Maintenance of sanitary and hygienic conditions in station and railway Colonies; water supply, drainage and sewerage	**(A) Water Supply** **(I).** Standards of Quality of drinking water-physical; chemical and bacteriological standards of water, Water-borne diseases, water demand-methods of forecasting, sources of water; Method of treatment of water – aeration; sedimentation; filtration (slow and rapid sand filters); disinfection; hardness methods of removal etc. **(II).** Conveyance and Distribution: - Preparation of Schemes for New Water Supply/ Augmentation of Existing Water Supply; Estimating Requirements of Water, water supply from outside sources, Types; Selection & Installation of Pumps; Capacity of Pumping, Conveyance of Water Rising mains; systems of distribution, residual pressure; different types of pipes and fittings; testing of pipes, Pipe laying and Fittings of Valves and Meters, Storage tanks; Capacity, Maintenance and Cleaning of Storage Tanks, Water-Supply Plans, maintenance and operation of water supply installation - responsibilities of Engineering department, Mechanical department and Electrical Department. **(III).** Rain water harvesting – legislation, necessity; advantage; types; techniques; estimation of capacity of rain water harvesting pits/ salient methods of recharging subsurface aquifer etc. **(IV).** Water Audit and water Management: **(a)** Conservation of Water, water reuse, water recycling, water recycling plant, flow measurement system, identification of losses & leakages. **(b) Sewerage:** Preparation of schemes for sewerage, sewage & water collection and carriage; design of sewers; house connection; storm water drains; maintenance of sewerage and drainage, conservancy and sanitary arrangements, disposal of sewage – river pollution and control; sewage treatment; land irrigation, septic tanks, primary clarifier, sludge and scum removal, trickling filters, activated sludge process, sludge digesting, principles of anaerobic digestion, sludge gas, sludge drying and disposal. **(c) Sanitation:** Formation of sanitation committee; Inspection by sanitation committee, sanitary arrangements in stations and colonies, drinking water wells-protection; Cleaning of wells; disinfection; prevention of Infectious diseases; disinfection of quarters.	**(A) Water Supply** **(I).** Standards of Quality of drinking water-physical; chemical and bacteriological standards of water, Water-borne diseases, water demand-methods of forecasting, sources of water; Method of treatment of water – aeration; sedimentation; filtration (slow and rapid sand filters); disinfection; hardness methods of removal etc. **(II).** Conveyance and Distribution: - Preparation of Schemes for New Water Supply/ Augmentation of Existing Water Supply; Estimating Requirements of Water, water supply from outside sources, Types; Selection & Installation of Pumps; Capacity of Pumping, Conveyance of Water Rising mains; systems of distribution, residual pressure; different types of pipes and fittings; testing of pipes, Pipe laying and Fittings of Valves and Meters, Storage tanks; Capacity, Maintenance and Cleaning of Storage Tanks, Water-Supply Plans, maintenance and operation of water supply installation - responsibilities of Engineering department, Mechanical department and Electrical Department. **(III).** Rain water harvesting – legislation, necessity; advantage; types; techniques; estimation of capacity of rain water harvesting pits/ salient methods of recharging subsurface aquifer etc. **(IV).** Water Audit and water Management: **(a)** Conservation of Water, water reuse, water recycling, water recycling plant, flow measurement system, identification of losses & leakages. **(b) Sewerage:** Preparation of schemes for sewerage, sewage & water collection and carriage; design of sewers; house connection; storm water drains; maintenance of sewerage and drainage, conservancy and sanitary arrangements, disposal of sewage – river pollution and control; sewage treatment; land irrigation, septic tanks, primary clarifier, sludge and scum removal, trickling filters, activated sludge process, sludge digesting, principles of anaerobic digestion, sludge gas, sludge drying and disposal. **(c) Sanitation:** Formation of sanitation committee; Inspection by sanitation committee, sanitary arrangements in stations and colonies, drinking water wells-protection; Cleaning of wells; disinfection; prevention of Infectious diseases; disinfection of quarters.
9- Acquisition, management and disposal of land: General Codes, Manuals, rules:	Ownership of Railway land; sanctioning authority for acquisition and relinquishment; Principles of acquisition and relinquishment; Procedure for acquisition and relinquishment; Land plans and schedule; Documents of Handing over and taking over Railway Land; Land Records- Responsibility and procedure for demarcation, verification of railway boundary , land plan etc. maintenance of right of way; religious structure. Management of railway Land leasing, licensing of land, way leave facility and easement rights, grow more food. Leasing licensing for merchants and vendors at	Ownership of Railway land; sanctioning authority for acquisition and relinquishment; Principles of acquisition and relinquishment; Procedure for acquisition and relinquishment; Land plans and schedule; Documents of Handing over and taking over Railway Land; Land Records- Responsibility and procedure for demarcation, verification of railway boundary , land plan etc. maintenance of right of way; religious structure. Management of railway Land leasing, licensing of land, way leave facility and easement rights, grow more food. Leasing licensing for merchants and vendors at

