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AEC

## Jharkhand University of Technology, Ranchi

### Diploma 2nd Semester Examination, 2025 (NEP)

Subject : Statistic and Analytics

Subject Code : AEC 201

Time Allowed : 3 Hours

Full Marks : 70

Pass Marks : 21

*Answer in your own words.*

*Answer any five questions in which Question No. 1 is compulsory.*

*The figures in the margin indicate full marks.*

*All questions carry equal marks.*

1. Write correct answer of the following questions:

2×7=14

- (i) Which of the following is a data collection tool?
- (a) Histogram (b) Pie Chart  
(c) Questionnaire (d) Box Plot
- (ii) Which type of data is continuous?
- (a) Number of students (b) Temperature  
(c) Gender (d) Blood group
- (iii) Which chart is used to represent relative frequency?
- (a) Bar chart (b) Pie chart  
(c) Frequency polygon (d) Relative frequency polygon
- (iv) Which measure is not a measure of central tendency?
- (a) Mean (b) Median  
(c) Mode (d) Variance
- (v) Which function is used to read data from a file in Python?
- (a) write() (b) read()  
(c) open() (d) input()
- (vi) Which of the following is a valid Python data type?
- (a) integer (b) number  
(c) float (d) decimal
- (vii) Which Python loop executes at least once?
- (a) for (b) while  
(c) do-while (d) Python does not have do-while

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2. (a) Define qualitative and quantitative data with examples.  
(b) Explain the process of data cleaning and its importance. 7+7
3. (a) Describe how to create a bar chart and pie chart using Microsoft Excel.  
(b) Explain the concept of frequency polygon and frequency curve. 7+7
4. (a) Define mean, median and mode. Explain how to calculate them in Excel.  
(b) What is standard deviation? How is it different from variance? 7+7
5. (a) Write a Python program to read a text file and count the number of lines.  
(b) Explain the use of if-else and loops in Python with examples. 7+7
6. (a) What are arrays in Python? Write a program to find the sum of array elements.  
(b) Define a function in Python to calculate factorial using recursion. 7+7
7. Write short notes on *any four* of the following: 3.5×4=14
- (a) Types of Data
  - (b) Box Plot
  - (c) Skewness and Kurtosis
  - (d) Python Comments
  - (e) File Opening Modes in Python
  - (f) Frequency Table

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**Jharkhand University of Technology, Ranchi**  
**Diploma 2nd Semester Examination, 2025 (NEP)**

201  
ALL

**Subject : Project Management Skill**  
**Time Allowed : 3 Hours**

**Subject Code : SEC-201**

**Full Marks : 70**

**Pass Marks : 21**

*Answer in your own words.*

*Answer any five questions in which Question No. 1 is compulsory.*

*The figures in the margin indicate full marks.*

*All questions carry equal marks.*

1. Write correct answer of the following questions:

2×7=14

- (i) Which of the following is a benefit of project management?  
(a) Increased paperwork  
(b) Reduced team collaboration  
(c) ~~Improved resource utilization~~  
(d) Delayed project timelines
- (ii) What is the main obstacle in project management?  
(a) Clear objectives  
(b) ~~Lack of communication~~  
(c) Defined scope  
(d) Strong leadership
- (iii) Which of the following best describes a process group in project management?  
(a) A team of consultants  
(b) A set of related operations  
(c) ~~A collection of logically grouped project activities~~  
(d) A financial audit team
- (iv) What does a Project Execution Plan (PEP) primarily include?  
(a) Marketing strategy  
(b) ~~Execution methodology and timelines~~  
(c) Employee benefits  
(d) Office layout
- (v) Which technique is used to shorten the duration of a project?  
(a) Milestone charting  
(b) ~~Crashing~~  
(c) SWOT analysis  
(d) Budget forecasting
- (vi) Which of the following is a reason for project cost overruns?  
(a) Accurate estimation  
(b) Efficient scheduling  
(c) ~~Systemic organizational issues~~  
(d) Timely audits

Please Turn Over

(vii) Which digital technology is commonly used in smart cities for project management?

