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Techno**8E1909**

Roll No. _____

Total No. of Pages: **2****8E1909****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Computer Science & Engineering****(Artificial Intelligence)/(Regional Language)****8CAI4/CSR4/CS4-01 Big Data Analytics****CS, CAI, CSR****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Define Big Data and list the traditional “3Vs”.
Q.2 What is Big Data Analytics?
Q.3 List out the sources of Big Data.
Q.4 What is the role of Namenode and Datanode in Hadoop?
Q.5 Why is a Combiner used in MapReduce?
Q.6 What is Pig Latin?
Q.7 Name two Hadoop configuration XML files.
Q.8 What is Hive used for? Name any two Hive data types.
Q.9 What is structured data, unstructured data and semi-structured data?
Q.10 Write any two difference between Pig Latin and SQL.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Explain the major features and challenges of Big Data.
- Q.2 Describe the problems with traditional large-scale systems.
- Q.3 Explain the three modes of Hadoop cluster configuration (Local, Pseudo-distributed, Fully Distributed)
- Q.4 Discuss the Writable Interface and types of Writable Classes.
- Q.5 Analyze the impact of Big Data technologies (Hadoop, Pig, Hive) on data analytics.
- Q.6 Describe the building blocks of Hadoop (Namenode, Datanode, Secondary Namenode, Job Tracker, Task Tracker).
- Q.7 Discuss the difference between Local, Pseudo-distributed and Fully Distributed Hadoop cluster modes.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Discuss the Hadoop Distributed File System (HDFS) architecture with diagrams.
- Q.2 Explain Pig Architecture, Pig Latin flow and Pig Script Interfaces in detail.
- Q.3 Explain the process of creating and managing databases and tables in Hive.
- Q.4 Discuss the advantages of Pig over traditional MapReduce programming. Also explain how Pig simplifies Hadoop programming with examples.
- Q.5 Analyze how implementing a Custom Writable and using a Raw Comparator together can improve Hadoop performance, particularly in terms of speed and efficiency of data processing.



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8E1907

Roll No. _____

Total No. of Pages: **2****8E1907****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Civil Engineering****8CE4-01 Project Planning and Construction Management****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:**Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.**Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.**Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 What is project planning?
Q.2 Define risk cost management.
Q.3 What is project scheduling?
Q.4 Define work breakdown structure.
Q.5 Define direct cost.
Q.6 What is arbitration?
Q.7 Define a contract.
Q.8 What is Environmental Impact Assessment (EIA)?

Q.9 What is resource leveling?

Q.10 What is total float?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Explain the main causes of project failure.

Q.2 Discuss the functions of project management.

Q.3 Differentiate between PERT and CPM.

Q.4 Explain work breakdown structure with an example.

Q.5 Differentiate between resource smoothing and resource leveling.

Q.6 Discuss lump sum and scheduled contracts.

Q.7 Explain safety measures for hot bituminous works.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 Explain various stages and steps involved in project planning. Discuss the main causes of projects failure.

Q.2 Describe the objectives and functions of construction project management in detail.

Q.3 Discuss important conditions of contract and explain the advantages of arbitration.

Q.4 Explain direct and indirect project costs with the help of a graph showing their variation with time. Discuss steps in resource allocation.

Q.5 Discuss causes and prevention of accidents at construction sites. Explain safety measures for demolition works.



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8E1960

Roll No. _____

Total No. of Pages: 2**8E1960****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Textile Technology (Open Elective-II)****8TT6-60.2 Disaster Management****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in Form No. 205)

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Discuss the objective of the course of Disaster Management.
- Q.2 Define hazard and disaster.
- Q.3 Explain power outage.
- Q.4 Define meteorological drought.
- Q.5 Differentiate natural and man-made disasters.
- Q.6 What are the different types of Tsunami warning systems?
- Q.7 Discuss the term “Risk” and “Vulnerability” related to disaster.

- Q.8 Define geological based disasters.
Q.9 Describe the mitigating of disaster.
Q.10 What are the major causes of disaster?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 What are the different phases of the disaster management cycle?
Q.2 Elaborate the preventive measures to avoid road accidents.
Q.3 Brief on the different hazards associated with earthquakes.
Q.4 What are the three major types of volcanoes?