	stations, bulk oil installation. Encroachment and responsibly; rules for permission for construction of building near Railway land; instructions regarding cutting / trimming and sale of natural product like mature tree, dry trees within and outside railway boundary, near electric or telegraph lines , sale of grass right etc. Provisions of Land Acquisition Act. 1989, Right to fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013.	stations, bulk oil installation. Encroachment and responsibly; rules for permission for construction of building near Railway land; instructions regarding cutting/ trimming and sale of natural product like mature tree, dry trees within and outside railway boundary, near electric or telegraph lines , sale of grass right etc. Provisions of Land Acquisition Act. 1989, Right to fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013.
10- Preparation of Plans and Estimates:	**(A) Preparation of plans:** General procedure; plan for other departments; size of drawings; titles and numbering of drawings; scale of drawings; details on drawings; symbols and colours in drawings; RDSO drawings; CE's plans; Plans of Divisional / Asst. Engineer's / inspector's Offices; completion drawings; **(B) Preparations of estimates:** Engineering code provisions, various types of estimates, technical details, rates and quantities; schedule of rates and price - listing of stores; report and justification; rent statement for staff quarters; special features of estimates for remodeling of station yards, track renewal works, deposit works: Urgency Certificate;	**(A) Preparation of plans:** General procedure; plan for other departments; size of drawings; titles and numbering of drawings; scale of drawings; details on drawings; symbols and colours in drawings; RDSO drawings; CE's plans; Plans of Divisional / Asst. Engineer's / inspector's Offices; completion drawings; **(B) Preparations of estimates:** Engineering code provisions, various types of estimates, technical details, rates and quantities; schedule of rates and price - listing of stores; report and justification; rent statement for staff quarters; special features of estimates for remodeling of station yards, track renewal works, deposit works: Urgency Certificate;
11- Contract and Execution of Work:	**(A) Contract:** Engineering code provisions, schedule of rates; analysis, non-schedules rates, tenders; types; tender documents, drawings and specifications, tender committees, acceptance of tenders, contracts; types, contract documents, General and special condition of contract; measurement and measurement books - code reference; recording measurements; 'on account' and final measurements; standard measurements books ; responsibilities of inspectors/JE/SSE) and Asst. Engineers for measurement of works; ballast measurement; computation quantities; preparation of abstract in measurement books; submission of bills; checking of bills; bill registers; Variations; PVC; Basics of Arbitration. **(B) Execution of Work**: Engineering code provisions, agencies for executing works; responsibilities of executive officers; deposit works; excess and savings on estimates; attention to public interests; prevention of accidents; planning - activity, milestone, bar charts, critical path networks, PERT; departmental execution of work - record; progress reports, charges for stores and labour, execution of works in Engineering workshops; contracted works; issue of work orders; completion documents; zonal works.	**(A) Contract:** Engineering code provisions, schedule of rates; analysis, non-schedules rates, tenders; types; tender documents, drawings and specifications, tender committees, acceptance of tenders, contracts; types, contract documents, General and special condition of contract; measurement and measurement books - code reference; recording measurements; 'on account' and final measurements; standard measurements books ; responsibilities of inspectors/JE/SSE) and Asst. Engineers for measurement of works; ballast measurement; computation quantities; preparation of abstract in measurement books; submission of bills; checking of bills; bill registers; Variations; PVC; Basics of Arbitration. **(B) Execution of Work**: Engineering code provisions, agencies for executing works; responsibilities of executive officers; deposit works; excess and savings on estimates; attention to public interests; prevention of accidents; planning - activity, milestone, bar charts, critical path networks, PERT; departmental execution of work - record; progress reports, charges for stores and labour, execution of works in Engineering workshops; contracted works; issue of work orders; completion documents; zonal works.

12- Track Machines:	**(A) Organizational structure, duties and inspection:** Duties of Executive (XEN) / Assistant Executive Engineer (AXEN) / TM / Line, Duties of SSE / TM / SDI, Duties of SSE / JE / TM Working on Machines, Duties of SSE/JE Machine In-Charge Duties of Machine Assistant, Duties of Assistant Divisional Engineer (Open Line) ADEN, Duties of SSE / JE (P.Way) Deployed with the Machine, Inspection Schedule of Track Machine Officials, Inspection Schedule of Open Line Officials. **(B) Tamping machine and dynamic track stabilizer:** Types of Tamping Machines, Tamping Mechanism, Tamping Parameters, ALC, Lining System, 4 Point Lining Method, Corrections to be Applied in 4 Point Lining Method, Modes of Tamping using 4-Point Lining Method (Only for curves), 3 Point Lining Method, Corrections to be applied in 3- Point Lining, Determination of Target Versine Values for the 3-Point Lining Method, Mode of Tamping using 3-Point Lining Method, Comparison between 3 Point and 4 Point Lining System, Levelling of Track, Mode of working for levelling, General Lift, Input of the Lifting Values, Survey and working of Tamping Machines in Design Mode, Works required Before, During and After Tamping, Working Principle of Dynamic Track Stabilizer, Modes of working of Dynamic Track Stabilizer, Working of DTS. **(C) Ballast cleaning and handling machines:** Ballast Cleaning Machines (BCM), Types of Ballast Cleaning Machines, Working Principle and Capability of Ballast Cleaning Machines, Works Required Before, During and After Deployment of Ballast Cleaning Machines. **(D) Track relaying machines:** Track Relaying Machines, Working Mechanism and Capability of Track Laying Equipment, Pre-Relaying Operations, Operation During Block, Post Relaying Operations, Working Mechanism of TRT, Operations Prior to Deployment of TRT, Operations During The Block of TRT, Post Block Operations for TRT, Precautions During TRT Working. **(E) Rail Grinding Machines:** Rail Grinding Machine (RGM) (Purpose & Advantage), Grinding Strategy, Working Parameters of RGM, Monitoring Equipment for Grind Quality, Quality Inspection of Grinding, Preparatory Works for Introduction of RGM, Pre-Block Activity Before Deploying RGM, Operation During RGM Block, Post Grinding Operation. **(F) Planning and deployment of Machines:** Pre-requisites for Deployment of Track Machines on Construction Projects/Other Agencies, Minimum Duration of Blocks, Through Tamping and Spot Attention.	**(A) Organizational structure, duties and inspection:** Duties of Executive (XEN) / Assistant Executive Engineer (AXEN) / TM / Line, Duties of SSE / TM / SDI, Duties of SSE / JE / TM Working on Machines, Duties of SSE/JE Machine In-Charge Duties of Machine Assistant, Duties of Assistant Divisional Engineer (Open Line) ADEN, Duties of SSE / JE (P.Way) Deployed with the Machine, Inspection Schedule of Track Machine Officials, Inspection Schedule of Open Line Officials. **(B) Tamping machine and dynamic track stabilizer:** Types of Tamping Machines, Tamping Mechanism, Tamping Parameters, ALC, Lining System, 4 Point Lining Method, Corrections to be Applied in 4 Point Lining Method, Modes of Tamping using 4-Point Lining Method (Only for curves), 3 Point Lining Method, Corrections to be applied in 3- Point Lining, Determination of Target Versine Values for the 3-Point Lining Method, Mode of Tamping using 3-Point Lining Method, Comparison between 3 Point and 4 Point Lining System, Levelling of Track, Mode of working for levelling, General Lift, Input of the Lifting Values, Survey and working of Tamping Machines in Design Mode, Works required Before, During and After Tamping, Working Principle of Dynamic Track Stabilizer, Modes of working of Dynamic Track Stabilizer, Working of DTS. **(C) Ballast cleaning and handling machines:** Ballast Cleaning Machines (BCM), Types of Ballast Cleaning Machines, Working Principle and Capability of Ballast Cleaning Machines, Works Required Before, During and After Deployment of Ballast Cleaning Machines. **(D) Track relaying machines:** Track Relaying Machines, Working Mechanism and Capability of Track Laying Equipment, Pre-Relaying Operations, Operation During Block, Post Relaying Operations, Working Mechanism of TRT, Operations Prior to Deployment of TRT, Operations During The Block of TRT, Post Block Operations for TRT, Precautions During TRT Working. **(E) Rail Grinding Machines:** Rail Grinding Machine (RGM) (Purpose & Advantage), Grinding Strategy, Working Parameters of RGM, Monitoring Equipment for Grind Quality, Quality Inspection of Grinding, Preparatory Works for Introduction of RGM, Pre-Block Activity Before Deploying RGM, Operation During RGM Block, Post Grinding Operation. **(F) Planning and deployment of Machines:** Pre-requisites for Deployment of Track Machines on Construction Projects/Other Agencies, Minimum Duration of Blocks, Through Tamping and Spot Attention.