- (a) IoT (Internet of Things) (b) Antivirus software  
(c) Spreadsheet tools (d) Email servers

2. (a) Explain the benefits of Project Management.  
(b) Discuss the obstacles in Project Management. 7+7
3. (a) Describe the essentials of Project Administration.  
(b) Explain the role of Project Diary. 7+7
4. (a) What are the phases of Project Life Cycle?  
(b) Illustrate types of risks in project management. 7+7
5. (a) Explain the steps in Project Planning.  
(b) Discuss the tools used in Project Scheduling. 7+7
6. (a) What is Project Audit?  
(b) Describe the functions of a Project Auditor. 7+7
7. Write short notes on *any four* of the following: 3.5×4
- (a) Project Consultants
  - (b) Project Execution Plan (PEP)
  - (c) Risk Assessment Techniques
  - (d) Milestone Charts
  - (e) Data Science in Project Management

c b c

b c a

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EEE

**Jharkhand University of Technology, Ranchi**  
**Diploma 2nd Semester Examination, 2025 (NEP)**

**Subject : Transformer and Altmators**

**Subject Code : EEE 201**

**Time Allowed : 3 Hours**

**Full Marks : 70**

**Pass Marks : 21**

*Answer in your own words.*

*Answer any five questions in which Question No. 1 is compulsory.*

*The figures in the margin indicate full marks.*

*All questions carry equal marks.*

1. Write correct answer of the following questions:

2×7=14

- (i) What is the unit of Magnetic Flux?  
(a) Tesla (b) Weber  
(c) Henryd (d) Ohm
- (ii) Which of the following is used to measure inductive reactance?  
(a) Ohm (b) Farad  
(c) Henry (d) Volt
- (iii) What is the transformation ratio (K) in a transformer?  
(a)  $N_2/N_1$  (b)  $N_1/N_2$   
(c)  $V_2/V_1$  (d) Both (a) and (c)
- (iv) Which device is used to indicate oil temperature in a transformer?  
(a) Breather (b) OTI  
(c) WTI (d) Buchholz Relay
- (v) What is the relation between line voltage and phase voltage in a star connection?  
(a)  $V_L = V_P$  (b)  $V_L = \sqrt{3} V_P$   
(c)  $V_L = V_P/\sqrt{3}$  (d)  $V_L = 2V_P$
- (vi) Which transformer is used for measuring high current?  
(a) Potential Transformer (b) Isolation Transformer  
(c) Current Transformer (d) Auto Transformer
- (vii) What is the effect of hunting in alternators?  
(a) Voltage drop (b) Speed fluctuation  
(c) Overheating (d) Noise

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(2)

2. (a) Explain the concept of MMF and its unit.  
(b) Derive the relationship between Flux, MMF and Reluctance. 7+7
  
3. (a) Explain the working principle of a transformer with a neat sketch.  
(b) Describe the construction and operation of Shell and Core type transformers. 7+7
  
4. (a) List and explain various losses in a transformer.  
(b) Write the equation for voltage regulation and efficiency. 7+7
  
5. (a) Explain the generation of 3-phase voltage and phase sequence.  
(b) Describe the working principle and construction of three-phase transformers. 7+7
  
6. (a) Explain the working of a DC generator.  
(b) Describe the construction and working of a salient pole alternator. 7+7
  
7. Write short notes on *any four* of the following:  
(a) Breather in transformer  
(b) Star rating of a transformer  
(c) Armature reaction in alternator  
(d) Parallel operation of alternators  
(e) Cooling agents used in alternators

3.5×4=14

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BSC

## Jharkhand University of Technology, Ranchi

### Diploma 2nd Semester Examination, 2025 (NEP)

Subject : Fundamentals of Electrical and Electronic Engineering Subject Code : BSC-201

Time Allowed : 3 Hours

Full Marks : 70

Pass Marks: 21

*Answer in your own words.*

*Answer any five questions in which Question No. 1 is compulsory.*

*The figure in the margin indicate full marks.*

*All questions carry equal marks.*

2×7=14

1. Choose the correct answer:

- (i) What does a yellow safety sign indicate?
- (a) Mandatory action (b) Warning  
(c) Prohibition (d) Emergency escape
- (ii) Which device is used to measure electrical energy?
- (a) Voltmeter (b) Ammeter  
(c) Wattmeter (d) Energy meter
- (iii) What is the SI unit of electric current?
- (a) Volt (b) Ohm  
(c) Ampere (d) Watt
- (iv) Which type of earthing is commonly used in residential buildings?
- (a) Pipe earthing (b) Plate earthing  
(c) Rod earthing (d) Strip earthing
- (v) Which tool is used to strip insulation from wires?
- (a) Pliers (b) Screwdriver  
(c) Wire stripper (d) Hammer
- (vi) What is the transformation ratio of a transformer?
- (a)  $V_1/V_2$  (b)  $I_1/I_2$   
(c)  $N_1/N_2$  (d) All of these
- (vii) Which logic gate gives a high output only when inputs are different?
- (a) AND (b) OR  
(c) XOR (d) NAND