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- Q.5 Discuss the fire hazards and its preventive measures.
Q.6 Describe the preventive measures due to landslides.
Q.7 Discuss the roll of production people in Disaster Management.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem solving/Design questions)

Attempt any three questions

- Q.1 Explain the disasters related social and environmental issues.
Q.2 Explain the Hydro-meteorological based disasters.
Q.3 Discuss the different hazards associated with the textile industry in detail.
Q.4 Explain different causes and mitigation measures for tsunami.
Q.5 Discuss the impact and preventive measures for disaster.
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8E1959

Roll No. _____

Total No. of Pages: 4**8E1959****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Open Elective-II****8TT6-60.1 Material and Human Resource Management****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 An IT company provides software services and receives payment after 60 days. It pays employee salaries monthly. Analyse whether the company requires high or low working capital.
- Q.2 A hotel maintains a large food inventory, leading to wastage. Which selective inventory control technique should be applied?
- Q.3 An automobile company introduces robotic assembly lines, but job descriptions are not updated. Write two impacts due to the same.
- Q.4 An automobile company plans to expand its plant. Management wants to raise funds while maintaining ownership control and avoiding issuing new shares. Which source of finance should the company prefer and which concept of finance is involved?

- Q.5 An IT company introduces a new role called “Cloud Support Engineer” but employees are unclear about duties, reporting authority and skills required. Which HRM function should be applied to solve this problem?
- Q.6 Define Materials Management and state any two functions of Materials Management in an automobile manufacturing company.
- Q.7 Define Human Resource Management and state two functions of HRM in the IT industry.
- Q.8 Define Finance Management and state any two functions of finance in an FMCG company.
- Q.9 A Britannia biscuit factory uses 500 kg of flour per day, Lead time = 6 days. Calculate Reorder Level.
- Q.10 Annual demand = 4000 units, ordering cost = ₹ 200 and carrying cost = ₹ 8 per unit. Calculate Economic Order Quantity.

PART – B

[5×4]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 An automobile company manufacturing gear assemblies consumes 8,000 gears per year. Ordering cost is ₹ 1,200 per order and carrying cost is ₹ 30 per unit per year.
- (a) Calculate Economic Order Quantity (EOQ).
- (b) Interpret the result and recommend an inventory policy.
- Q.2 An FMCG company has the following data -

[2+]

[2+]

Component	Days
Raw Material	15
WIP	10
Finished Goods	12
Receivable	20
Payable	18

Daily operating cost = ₹ 1,50,000

Calculate working capital requirement, interpret and recommend.

- Q.3 An e-commerce warehouse stores electronics, books, clothes and groceries. High-value electronics sometimes go out of stock while low-value items occupy most warehouse space. Analyse the problem (Bullet points) and recommend inventory control techniques.
- Q.4 An IT consulting company is facing project delays because employees are unclear about job roles and responsibilities. Explain how job analysis (bullet points) will help. Provide interpretation and recommendation.

[2+]

[2+]

- Q.5 A petroleum refinery stores spare parts. Some parts are critical for plant operation, while others are low-cost consumables. Suggest two selective inventory techniques (Names and their criteria) with interpretation and recommendations. [2+2=4]
- Q.6 An IT company has high employee turnover due to lack of training, poor appraisal and job dissatisfaction. Analyse two HRM issues (names as per HRM Functions) and recommend HRD practices with reasons. [2+2=4]
- Q.7 A retail chain sells goods on credit and purchases goods in cash, leading to a cash shortage. Interpret three terms used in cash flow management and recommend improvements to working capital management (three names with justification) [2+2=4]

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 An automobile manufacturing company producing electric vehicles is facing the following problems - [3+3+4=10]
- Frequent stockouts of battery components
 - Excess inventory of nuts and bolts
 - High inventory carrying cost
 - Poor coordination between purchase and production departments
 - Warehouse space shortage
- Company data for battery component -
- Annual demand = 12,000 units
 - Ordering cost = ₹ 1,000 per order
 - Carrying cost = ₹ 20 per unit per year
 - Lead time = 10 days
 - Daily demand = 40 units
- (a) Calculate EOQ and Reorder Level.
- (b) Interpret the results and suggest inventory control techniques.
- (c) Design a concept line diagram model for the innovative process of the inventory control system for the company.
- Q.2 An IT consulting company expanding into AI and Data Analytics projects is facing HR problems: [2+4+4=10]
- Employees unclear about roles
 - High employee turnover
 - Poor performance appraisal
 - Skill mismatch
 - Training not aligned with job roles

The HR department wants to redesign the HR system.