	(G) Rules for movement and block working: Provision of G&SR, Operation and Working of Track Machine, Competencies of Track Machine Staff, Safety Equipment, Rules for Operation – General, Important Instructions and Precautions (Protection of Work Site, Fouling of Adjacent Lines, Information to Level Crossings etc), Failure and Accidents of Track Machines, Speed Certification for Track Machines, Special Precautions while working in Special Circumstances (Ghat Sections, Night Working). **(H) Periodical maintenance and associated infrastructural facility:** Maintenance Schedule for Various Track Machine, Types of Workshops, Functions of Central Periodic Overhauling Workshop (CPOH), Functions of Zonal Machine Depot (ZMD), Functions of Satellite Depot, Functions of Mobile Workshop, Functions of Camping Coach Workshop. **(I) Track Machine Manpower:** Training (Officers, SSEs / JEs / TM(s), Technical Staff, Machine Assistant), Roster.	**(G) Rules for movement and block working**: Provision of G&SR, Operation and Working of Track Machine, Competencies of Track Machine Staff, Safety Equipment, Rules for Operation – General, Important Instructions and Precautions (Protection of Work Site, Fouling of Adjacent Lines, Information to Level Crossings etc), Failure and Accidents of Track Machines, Speed Certification for Track Machines, Special Precautions while working in Special Circumstances (Ghat Sections, Night Working). **(H) Periodical maintenance and associated infrastructural facility:** Maintenance Schedule for Various Track Machine, Types of Workshops, Functions of Central Periodic Overhauling Workshop (CPOH), Functions of Zonal Machine Depot (ZMD), Functions of Satellite Depot, Functions of Mobile Workshop, Functions of Camping Coach Workshop. **(I) Track Machine Manpower:** Training (Officers, SSEs / JEs / TM(s), Technical Staff, Machine Assistant), Roster.
13. Miscellaneous:	**(A) Engineering plant:** Control of plant and machinery, engineering plant reserve, plant register; valuation of plant; maintenance; storage and repairs; requisitioning of plants; use of plant at site; maintenance of log books; hiring out of engineering plant; examination of boilers of the engineering department. **(B) Explosives:** Issue of Instructions on use of explosives; observance of rules, carriage of explosives, Protection of trains and Railway property, precautions to be observed during blasting, Misfire with electrical method of firing, explosives disposal, destruction of explosives. **(C) Management of Engineering Stores:** Reference to code and Rules; procurement of stores; requisition; receipt and issue of challans; claims of short receipts; etc.; custody of stores - classification, handling and storage, Account head of stores - operation, records and returns; disposal of released and surplus stores - return to stores Depot, disposal by auction; verification of stock and adjustment for shortage/excesses. **(D) Law and Order** Railway Police; lodging complaints; cooperation with railway police; cognizable offences; non cognizable offences; powers of arrest by railway staff; warrant against railway staff; action by railway staff in case of attempted sabotage; answering of court summons; Prevention of trespass disposal of human bodies found run over; disposal of cattle found dead on the line.	**(A) Engineering plant:** Control of plant and machinery, engineering plant reserve, plant register; valuation of plant; maintenance; storage and repairs; requisitioning of plants; use of plant at site; maintenance of log books; hiring out of engineering plant; examination of boilers of the engineering department. **(B) Explosives:** Issue of Instructions on use of explosives; observance of rules, carriage of explosives, Protection of trains and Railway property, precautions to be observed during blasting, Misfire with electrical method of firing, explosives disposal, destruction of explosives. **(C) Management of Engineering Stores:** Reference to code and Rules; procurement of stores; requisition; receipt and issue of challans; claims of short receipts; etc.; custody of stores - classification, handling and storage, Account head of stores - operation, records and returns; disposal of released and surplus stores - return to stores Depot, disposal by auction; verification of stock and adjustment for shortage/excesses. **(D) Law and Order** Railway Police; lodging complaints; cooperation with railway police; cognizable offences; non cognizable offences; powers of arrest by railway staff; warrant against railway staff; action by railway staff in case of attempted sabotage; answering of court summons; Prevention of trespass disposal of human bodies found run over; disposal of cattle found dead on the line.

