

**INDIRA TECHNICAL INSTITUTE EDUCATION SOCIETY  
NASHIK**

**ADVANCE DIPLOMA  
ELECTRICAL ENGINEERING SERVICES (ADEES)(EL)**

<b>Theory Paper I</b>	: Syllabus for this paper is same as Certificate Course in ELECTRICIAN [ E ] Refer this syllabus booklet Page No. _____	100 Marks
<b>Theory Paper II</b>	: Syllabus for this paper is same as Certificate course in ARMATURE & MOTOR REWINDING [ AM ] Refer this syllabus booklet Page No. _____	100 Marks
<b>Theory Paper III</b>	: Syllabus for this paper - III is same as DEES – (EL ) – PAPER - III Refer this syllabus booklet Page No. _____	100 Marks
<b>Theory Paper IV</b>	: Theory syllabus for this Diploma Paper IV is Printed below.	100 Marks
<b>Practical I and II</b>	: Two separate Practicals Practical – I same as E Practical – II same as AM	100 Marks 100 Marks
<b>Total :</b>		<b>(600 marks)</b>



**( ADEES – (EL ) -PAPER –IV )**

**THEORY SYLLABUS**

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**1. INDUSTRIAL WIRING (ESTIMATION AND COSTING) :**

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- ❖ Supply connection, Termination, Lug selection and crimping.
- ❖ Conduct wiring accessories and conduct wiring.
- ❖ Bus bar's
- ❖ Deciding rating of conductor, cable, fuses and switches.
- ❖ Estimating type of labour, Labour charges and material cost, overhead charges.

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**2. INDUSTRIAL ELECTRONICS :**

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- ❖ Controlled Rectifier, construction, working and their application.
- ❖ Inverter and working of inverter ckt. application of inverter.
- ❖ Electronic speed control of DC motor, SCR control.
- ❖ Electronic speed control of AC motor variable frequency control.
- ❖ Electronic time delay relay, type of time delay, Relay on delay / off delay.
- ❖ Application of Electronic ckt. light dimmer, Electronic Fan regulator, battery charger, Emergency light ckt.

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### 3. DESIGN OF PANEL BOARD :

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- ❖ Control wiring and power wiring of panel board.
  - ❖ Selection of contactor, voltage and current rating of contactors.
  - ❖ Use of timer in control ckt.
  - ❖ Various Logical ckt. Design.
  - ❖ Mounting of various accessories and fabrication.
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### 4. TESTING OF ELECTRICAL EQUIPMENT ;

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- ❖ Transformer testing – open ckt. Test and short ckt. Test of transformer.
  - ❖ Finding the copper and iron lost of transformer and it's efficiency, all day efficiency.
  - ❖ Transformer on No load and On load and it's performance.
  - ❖ Dielectric test, temp rise test and polarity test of transformer.
  - ❖ 3  $\Phi$  induction motor testing No load test and Blocked rotor test of 3  $\Phi$  induction motor.
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### 5. DC MACHINE (MOTOR AND GENERATOR) :

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- ❖ EMF equation and Building of EMF.
  - ❖ Open ckt. Characteristic and Load ckt. Characteristic of Generator.
  - ❖ Armature and field control of D.C. motor and it's performance.
  - ❖ Various fault in DC machine.
  - ❖ Applications.
  - ❖ Field coil winding and connections.
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### 6. A C MACHINE (ALTERNATOR, 3 $\Phi$ INDUCTION MOTOR) :

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- ❖ Alternator construction and emf equation.
  - ❖ Parallel operation of Alternator and load sharing process.
  - ❖ 3  $\Phi$  induction motor. Construction and working.
  - ❖ Slip ring induction motor and Rotor resistance starter.
  - ❖ 3  $\Phi$  induction motor performance and torque speed curve.
  - ❖ Application's.
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### 7. CONTACTOR PROGRAMMING :

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- ❖ Contactor programming of D.O.L. starter.
  - ❖ Contactor programming of semi automatic starter.
  - ❖ Contactor programming of automatic star delta.
  - ❖ Contactor programming of Reverse forward starter.
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### 8. INSTALLATION AND COMMISSIONING :

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- ❖ Installation of plate and pipe Earthing and Earthing Resistance measurement.
  - ❖ Troubleshooting of Electrical equipment.
  - ❖ Mechanical fault and magnetic fault.
  - ❖ Preventive maintenance of Electrical machine.
  - ❖ Importance of preventive maintenance.
  - ❖ Daily, Weekly, Monthly and Yearly maintenance of the transformer.
  - ❖ Under ground cable installation and cable
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### 9. SWITCH GEAR AND PROTECTION :

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- Oil ckt. Breaker, construction and working.
  - Vacuum ckt. Breaker, construction and working.
  - Use of CT and PT, Ratio of CT and PT.
  - Connection of CT and PT.
  - Over current protection, over voltage protection
  - Various relay protection used in industry.
  - Lighting Arrestor's.
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