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2. (a) Explain the importance of PPE in electrical safety with examples.  
(b) Describe the procedure to administer CPR to an unconscious person. 7+7
3. (a) Define voltage, current and resistance. Mention their SI units.  
(b) Explain the behaviour of current and voltage in a parallel circuit with examples. 7+7
4. (a) Describe the working principle of a single-phase transformer.  
(b) Compare the features and applications of DOL and Star-Delta starters. 7+7
5. (a) Explain the function of RCCB and ELCB in electrical protection.  
(b) Draw and explain the wiring diagram for controlling one lamp from two different places. 7+7
6. (a) Describe the working of a bridge rectifier with and without capacitor filter.  
(b) Explain the operation of a relay as an actuator in a control circuit. 7+7
7. Write short notes on *any four* of the following: 3·5×4
  - (a) Types of fire extinguishers and their applications
  - (b) CRO
  - (c) Types of batteries and their selection criteria
  - (d) Rectifier
  - (e) Microcontroller applications in automation
  - (f) Ripple factor

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AU

## Jharkhand University of Technology, Ranchi

### 2nd Semester Diploma Engg. Examination, 2025

Subject : Environment Sustainability

Subject Code : AU 201

Time Allowed : 3 Hours

Full Marks : 70

Pass Marks : 21

*Answer in your own words.*

*Answer any five questions in which Question No. 1 is compulsory.*

*The figures in the margin indicate full marks.*

1. Choose the correct option:

2×7=14

- (i) Which of the following ecosystems is classified as lentic?  
(a) River (b) Pond  
(c) Stream (d) Canal
- (ii) What is the primary cause of the greenhouse effect?  
(a) Oxygen (b) Nitrogen  
(c) Carbon dioxide (d) Argon
- (iii) Which Act was enacted to control air pollution in India?  
(a) Water Act. 1974 (b) Air Act. 1981  
(c) Environment Protection Act. 1986 (d) Solid Waste Management Rules, 2016
- (iv) Which device is used to control particulate pollutants using electrical charge?  
(a) Cyclone separator (b) Electrostatic precipitator  
(c) Scrubber (d) Filter press
- (v) Which of the following is a source of noise pollution?  
(a) Solar panels (b) Wind turbines  
(c) Loudspeakers (d) Rainwater harvesting system
- (vi) What is the main advantage of solar stills?  
(a) Generate electricity (b) Purify Water  
(c) Reduce noise (d) Control air pollution
- (vii) Which rule governs the management of e-waste in India?  
(a) Plastic Waste Management Rules, 2016 (b) E-Waste Management Rules, 2016  
(c) Solid Waste Management Rules, 2016 (d) Biomedical Waste Rules, 2016

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(2)

2. (a) Explain the structure of an aquatic ecosystem with examples of lentic and lotic systems. 7+7  
(b) Discuss the causes and effects of global warming on terrestrial ecosystems.
3. (a) Describe the types of air pollutants and their sources.  
(b) Explain the working principle of an electrostatic precipitator and its role in pollution control. 7+7
4. (a) What are the sources and effects of noise pollution?  
(b) Discuss the Noise Pollution (Regulation and Control) Rules, 2000. 7+7
5. (a) Explain the characteristics and types of water pollutants.  
(b) Describe the importance and methods of rainwater harvesting. 7+7
6. (a) What are the advantages of advanced solar collectors over traditional ones?  
(b) Describe the environmental benefits of hydrogen energy as a new energy source. 7+7
7. Write short notes on *any four* of the following: 3.5×4
  - (a) Ozone depletion
  - (b) Cyclone separator
  - (c) Water (Prevention and Control of Pollution) Act, 1974
  - (d) Biomass as an energy source
  - (e) Solid Waste Management Rules, 2016
  - (f) Occupational health and safety measures