VOL-II Other than Professional Subject

1- Establishment and Finance Rules & Rajbhasha 20 Marks + 10 Marks =30Marks - **For LGS**
Including 5 optional question

2-(i) Establishment and Finance Rules & Rajbhasha 20 Marks + 10 Marks =30 Marks - **For LDCE**
(ii) General Knowledge (excluding current affairs) 25 Marks +15 Marks = 40 Marks - **For LDCE**

SYLLABUS FOR PROMOTION TO GROUP- B POSTS - 70% SELECTION AND 30% LDCE.
(Other than PROFESSIONAL SUBJECTS)

Syllabus for Establishment Rules:

1. Organization of the Personnel Department in Railways objectives functions and policies of Personnel Department.
2. Recruitment and Training, Classification of Services, Recruitment in Different services, Railway Recruitment Boards & Railway Recruitment Cells Compassionate Ground Appointments, Initial & In Service Training, Refresher Courses, Central Training Institutes, Training Centers in Zones, Divisions & Workshops, Training Modules for different posts, Training under Apprentices Act, Online Training, APARs.
3. General conditions of service in Railways, Seniority, Lien, Inter Railway & Inter Division transfers, Deputation, Promotion Policy & methods. Selection, Suitability, Trade Tests, Leave Rules, Pass Rules, Joining Time Reservation policy, HOER, Overtime, Payment of wages, current CPC Pay Rules, Advances in Railways.
4. Manpower planning, Rightsizing & Benchmarking, creation, extension and surrender of posts, creation of posts against new assets, different types of posts including work charged posts.
5. The Railway Servants (Discipline & Appeal) Rules, 1968 and related instructions.
6. The Railway Services (Conduct) Rules, 1966 and related instructions. Retirement benefits, qualifying service, pension, family pension, commutation gratuity, new pension scheme.
7. Staff welfare, SBF, Railway institutes, Railway schools, Ex-gratia payment, Incentive Bouns Scheme, Staff Grievances Redressal Mechanisms.
8. Industrial relations in Railways, recognized trade unions, industrial disputes. The Industrial Disputes Act, 1947. The Industrial Relations Code, 2020. The TradeUnions Act, 1926, PNM, PREM, JCM,Various Associations& Informal Meetings.
9. The Factories Act, 1948. The workmen's Compensation Act, 1923. Functions of Labour Enforcement Officers, Right to Information Act.
10. The scope of Information Technology in Railway e – office. HRMS, IPAS, LIMBS, ARPAN, CPGRAMS, ANUBHAV etc.

Syllabus for Financial Rules:

(a) Parliamentary Control over Railway Finance, Public Accountability, Cannons of Financial Propriety.
(b) Railway Budget - Budgetary terms, Types of Budgets, Budget cycle, Demand of Grants, Budgetary and Financial Reviews.
(c) Rules of Allocation - Classification of expenditure - Control of expenditure - Responsibility Accounting - Performance Budgeting - Exchequer Control - Financial Results of Working lines.
(d) Works Programme - Financial justification of Works - Surveys - Preparation of Estimates - Capital Budget - Control over Capital Expenditure - Reappropriation of Funds.
(e) Financial control over Stores Expenditure - Purchase and Stores Keeping Procedure - Inventory Control and ABC Analysis.
(f) Financial & Cost Control in Railway *W*orkshops / Sheds / Units.
(g) Rules and procedure relating to Tenders and contracts for execution of works and Procurement of Stores, M&P Programme and RSP.
(h) Procedure for Possessing and finalizing Audit Objections and Draft Paras.
(i) Delegation of Powers.
(j) Losses, Frauds and Embezzlements.
(k) General Financial Rules.
(l) Government e-Market (GeM).
(m) Classification of Railway Revenue (Earnings).
(n) Information Technology in general with specific reference to Railway's IT Applications.
(o) Taxation matters with special focus on GST & Income Tax.
(p) Organization of CGA and C&AG.
(q) Any other topic felt necessary from time to time.

Question paper on Civil Engineering along with Answer of CBT Exam for AEN 70% quota held on 17-03-2024

SUBJECT: CIVIL ENGINEERING VOLUME - 1

1- The "back sight" reading on a staff held at Point A on the floor of a tunnel is 5.675 m. The "fore sight" reading on the inverted staff held at the roof of the tunnel at a point just above Point A is 2.215 m. The height of tunnel at Point A is

(A) 3.460 (B) 3.945

(C) 1.730 **(D)** 7.890

2- Increase in the water content in the concrete

(A) Increase the strength of concrete

(B) Does not change the strength of concrete

(C)Increases durability of concrete

(D) Reduce the strength of concrete

3- The water content of soil which represent the boundary between plastic state and liquid state is known as

(A) Plastic Limit (B) Shrinkage limit

(C) Liquid limit (D) Ultimate limit

4- in surveying by tape or chain the correction for sag is

(A) Always additive

(B) Always subtractive

(C) Always zero

(D) Can be additive or subtractive

5- The heaviest I-section for same depth is:

(A) ISLB (B) ISMB

(C) ISHB (D) ISWB

6- Which of the following cement is suitable for use in massive concrete structure such as a large abutment of bridge:

(A) Ordinary Portland Cement

(B) Low Heat Cement

(C)Rapid Hardening Cement

(D) Sulphate Resisting Cement

7- Backfill of cohesion less soils behind retaining walls are:

(A) Poor because of less lateral pressure

(B) Good because of less lateral pressure

(C) Good because of large lateral pressure

(D) Poor because of large lateral pressure

8- The angle that shear strength plot as per Coulomb's theory, makes with horizontal line is called:

(A) Cohesion

(B) Angle of Internal Friction

(C) Angle of Repose

(D) Angle of Failure

9- Maximum bending moment in a simply supported beam occurs where:

(A) Deflection is zero

(B) Shear force is maximum

(C) Shear force changes sign

(D) Shear force is minimum

10- Modulus of Elasticity is defined as the ratio of

(A) Shear Stress to Shear Strain

(B) Longitudinal Stress to Longitudinal Strain

(C) Maximum Stress to Maximum Strain

(D) Minimum Stress to Minimum Strain

11- Which is a part of Terms of Reference provided to Project Investigator

(A) Ruling Gradient in section and Yard

(B) Maximum degree of Curvature

(C) Loading Standard for Bridges and formation

(D) All the given

12- The shape of transition curve for Railway line alignment as per IRPWM is generally,

(A) Cubic spiral **(B)** Cubic parabola

(C) Hyperbola (D) Ellipse

13- When several contours coincide in a map, it indicates .....

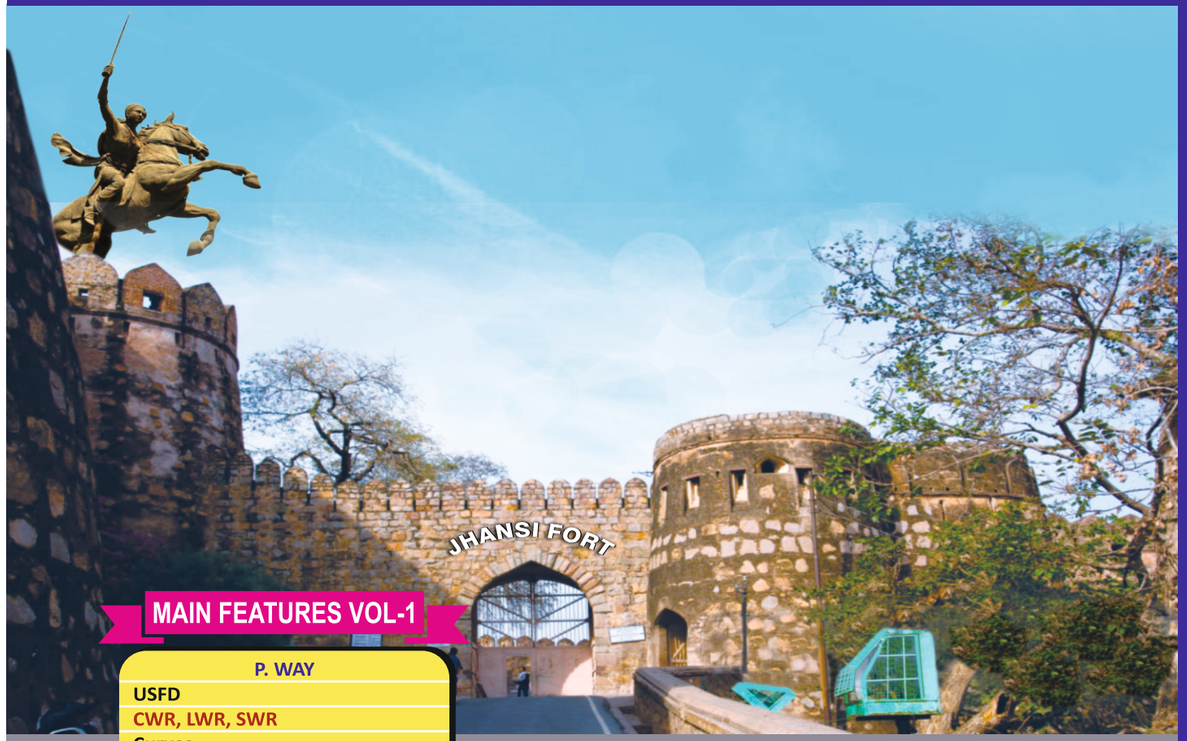
(A) A vertical cliff (B) A valley

(C) A ridge (D) none of these

14- Which of the following is not a formula used to calculate the length of a transition curve

(A) L=0.008 CaxVm (B) L 0.008 Cd x Vm

(C) L=0.72 Ca. **(D)** L 0.08 CdxVmx S



MAIN FEATURES VOL-1

P. WAY
USFD
CWR, LWR, SWR
Curves
Points & Crossings
Manual Maintenance
Mechanised Maintenance
Track Machine
Level crossings
Accidents
BRIDGES & TUNNELS
Bridges & Tunnels
WORKS
Maintenance of Buildings
Passenger Amenities
Water Supply
Drainage & Sewerage
Garden & Plantations
Land management
Building Material
Concrete and R.C.C.
Soil Mechanics
Surveying
Police Jurisdiction
Schedule of Dimensions

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Author

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How To Become A Railway Officer

VOL-2

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VOLUME-2

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For Railway Departmental Examination (LDCE 30%/LGS 70%)

(ACM, AEE, AEN, AFA, AME, AMM, AOM, APO, ASTE)