- (a) Analyse HR problems in the company, 4 points only
- (b) Design a line diagram-based process model of HRD functions related to the above problems mitigation for the company.
- (c) A training program costing ₹ 5,00,000 improved productivity from 80 units/day to 100 units/day. Contribution per unit = ₹ 50. Calculate the payback period.

- Q.3 A manufacturing company is planning an expansion requiring ₹ 10 Crore. Two financing options are available -

[6+4=10]

Option	Debt	Equity
A	70%	30%
B	40%	60%

Interest rate = 10%, Expected EBIT = ₹ 3 Crore, Tax rate = 30%

- (a) Calculate EPS under both options.
- (b) Interpret and recommend the best capital structure.

- Q.4 An IT company is planning a new project requiring 24,000 man-hours per year. Each employee works 2,000 hours per year. Current employees = 8. Recruitment cost per employee = ₹ 50,000

[3+3+4=10]

Training cost per employee = ₹ 20,000

- (a) Calculate the number of employees required.
- (b) Calculate the number of employees to be recruited.
- (c) Interpret and recommend HR planning strategy.

- Q.5 An IT services company has recently expanded its operations and started handling multiple software development projects for international clients. However, the company is facing several HR-related problems:

[5+5=10]

- Employees are unclear about their roles and responsibilities.
- Some employees are overloaded with work while others are underutilised.
- Recruitment is not effective and many newly hired employees are not suitable for the job.
- Performance appraisal is not fair because job standards are not defined.
- Training programs are not aligned with job requirements.

The HR Manager has suggested conducting a job analysis for all major positions in the company.

- (a) Explain how job analysis will help the company solve these problems.
- (b) Describe the steps involved in Job Analysis.



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Roll No. _____

Total No. of Pages: 4

8E1922

B. Tech. VIII-Sem. (Main/Back) Exam. April-2026

Mechanical Engineering

8ME5-12 Supply and Operations Management

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

PART – A

[10×2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 Define Operations Management.

Q.2 What is productivity in operations?

Q.3 State two components of demand forecasting.

Q.4 What is process selection?

Q.5 Define capacity planning.

- Q.6 What is facility location decision?
- Q.7 Define aggregate planning.
- Q.8 What is MRP?
- Q.9 Define just-in time.
- Q.10 What is the Bullwhip Effect in SCM?

PART – B

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Using the following data, find the forecast for next period using exponential smoothing ($\alpha = 0.3$): Forecast for previous period = 500 units, actual demand = 550 units.
- Q.2 Differentiate between time series forecasting and associative forecasting with suitable examples.
- Q.3 A firm produces 400 units in 8 hours. Standard output is 60 units/hour. Calculate efficiency and comment on performance.
- Q.4 Explain the steps involved in capacity planning and discuss factors affecting capacity decisions.
- Q.5 Compare product layout and process layout with respect to flexibility, cost and application.
- Q.6 Explain priority rules used in job sequencing and their impact on production efficiency.
- Q.7 Analyze the causes and effects of the Bullwhip Effect in supply chain management and suggest remedies.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 A manufacturing company must choose between two capacity alternatives:

Option	Fixed Cost (₹)	Variable Cost (₹/unit)
A	2,00,000	20
B	3,50,000	15

Selling price = ₹ 30 per unit.

Estimated demand ranges between 20,000 and 50,000 units.

- (a) Calculate break-even point for both options.
- (b) Determine the better option at output level of 25,000 units.
- (c) Interpret results for capacity planning decision.

Q.2 Actual demand for last 5 months: 200, 220, 210, 230, 250 units.

- (a) Calculate 3-period moving average forecast.
- (b) Compute mean absolute deviation.
- (c) Comment on forecast accuracy.

Q.3 Explain different facility layouts (product, process, fixed position, cellular) and evaluate which layout is suitable for an automobile manufacturing plant with justification.

