Scheme of Examination

There shall be one paper. The marks and time allowed for each section of paper shall be as under:

	Name of Paper	Questions	Marks	Time
(i)	Section A- General awareness & Aptitude Test-			3 Hours
	(a) General Knowledge of Rajasthan and its History , Art & Culture, Literature, Monuments, Heritage, Geography, Traditions, etc.	30	90	
	(b) Every day Science, General Aptitute e.g. History, Maths., innovation, Indian and International events etc.	30	90	
(ii)	Section B – Electrical Engineering	90	270	

Note:

- 40% shall be pass marks for the exam.
- Senior Secondary Level will be the standard of the Section –A of paper & Section B is of Degree level.
- The pattern of question paper will be Objective Type (MCQ).
- Maximum Marks and Negative Marking-The maximum marks of the paper will be 450. For every correct answer 3 marks will be awarded and for every incorrect answer 1 marks will be deducted.

SYLLABUS

On-Line Examination

Section - A

General awareness & Aptitude Test-

(a) Knowledge and Current Affairs relating to Rajasthan,

(राजस्थान का इतिहास, कला एवं संस्कृति, साहित्य, परम्पराऐं एवं विरासत)
1. राजस्थान के इतिहास के प्रमुख स्रोत
2. राजस्थान की प्रमुख प्रागैतिहासिक सभ्यताऐं
3. राजस्थान के प्रमुख राजवंश एवं उनकी उपलब्धियां
4. मुगल–राजपूत संबंध
5. स्थापत्य कला की प्रमुख विशेषताऐं
6. महत्वपूर्ण किले, स्मारक एवं संरचनायें
7. राजस्थान के धार्मिक आंदोलन एवं लोक देवी–देवताऐं
8. राजस्थान की प्रमुख चित्रकलाऐं, बोलियां एवं हस्तशिल्प
9. राजस्थानी भाषा एवं साहित्य की प्रमुख कृतियां, क्षेत्रीय बोलियां
10. मेले, त्यौहार, लोक संगीत, लोक नृत्य, वाद्ययंत्र एवं आभूषण
11. राजस्थानी संस्कृति, परम्परा एवं विरासत
12. महत्वपूर्ण ऐतिहासिक पर्यटन स्थल
13. राजस्थान के प्रमुख व्यक्तित्व
14. राजस्थान की रियासतें एवं ब्रिटिश संधियां, 1857 का जन–आंदोलन
15. कृषक एवं जन–जाति आंदोलन, प्रजामंडल आंदोलन
16. राजस्थान का एकीकरण
17. राजस्थान का राजनीतिक जनजागरण एवं विकास– महिलाओं के विशेष संदर्भ में।
राजस्थान का भूगोल

1. स्थिति एवं विस्तार
2. मुख्य भौतिक विभागः– मरुस्थलीय प्रदेश, अरावली पर्वतीय प्रदेश, मैदानी प्रदेश. पठारी प्रदेश
3. अपवाह तन्त्र
4. जलवायु
5. मृदा
6. प्राकृतिक वनस्पति
7. वन एवं वन्य जीव संरक्षण
8. पर्यावरणीय एवं पारिस्थिकीय मुद्दे
9. मरुस्थलीकरण
10. कृषि– जलवायु प्रदेश एवं प्रमुख फसलें
11. पशुधन
12. बहुउद्देशीय परियोजनाऐं
13. सिंचाई परियोजनाऐं
14. जल संरक्षण
15. परिवहन
16. खनिज संपदाऐं

राजस्थान की

राजनीतिक एवं प्रशासनिक व्यवस्थाः–

1. राजस्थान में स्थानीय, नगरीय प्रशासन
2. 74वां संविधान संशोधन विधेयक
3. राज्यपाल, राजस्थान विधान सभा, मुख्य मंत्री, जिला प्रशासन, लोकायुक्त
4. राज्य मानवाधिकार आयोग
5. राज्य सूचना आयोग
6. राज्य निर्वाचन आयोग
7. राजस्थान लोक सेवा गारन्टी अधिनियम, 2011

(b) General Science, General Aptitute e.g. History, Maths., innovation, Indian and International events etc.:-

1. General Science: - General Science will cover General Application and understanding of Science including matters of everyday observations and experiences. Candidates are supposed to be faimiliar with matters such as electronics tele-communications, Satellites and elements of computers (both Hard & Soft Wares), research labs including CSIR managed national labs and institutes, Environment & pollution etc.
2. Current affairs: - Current events of State, National and International importance. National and International agencies and their activities. Games & Sports at State, National and International levels.
3. History & Culture; - Land Marks in the political and cultural history of India, Major monuments and literary works. Renaissance, struggle for freedom and national integeation & Culture with special reference to:-
   (a) The medieval background.
   (b) Socio-economic life and organisation.
   (c) Freedom movement and political awakening.
   (d) Political integration.
   (e) Dialects and Literature.
   (f) Music, Dance & theatre.
   (g) Religious beliefs, cults, saints, poets, Warrior-saints, Lok Devtas & Lok deviyan.
   (h) Handicrafts.
   (i) Fairs and Festivals, Customs, Dresses, Ornaments with special reference to Folk and tribal aspects thereof.
4. Economic Developments:- Food and Commercial crops of Rajasthan, Agriculture based Industries, Major irrigation and River Valley, Projects for the development of the desert and waste lands. Indira Gandhi Canal Project, growth and location of Industries, Industrial raw materials. Mineral based industries, Small scale and Cottage industries, export items

Rajasthani handicrafts. Tribes and their economy. Cooperative movement, Tourism Development. Economic Reforms in India and their impact.