OBJECTIVE / MULTIPLE CHOICE QUESTIONS WITH ANSWERS

Based on Latest Guidelines of Railway Board

MAIN FEATURES

ESTABLISHMENT
General conditions of service
Recruitment and training
Leave rules, Pass rules
D & Appeal Rules, 1968
Retirement Benefits
Industrial relations
Staff Welfare
Labor laws
Scope of IT
FINANCE
Financial overview
Budget
Rules of allocation
Works Programme
Control over Stores Expenditure
Workshop accounts
Tenders and Contracts
Audit and Draft paras
Traffic account
Information Technology
RAJBHASHA
STORES
GENERAL KNOWLEDGE
MODEL PAPERS

2025

Er SURESH K SHEVRA

Blue Circle Publication India

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FOR RAILWAY DEPARTMENT EXAMINATIONS (LDCE 30%, LGS 70%)
CIVIL ENGINEERING (ADEN / AXEN & JE)
OBJECTIVE / MULTIPLE CHOICE QUESTIONS WITH ANSWERS

Er. SURESH K SHEVRA
FORMER EXECUTIVE ENGINEER
CENTRAL RAILWAY

VOLUME-2

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2025

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INDEX HBRO 2025 VOLUME-2

VOLUME -II
PART-D
CHAPTER - 1
ORGANIZATION OF THE PERSONNEL DEPARTMENT IN RAILWAYS
objectives functions and policies of Personnel Department.

1 How many Divisions are there on Indian Railways?

C

A) 66 B) 65
C) 68 D) 70

2 How many Zones is there on Indian Railways?

C

A) 16 B) 17
C) 18 D) 19

3 Where is the Office of the Railway Rates Tribunal (RRT)?

D

A) Mumbai B) Hyderabad
C) New Delhi D) Chennai

4 Where is the RCT Railway Claims Tribunal Office?

C

A) Mumbai B) Hyderabad
C) New Delhi D) Chennai

5 What is the full form of CAT?

C

A) Central Administration B) Central Administration Tribe
C) Central Administration Tribunal D) Central Administration Trade

CHAPTER - 10
IR FINANCIAL OVERVIEW

Parliamentary Control over Railway Finance, Public Accountability, Cannons of Financial Propriety.

1 How many Shramik Special trains have been arranged by Indian Railways till the first week of June 2020, to ferry the migrants due to Covid-19?

B

(A) Less than 2000 trains (B) Between 3000 and 4000 trains
(C) Between 100 and 200 trains (D) Between 5000 and 6000 trains

2 The commodities largely moved by Railways during the lockdown period were:

C

(A) POL, cement and iron ore (B) Coal, fly ash and steel
(C) Foodgrains, salt, sugar, milk van (D) None of the above

3 For better monitoring of big Railway projects, they have been categorized as:

A

(A) Super critical, critical and throughput enhancement projects
(B) High speed, safety and heavy haul projects
(C) Projects with Rs.500 crores each and Rs.1000 crore each
(D) Out of turn projects, Urgency based projects and Safety works projects

4 The Gross Traffic Receipts as per B.E. of 2020-21 are:

D

(A) 2,05,800 crores (B) 1,88,800 crores
(C) 2,35,000 crores (D) 2,25,613 crores

5 The Net Revenue projection for 2020-21 is:

C

(A) Rs. 9,000 crores (B) Rs. 19,000 crores
(C) Rs. 6,500 crores (D) Rs. 15,000 crores

6 Choose the right option in terms of top 3 railway freight commodities loaded (in MTs)

A

(A) Coal, Iron ore, Cement (B) Coal, Fertilizers and Foodgrains
(C) Coal, Foodgrains and Pig iron

7 Which of the following is NOT a Reserve Fund of Indian Railways as in 2019-20:

C

(A) Capital Fund (B) Development Fund
(C) Revenue Reserve Fund (D) RRSK

8 Average lead in terms of kms for revenue earning freight of Indian Railways is:

D

(A) Between 750 and 1000 kms (B) Between 250 and 550 kms
(C) Between 1000 and 1200 kms (D) Between 500 to 600 kms

CHAPTER - 20
RAJBHASHA
Constitutional provisions of official language, committees, implementation of official language Hindi training

1 -------- is the official language of union of India

C

(A) English (B) Sanskrit
(C) Hindi in Devanagari (D) Urdu

2 By Article 344/1-of the constitution contains provision regarding the constitute of Rajbhasha Commission in the ----------year.

B

(A) 1953 (B) 1955
(C) 1954 (D) 1956

3 Article ------of the constitution contains provision regarding the Hindi became the official language of the union of India

B

(A) 343 (B) 343
(C) 344 (D) 345

4 The constitution contains provision regarding the Hindi became the official language of the union of India on ------

C

(A) 26-1-1947 (B) 26-1-1950
(C) 26-1-1965 (D) 26-1-1978

5 official language act passed on -------

D

(A) 10-5-1948 (B) 10-5-1950
(C) 10-5-1956 (D) 10-5-1963

6 Official language rules passed was on -----

A

A) 1976 B) 1966
C) 1956 D) 1947

7 Hindi day is celebrated on ------ every year

B

(A) 14 November (B) 14 September
(C) 14 August (D) 14 January

CHAPTER - 22
STORES

Classification of Stores, Procedure of drawl of Stores, Indenting Procedures, Procurement methods-Local purchase, Spot purchase, Bulletin tender, Advertised tender, Limited tender, Tender Committee, Direct Purchasing, Schedule of Powers, Incoming inspection requirements

1 Test check of vouchers during stock verification In the case of revenue and other charged of stores, _____receipts and issue transactions for any_____from the date of last accounts verification should be checked with the postings recorded in the Ledgers.