Q.4 Discuss aggregate planning strategies (chase, level, mixed) and explain how MRP supports production planning and capacity requirements. Include role of ERP systems.

Q.5 Explain lean operations and JIT philosophy. Discuss how JIT improves efficiency and how supply chain management integrates logistics, purchasing and supplier management for competitive advantage.

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8E1914

Roll No. _____

Total No. of Pages: 4**8E1914****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Electrical Engineering****8EE4-11 HVDC Transmission System****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:*

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL _____2. NIL _____**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Differentiate between point-to-point and back-to-back HVDC systems.
- Q.2 Why is HVDC preferred for submarine cable transmission?
- Q.3 Differentiate between two-level and three-level VSC.
- Q.4 What is the function of Phase Locked Loop (PLL)?
- Q.5 Define the role of ground electrodes.

- Q.6 Differentiate between synchronous and asynchronous HVDC links.
- Q.7 What are the advantages of VSC-based MTDC systems?
- Q.8 Why does elimination of skin effect in DC not always guarantee lower losses?
- Q.9 If firing angle is increased beyond a limit, why does a converter start behaving like an inverter?
- Q.10 Corona exists in AC lines - why is its behavior different in DC lines?

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Discuss the limitations of AC transmission that led to the development of HVDC systems.
- Q.2 Explain the working of a six-pulse converter with waveform description.
- Q.3 If extinction angle reduces from 20° to 10° , explain numerically how inverter margin is affected (assume simple proportional relation).
- Q.4 Discuss the challenges involved in DC fault interruption.
- Q.5 Explain the working principle of Modular Multilevel Converter (MMC).
- Q.6 A 6-pulse converter draws AC current of 500 A. Calculate approximate DC current assuming ideal conditions.
- Q.7 Explain how VSC controls both active and reactive power independently.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 A transmission system requires black-start capability and operation in weak grids. Analyze whether LCC or VSC is more suitable and justify your choice.
- Q.2 Derive and explain the relationship between firing angle, extinction angle, and DC voltage, and discuss practical limits.
- Q.3 Discuss the role of smoothing reactors, filters and reactive power sources in improving HVDC system performance.
- Q.4 An HVAC system losses 12% power, while HVDC losses 7% for same transmission. If power sent = 1000 MW:
- (i) Calculate received power in both cases.
 - (ii) Justify HVDC preference quantitatively.
- Q.5 An HVDC system has: DC voltage = 600 kV, Current = 2.5 kA, Line resistance = 15Ω , find: (i) power sent, (ii) line loss, (iii) receiving end power, (iv) efficiency.
- Comment on impact of increasing voltage on efficiency.
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DO NOT WRITE ANYTHING HERE



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8E1911

Roll No. _____

Total No. of Pages: 2**8E1911****B. Tech. VIII-Sem. (Main/Back) Exam. April-2026****Electronics & Communication Engineering****8EC5-11 Artificial Intelligence And Expert Systems****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:**Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.**Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.**Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Define Artificial Intelligence.
- Q.2 What is a state space in AI?
- Q.3 What is informed search?
- Q.4 What are classification based problems?
- Q.5 What is a game tree?
- Q.6 What is resolution in logic?
- Q.7 What is a frame in knowledge representation?

[260]

- Q.8 What is a rule-based system?
Q.9 Mention two real-time application based on AI.
Q.10 Define decision tree.

PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 Explain the concept of intelligent agents with suitable examples.
Q.2 Compare uninformed and informed search techniques with examples.
Q.3 Describe various state space search methods in detail.
Q.4 Explain the working of heuristic search algorithms.
Q.5 Discuss the formulation and solution of Constraint Satisfaction Problems.
Q.6 Describe propositional logic and its inference mechanisms.
Q.7 Explain First Order Logic and how reasoning is performed using it.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

- Q.1 Discuss resolution in First Order Predicate Logic with example.
Q.2 Compare semantic networks and frames as knowledge representation techniques.
Q.3 Describe the architecture and working of expert systems.
Q.4 Describe neural networks and probabilistic learning with applications in NLP.
Q.5 Explain different learning methods in AI including rule induction and decision trees.
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