5. Geography and Natural Resources:-
   (a) Broad – physical features of the world imporant places, rivers, mountains, continents, oceans.
   (b) Ecology and wild-life of India.

Section- B

1. **ELECTRICAL CIRCUITS**

   Circuit components, KCL and XVL. Network graphs, Methods of circuits analysis, Nodal and Mesh analysis, Analysis of D.C. and A.C. networks. Network theorems. Basic network theorems and applications. Network Functions: Driving point and transfer functions, poles and zeros of network functions. Response of networks to standard Input signals. Two port networks, Elementary network synthesis, different type of network parameters, signal flow graphs, Fourier series, Laplac transformers and their applications. Frequency response. Resonant circuits and applications. Three phases balanced and unbalanced networks. Steady state response with sinusoidal input. Transient response: Transient analysis of RL, RC and RLC circuits.

2. **FIELD THEORY**

   Electrostatics and Magnetostatics: Electrostatics and electrical fields, Magneto statics and magnetic fields, field in conductor and in magnetic material, field in dielectrics, Maxwells' equators and time varying field. Electromagnetic wave equations. Plane wave propagations in coducting and dielectric media.

3. **ELECTRICAL MATERIALS**

   Classifications of materials on the basis of permanent magnetic dipoles, Electrical and electronical behaviour of materials, classification on the basis of conductivity. Behaviour of dielectrical in static and alternating fields. Phenomenon of polarization. Super conductivity applications of magetic conducting, dielectric and insulating materials.

4. **ELECTRICAL MEASURMENT AND INSTRUMENTATION:**

   General Principles of measurement: Unit and dimension, Standards error analysis. Basic Methods of measurement, Measurement of circuit's parameters of bridge methods.

   Measuring Instrument: Indicating Instruments, Integrating instruments, Recording instrument, Measurement of voltage, current, power, power factor, energy, resistance, inductance, capacitance and frequency.

   Transducers: Strain guage, LVDT, resistance thermometers, Thermistors, piezoelectric Measurement of non-electrical quantities (Pressure, Temperature, Flow rate, displacement, velocity, acceleration, strain etc.)

   Measurements: digital voltmeters, Frequency counter, distortion meter. Telemetry and Data reccording and display, Data acquisition.

5. **ELECTRONICS AND COMMUNICATION:**

   Solid state (semi-conductor devices): Diodes, Zener dioles, Transistors (Bipolar, BJT, JFET, MOSFET) Biasing and their applications. Analysis of electronic circuits, equivalent circuits, Rectifier, Filter and voltage regulators. Single stage and multistage amplifiers-gain and frequency response, Multivibrators, flip-flops and their applications.

   Communications: generations and detection of AM and FM, noise beaviour of AM and FM systems.

6. **POWER ELECTRONICS:**

   Power semiconductor devices, Thyristor, triac, GTO, MOSFET, Static characteristics and

triggering circuits, A.C. to D.C. converters, Choppers. Controlled and uncontrolled power rectifiers, Bridge converters.

7. **CONTROL SYSTEM:**

   Open and closed loop systems. Block diagrams and signal flow graphs. Response analysis time domain, frequency domain: Steady state error analysis. Root locus technique, bode plots, Routh Hurwitz and Nypuist criteria of stability. State Space analysis of linear systems.

8. **ELECTRICAL MACHINES:**

   Constructions, Principles of operations, equivalent circuits, basic characteristics and applications of distribution and power transformers. Single phase induction motors. Three phase inductions motors. Alternators, synchronous motors.

9. **POWER SYSTEMS:**

   Generations: Thermal generations, Hydro generationm, Nuclear Generations. Non Conventional energy sources. Transmission and Distribution. Transmission line parameters – resistence, Inductance and capacitance calculation, Performance of short, medium and long lines. Neutral earthing. Underground cables, Corona, its effect and remedial measures. Basic idea of power system stability. Line insulators, Introductions of HVDC transmission.

10. **SWITCH GEAR & PROTECTION:**

    Theories of arc extinction. Comparative merits or minimum oil, bulk oil, air blast, SF6 circuits breakers. Causes and consequences of dangerous currents. Currents limiting reactors. Busbar arrangement. Requirements of protective relays. Protections of lines, transformer, synchronous generators and busbars. Symmetrical components and their applications.