D

(A) 25% and 6 months (B) 20% and 3 months
(C) 20% and 6 months (D) 25% and 3 months

2 Stores with Imprest Holders whether in a Stores Depot or with a department, should be verified by accounts Stock Verifiers every once in a_____

B

(A) 12 Months (B) 24 Months
(C) 36 Months (D) 18 months

3 Items for which there is a regular demand, regular drawl or consumption and there is a regular recoupment :

B

(A) Revenue items (B) Stock items
(C) Consumables (D) Non stock items

4 Items which are required for day-to-day operation of services and maintenance of the activity_____

C

(A) Custody stores (B) Surplus stores
(C) Imprest stores (D) Special stores

5 The Material at site of works whether in a Stores Depot or with a department, should be verified by accounts Stock Verifiers every once in a_____

A

(A) 12 Months (B) 24 Months
(C) 36 Months (D) 18 months

6 PL number consists of ---------- digit D
(A) 12 (B) 10
(C) 06 (D) 08

7 Principal Head of stores Department on a Zonal Railway is----------

C

(A) Chief Materials Manager (B) Member Mechanical
(C) Principal CMM (D) Chief COS

CHAPTER - 23
GENERAL KNOWLEDGE

This section would contain questions of general interest and importance, which is acquired by general observation or reading without specific text book study. Subjects of national importance as well as achievements of Railways are also to be covered, the standard of General Knowledge shall not be more rigorous than Matriculate level

1 GIP Railway Company (GIP) was incorporated in England by an Act of the British Parliament on :

A

(A) 1st August 1849 (B) 1st August 1850
(C) 1st January 1851 (D) None of the above

2 The formation of the Railway Board in 1905 was based upon the recommendations of :

C

(A) Acworth Committee (B) MacDonald Stephenson Committee
(C) Thomas Robertson Committee (D) Separation Convention 1924

3 Who was the first Secretary of the Railway Board in 1905 :

D

(A) Rowland Macdonald Stephenson (B) Lord Dalhousie
(C) G.W. Mc George (D) N.G. Priestley

4 Which was the first train in India to have a Ladies Only compartment ?

C

(A) Frontier Mail (B) Punjab Mail
(C) Deccan Queen (D) Toofan Mail

5 After independence and nationalization of Railway Zones, which was the only Railway Company which continued its private operations till 2016

B

(A) Assam Railway Company (B) Central Provinces Railway Company
(C) Punjab Northern State Railway (D) Nagpur Chattisgarh Railway

6 The East India Railway Company's first passenger train ran on 15th August 1854 covering a distance of 38 kms between:

A

(A) Howrah and Hooghly (B) Hooghly and Raneegunje
(C) Nagpur and Ajani (D) Jamalpur and Munger

7 Which of the following is NOT owned by Indian Railways ?

A

(A) Delhi Metro (B) Kolkata Metro
(C) Konkan Railway Corporation Ltd. (D) None of the above

CHAPTER - 24

SYLLABUS& MODEL PAPERS

SYLLABUS FOR PROMOTION TO GROUP- B POSTS - 70% LGS SELECTION AND 30% LDCE.
(FOR ACM, AEE, AEN, AFA, AME, AMM, AOM, APO, ASTE)

1 Establishment, Finance Rules & Rajbhasha : **20** Marks + **10** Marks =30Marks - **For LGS Including 5 optional question**

2 (i) Establishment + Finance Rules: **20** Marks + 10 Marks = **30** Marks -**For LDCE Including 5 optional question**

(ii) General Knowledge (excluding current affairs) + Rajbhasha: **25 Marks+ 15 Marks (Optional = 40Marks - For LDCE**

VOLUME-II OTHER THAN PROFESSIONAL SUBJECTS

SYLLABUS FOR ESTABLISHMENT RULES FOR ALL CATEGORY

1 Organization of the Personnel Department in Railways objectives functions and policies of Personnel Department.

2 Recruitment and Training, Classification of Services, Recruitment in Different services, Railway Recruitment Boards & Railway Recruitment Cells Compassionate Ground Appointments, Initial & In Service Training, Refresher Courses, Central Training Institutes, Training Centers in Zones, Divisions & Workshops, Training Modules for different posts, Training under Apprentices Act, Online Training, APARs.

3 General conditions of service in Railways, Seniority, Lien, Inter Railway & Inter Division transfers, Deputation, Promotion Policy & methods. Selection, Suitability, Trade Tests, Leave Rules, Pass Rules, Joining Time Reservation policy, HOER, Overtime, Payment of wages, current CPC Pay Rules, Advances in Railways.

4 Manpower planning, Rightsizing & Benchmarking, creation, extension and surrender of posts, creation of posts against new assets, different types of posts including work charged posts.

5 The Railway Servants (Discipline & Appeal) Rules, 1968 and related instructions.

6 The Railway Services (Conduct) Rules, 1966 and related instructions. Retirement benefits, qualifying service, pension, family pension, commutation gratuity, new pension scheme.

7 Staff welfare, SBF, Railway institutes, Railway schools, Ex-gratia payment, Incentive Bonus Scheme, Staff Grievances Redressal Mechanisms.

8 Industrial relations in Railways, recognized trade unions, industrial disputes. The Industrial Disputes Act, 1947. The Industrial Relations Code, 2020. The Trade Unions Act, 1926, PNM, PREM, JCM, Various Associations & Informal Meetings.

9 The Factories Act, 1948. The workmen's Compensation Act, 1923. Functions of Labor Enforcement Officers, Right to Information Act.

