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SSC-JE 2024

PAPER - I & II EXAMINATIONS

SOLVED
3500
Objective Questions
(2007-2023)

ELECTRICAL ENGINEERING

Previous Years Objective Questions with Solutions, Subjectwise & Chapterwise

(Useful for RRB-JE, DMRC, State Public Service Commissions & Various Competitive Examinations)

REVISED & UPDATED AS PER LATEST SYLLABUS

Published at:

ACE Engineering Publications

#3rd Floor, Suryalok Complex, Rosary Convent School Road,
Gunfoundary, Basheer Bagh, Hyderabad – 500001,
Telangana, India.
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First Edition : 2011
Revised Edition : 2024

Printed at:
Rowshni Graphics,
Hyderabad.

MRP : ₹. 950/-
ISBN : 978-1-64597-265-5

Foreword

Dear Students,

Securing central government job through SSC-JE is a dream for many engineering students. SSC-JE exam is considered to be one of the toughest competitive exam in India from competitive ratio point of view. Competition ratio challenges job aspirants as the jobs available are less when compared with the number of aspirants.

We at ACE always ready to provide quality guidance to the engineering competitive exam takers so that they can achieve their goals through our guidance and aspirant's hard work. Beyond a point ACE proved it's merit in guiding aspirants for various competitive exams such as GATE, ESE, PSUs and various public service exams. The aspirants also well received the efforts of ACE and always credited the valuable guidance provided by ACE.

As an effort to guide the SSC-JE aspirants with the help of our empanelled subject matters experts, ACE has produced this master piece to encourage aspirants in their endeavor by providing comprehensive solutions to the previous exam questions by utilising a systematic approach to the solutions. This approach definitely help aspirants to understand the theory behind, and how to use optimized way of answering questions. Categorisation of questions and solutions on the basis of Subjects and chapters is the unique characteristic of this book and we are sure that the aspirants do receive this well and will take the best benefit out of this book.

Finally we assure student community that we have put in best human effort into this task and I believe that definitely SSC JE aspirants will take most benefit out of our effort.

Thanks to all Professors who extended their services in the preparation of this booklet. It is believed that this volume is also a valuable aid to the students appearing for competitive exams like RRB, ISRO, State and Central Commissions and other PSUs.

With best wishes to all the Students

Y.V. Gopala Krishna Murthy,
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Chairman & Managing Director,
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Frost Interactive Service Pvt. Ltd. (ACE ONLINE)

EXAM PATTERN

SSC-JE Exam Pattern For Paper – I
(Computer Based Objective Type Exam)

PAPERS	SUBJECT	NUMBER OF QUESTIONS	MAXIMUM MARKS	EXAM DURATION
PAPER - 1	General Intelligence & Reasoning	50	50	2 Hours
	General Awareness	50	50	
	General Engineering **Part A:** General Engineering (Civil & Structural) (or) **Part B:** General Engineering (Electrical) (or) **Part C:** General Engineering (Mechanical)	100	100	

SSC-JE Exam Pattern For Paper – II
(Computer Based Objective Type Exam)

PAPERS	SUBJECT	NUMBER OF QUESTIONS	MAXIMUM MARKS	EXAM DURATION
PAPER - II	**General Engineering** **Part A:** General Engineering (Civil & Structural) (or) **Part B:** General Engineering (Electrical) (or) **Part C:** General Engineering (Mechanical)	100	300	2 Hours

SYLLABUS

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

Circuit law: Kirchhoff‟s law, Simple Circuit solution using network theorems

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

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

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

Electrical Machines : (a) DC Machine – Construction, Basic Principles of DC motors and generators, their characteristics, speed control and starting of DC Motors Method of braking motor, Losses and efficiency of DC Machines (b) 1-phase and 3-phase transformers: Construction, Principles of operation, equivalent circuit, voltage regulation, OC and SC Tests, Losses and efficiency Effect of voltage, frequency and wave form on losses Parallel operation of 1 phase /3 phase transformers Auto transformers (c) 3 phase induction motors, rotating magnetic field, principle of operation, equivalent circuit, torque-speed characteristics, starting and speed control of 3 phase induction motors Methods of braking, effect of voltage and frequency variation on torque speed characteristics Fractional Kilowatt Motors and Single Phase Induction Motors: Characteristics and applications.

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

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

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

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

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

Previous years Weightage (2019 - 2023)

YEAR	NAME OF THE SUBJECT							
	E. Circuits	M. Circuits	M&M.Inst.	E. Machines	P. Systems	BEE	CS & DE	B. Mechanical
26-09-19(MS)	17	13	8	26	30	3	3	
26-09-19(ES)	14	15	5	25	31	5	5	
28-10-20(MS)	22	15	4	30	24	4	-	1
29-10-20(AN)	21	10	7	33	17	6	2	4
10-12-20(AN)	20	10	8	28	24	7	1	2
24-03-21(MS)	26	11	6	23	25	8	-	1
24-03-21(ES)	25	10	9	25	23	7	-	1
14-11-22(ES)	24	7	6	23	30	10		
15-11-22(AN)	24	12	8	23	28	5		
16-11-22(ES)	28	11	6	19	31	5		
09-10-23(P1)	26	6	7	30	25	6		
10-10-23(P1)	19	13	9	30	23	6		
11-10-23(P1)	20	11	7	29	26	7		
04-12-23(P2)	23	12	6	23	28	7	1	

E. Circuits : Electric Circuits, **M. Circuits :**Magnetic Circuits, **MM & Inst.:** Measurements & Measuring Instruments

P. Systems : Power Systems, **BEE :** Basic Electronic Engineering, **CS & DE:** Control Systems & Digital Electronics,

B. Mechanical: Basics of Mechanical Engineering

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