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Jharkhand University of Technology, Ranchi

Diploma 2nd Semester Examination, 2025 (NEP)

Subject : Elements of Mining

Subject Code :MIN 201

Time Allowed : 3 Hours

Full Marks : 70

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.

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1. Select the appropriate answer: 7×2

   (i) Storage of explosives in a mine is done in

       (a) Pump room   (b) Coal bunker

       ✓(c) Magazine   (d) Safety bay

   (ii) Longwall mining is most suitable for—

       ✓(a) Flat and think coal seams   (b) Steep and narrow seams

       (c) Metal mining   (d) Riverbed mining

   (iii) Which mining method uses surface excavation?

       (a) Longwall   (b) Board and Pillar

       ✓(c) Open Cast   (d) Stope and Pillar

   (iv) Which of the following is a commonly used blasting pattern in machine-cut faces?

       (a) Fan cut   (b) Pyramid cut

       (c) Parallel Hole cut   ✓(d) Ring cut

   (v) A misfire is a condition when

       (a) explosive goes off too early.   ✓(b) explosive fails to detonate.

       (c) too much smoke is produced.   (d) only noise is heard.

   (vi) Power factor is defined as:

       (a) Explosive weight per cubic meter of coal   ✓(b) Coal extracted per kg of explosive

       (c) Volume of air per minute   (d) Blasting power per meter

   (vii) Which material is NOT commonly used for stemming?

       (a) Clay   ✓(b) Water ampoule

       (c) Sawdust   (d) Sand

Please Turn Over

2. (a) Discuss about the vertical shaft with neat sketch. 7+7

   (b) Explain the factors on which selection of shaft is decided.

3. (a) Discuss the two different types of lining in shaft sinking. 7+7

   (b) Discuss the general arrangement of shaft sinking.

4. (a) Differentiate the raise and winze used in metal mining with diagram. 7+7

   (b) Enlist the name of different types of stopping methods used in underground metal mining.

5. (a) Give brief discussion of support system used in underground mines. 7+7

   (b) Describe a complete timber set, incomplete timber set and concrete column.

6. (a) Enumerate the basic difference in underground mining and opencast mining. 7+7

   (b) Discuss the single tube and double tube core barrel used in core recovery.

7. Write short notes on *any four*: 3.5×4

   (a) Temporary lining

   (b) Rider

   (c) Orepass

   (d) Steel arches

   (e) Cog support

Jharkhand University of Technology, Ranchi

Diploma 2nd Semester Examination, 2025 (NEP)

Subject : Project Management Skill

Subject Code : SEC-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.

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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

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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

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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) whil

      (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

2nd Semester Diploma Engg. Examination, 2025 (NEP)

Subject : IT Skills   **Subject Code : CSE 101**

**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.

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1. Choose the correct options:

   (i) The process of drawing a flowchart for an algorithm is called

       (a) Performance

                         (b) Evaluation

       (c) Algorithmic Representation

                         (d) Flowcharting

   (ii) The following box denotes—
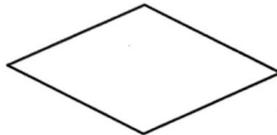
       (a) Decision

                         (b) Initiation

       (c) Initialization

                         (d) I/O3

   (iii) An algorithm is

       (a) a programming language.

       (b) a step-by-step procedure to solve a problem.

       (c) a type of hardware.

       (d) a flowchart symbol.

   (iv) Cloud computing technic allows users to

       (a) use only local storage.

       (b) access computing resources over the internet.

       (c) run programs without electricity.

       (d) share files offline only.

   (v) Which is not a popular web browser?

       (a) Chrome

                         (b) Mozila

       (c) Microsoft Edge

                         (d) Acrobat Reader

Please Turn Over

(vi) The URL stands for

    (a) Universal Resource Locator.

    (b) Uniform Resource Locator.

    (c) Uniform Reference Link.

    (d) Universal Reference Locator.

(vii) Which is not Secondary Memory?

    (a) HDD.

    (b) ROM.

    (c) Pen Drive.

    (d) Solid State Drive.

2. (a) What is an algorithm? Also explain the characteristics of a good algorithm with suitable examples.

    (b) What do you understand by flowchart? Draw and explain the commonly used symbols in a flowchart.   7+7

3. (a) What are HTML attributes? Explain with at least live examples.

    (b) Write HTML code to create a login form with username, password and reset button.   7+7

4. (a) Explain Java Script data types with examples.

    (b) What is CSS? Explain its advantages over inline HTML formatting?   7+7

5. (a) Differentiate between ERP and traditional information systems.

    (b) Discuss the cloud service models— IaaS, PaaS and SaaS with examples.   7+7

6. (a) Discuss the role of encryption in data security.

    (b) Describe the various types of cyber with examples.   7+7

7. Write short notes on *any four* of the following: 3.5×4

    (a) Different symbols of flow chart

    (b) Tags in HTML with examples

    (c) Inline, Internal and External CSS

    (d) Customer Relationship Management (CRM)

    (e) Public, Private, Hybrid cloud computing

    (f) Ethical Hacking

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.

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1. Choose the correct answer: 2×7=14

(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

39857   **Please Turn Over**

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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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.

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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

Please Turn Over

2. (a) Explain the structure of an aquatic ecosystem with examples of lentic and lotic systems.

    (b) Discuss the causes and effects of global warming on terrestrial ecosystems.   7+7

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