10 The scope of Information Technology in Railway e – office. HRMS, IPAS, LIMBS, ARPAN, CPGRAMS, ANUBHAV etc.

SYLLABUS FOR FINANCIAL RULES FOR ALL CATEGORY

a) Parliamentary Control over Railway Finance, Public Accountability, Cannons of Financial Propriety.

b) Railway Budget - Budgetary terms, Types of Budgets, Budget cycle, Demand of Grants, Budgetary and Financial Reviews.

c) Rules of Allocation - Classification of expenditure - Control of expenditure - Responsibility Accounting - Performance Budgeting - Exchequer Control - Financial Results of Working lines.

d) Works Programme - Financial justification of Works - Surveys - Preparation of Estimates - Capital Budget - Control over Capital Expenditure - Reappropriation of Funds.
e) Financial control over Stores Expenditure - Purchase and Stores Keeping Procedure - Inventory Control and ABC Analysis.
f) Financial & Cost Control in Railway *W*orkshops/Sheds/Units.
g) Rules and procedure relating to Tenders and contracts for execution of works and Procurement of Stores, M&P Programme and RSP.
h) Procedure for Possessing and finalizing Audit Objections and Draft Paras.
i) Delegation of Powers.
j) Losses, Frauds and Embezzlements.
k) General Financial Rules
l) Government e-Market (GeM)
m) Classification of Railway Revenue (Earnings)
n) Information Technology in general with specific reference to Railway's IT Applications
o) Taxation matters with special focus on GST & Income Tax
p) Organization of CGA and C&AG
q) Any other topic felt necessary from time to time

SYLLABUS FOR STORES FOR ALL CATEGORY

Classification of Stores, Procedure of drawl of Stores, Indenting Procedures, Procurement Methods-Local purchase, Spot purchase, Bulletin tender, advertised tender, Limited tender, Tender Committee, Direct Purchasing, Schedule of Powers, Incoming inspection requirements, Scrap disposal

OTHER THAN PROFESSIONAL SUBJECTS SYLLABUS FOR ADSTE (Part – A)-

I. Current Affairs and General Knowledge

This section would contain questions of general interest and importance, which is acquired by general observation or reading without specific text book study. Subjects of national importance as well as achievements of Railways are also to be covered, the standard of General Knowledge shall not be more rigorous than Matriculate level.

II. General Mathematics

Arithmetic and Statistical operations, Graphs, Fractions, Percentage, Sampling & Averages, Geometry – Areas & Volumes up to Higher Secondary /12th Standard level, Algebra, Simultaneous Equations etc. up to Higher Secondary /12th Standard level

III. Physics & Basic Electricity

Units & Measurements, Mechanics – Newton's Law of motion, Velocity & Acceleration, Work, Energy, Power, Mechanical properties of solids and fluids, Heat & work, expansion of solids, liquids & gases, Ohm's law, Coulomb's law, Faraday's Law, Voltage, Current & Resistance, Kirchhoff's Laws, Wet & Dry Batteries, Power Factor, Fleming's Law, Lenz's Law, Simple Motors & Dynamos.

OTHER THAN PROFESSIONAL SUBJECTS SYLLABUS FOR AME:

General questions

Quantitative aptitude, Applied Mechanics, General Science Information Technology and En HM. **and other sections:** General Knowledge, Establishment, financial rules, Stores and Rajbhasha (as given above)

QUESTION PAPER ON RAJBHASHA, ESTABLISHMENT & FINANCE ALONG WITH ANSWER OF CBT EXAM FOR AEN 70% QUOTA HELD ON 17-03-2024

RAHBHASHA

71- As per the Constitution of India, the form of numerals to be usedfor the official purposes of the Union shall be...
(A) Devnagari form of Indian numerals
(B) International form of Indian numerals
(C) Indo-arabic form of Roman numerals
(D) Indian form of Roman numerals

72- Who works as the Chairman of Central Hindi Committee?
(A) President of India
(B) Prime Minister of India
(C) Home Minister of India
(D) Chairman of the Parliamentary committee on Rajbhasha

73- What is the name of the award given for writing Hindi poetry books?
(A) Prem Chand Puraskar
(B) Harivansh Rai Bachchan Puraskar
(C) Maithili Sharan Gupta Puraskar
(D) Ramdhari Singh Dinkar Puraskar

74- Who is responsible to ensure that Contracts and Agreements are made and issued in both English and Hindi?
(A) The Person signing these documents
(B) Head of the Office
(C) General Manager of the Zonal Railway
(D) Chairman of parliamentary committee

75- When the Constitution was adopted, how many languages were included in the Eighth Schedule initially?
(A) 13 **(B)** 14
(C) 15 (D) 16

76- When did the section 3(3) of the Official Language Act take effect?
(A) 26 January 1950 **(B)** 26 January 1965
(C)14 September 1956 (D) 14 September 1950

77- Who is responsible for the compliance of provisions of Official Languages Act and rules?
(A) Rajbhasha Adhikari
(B) Administrative Head of each Central Government Office
(C) Divisional Railway Manager
(D) General Manager

78- In which order of languages, the name boards, sign boards, and designation boards should be exhibited?
(A) Hindi, Regional Language, English
(B) English, Hindi, Regional Language
(C) Regional Language, Hindi, English
(D) None of these

79- In which of the following State, the Official Language Rules-1976,are not applicable:
(A) Goa (B) Mizoram
(C) Tamil Nadu (D) Sikkim

80- Who can authorize the use of Hindi or the official language of the State, in addition to the English, for any judgement or order passed by the High Court?
(A) Vidhan Sabha of the State
(B) Governor of the State with the consent of the President
(C) Lok Sabha
(D) President of India

ESTABLISHMENT & FINANCE

1- Who maintains the leave account of Group "A" and Group "B"Railway officers?
(A) Personnel Officer (B) Head of the Office
(C) Accounts Officer (D) Audit Officer

2- The amount of Children Education Allowance (CEA) gets automatically raised by 25% every time the rate of Dearness Allowance goes up by
(A) 25% **(B)** 50%
(C) 75% (D) 100%