Code No. D-3762/CBCS

FACULTY OF ENGINEERING

B.E. (CSE) VII - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Data Mining

Time: 3 hours **Max. Marks: 70**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. List the issues to be addressed in Data Mining.
2. Distinguish KDD and Data Mining.
3. Differentiate between classification and clustering.
4. Define multi level association rule.
5. Define Apriori Principal.
6. List the methods to evaluate the performance of a classifier.
7. Define cluster analysis? List few requirements for cluster analysis.
8. What is Grid based clustering?
9. What is Web Mining?
10. What is Invisible Data Mining?

PART – B

Note: Answer any five questions **(5 x 10 = 50 Marks)**

11. a) What is an Attribute? Explain different types of attributes.
    b) Explain briefly about measuring data similarity and dissimilarity.

12. Write and explain Apriori algorithm to find all frequent item sets and strong association rules for the following database, where min_sup=60% and min_conf=80%.

Tid	Items
T100	{K, A, D, B}
T200	{D, A, C, E, B}
T300	{C, A, B, E}
T400	{B, A, D}

13. a) Explain about support vector machine.
    b) Explain in detail Bayesian Classifier.

14. Explain DBSCAN Algorithm with an example.

15. List and explain various Data Mining Applications.

16. a) Explain about tree pruning with example.
    b) Explain the construction of FP-tree with example.

17. a) Discuss various issues in data mining.
    b) Explain cluster evaluation methods.

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Code No. D-3766/CBCS

FACULTY OF ENGINEERING

B.E. (IT) VII - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Network Security & Cryptography

Time: 3 Hours **Max. Marks: 70**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1 Write the difference between passive and active attacks.
2 What are different substitution techniques?
3 What is steganography?
4 List the block cipher principles.
5 Perform encryption for the plain text M=88 using RSA algorithm p=17, q=11 and the public component e=7.
6 Mention the significance of a signature function in Digital Signature Standard approach (DSS).
7 List any two applications of X.509 certificates.
8 What is the difference between TLS and SSL security?
9 Differentiate transport and tunnel mode in IPSec.
10 Draw the ESP Packet format.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 (a) Explain the principles of security.
(b) Discuss Transposition techniques.

12 (a) Explain block cipher algorithm modes.
(b) Explain Diffie-Hellman Key exchange. Find the secret key shared between user A and user B using Diffie-Hellman Algorithm for the following:
Q=353, α (primitive root) =3, X_A = 45, X_B = 50.

13 (a) Explain RSA algorithm with an example.
(b) Explain Blow Fish Algorithm.

14 (a) Illustrate SHA-512 Algorithm in detail.
(b) Discuss the steps involved in HMAC algorithm.

15 Explain briefly about the architecture and certification mechanism in X.509.

16 Discuss the following in detail:
(a) Transport Layer Security
(b) IEEE 802.1 li Wireless LAN Security.

17 (a) Explain in detail about S/MIME.
(b) Illustrate how PGP encryption is implemented through a suitable diagram.

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Code No. D-2296/AICTE

FACULTY OF ENGINEEERING

BE (MECH) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – IV
Additive Manufacturing Technology

Time: 3 Hours **Max. Marks: 70**

(Missing data, if any may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1. Define prototype in the context of modern product development?
2. What does input refers to in additive manufacturing?
3. What is photopolymerization?
4. Why FDM is a slow process?
5. Which type of laser is used in selective laser sintering?
6. Sketch Laser Engineered Net Shaping process.
7. Name some other translators used in place of STL.
8. What is the efficiency of the detection routine?
9. Explain the application rapid prototyping in engineering analysis model.
10. List the applications of additive manufacturing technology in sport industry.

PART - B

Note: Answers any five questions. **(5 x 10 = 50 Marks)**

11 (a) Briefly discuss the historical development of Rapid Prototyping.
(b) Explain RP process chain with neat sketch.

12 Describe the working principle, advantages and disadvantages of SLA process with a neat diagram.

13 (a) Discuss the working principle of selective laser sintering and list out any four applications.
(b) With a neat sketch describe Direct Metal Laser Sintering(DMLS).

14 (a) What are the features of RP software and explain briefly solid view, view expert, 3D view.
(b) Explain invalid tessellated models with neat sketches.

15 (a) Explain briefly the applications of the RP in jewel industry and coin making.
(b) With a case study explain the applications of RP in automotive industry.

16.(a) Describe the principle of fused deposition modeling and list out any two applications.
(b) Explain the working principle of laminated object manufacturing and list out any four advantages

17 Explain with an example / case study. Discuss the application of RP in following industries
(i) Aerospace industry.
(ii) Medical application.

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Code No. D-2297/AICTE

FACULTY OF ENGINEEERING

B.E. (MECH/PROD/AE) VII - Semester (AICTE) (Main) Examination,
March / April 2022
Subject: Professional Elective – IV
Robotics Engineering

Time: 3 Hours **Max marks: 70**

(Missing data, if any may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1 Define the following words a) Degrees of freedom of a robot b) Work space of a robot
2 Mention the specifications of a manipulator used in spray painting of Automobiles.
3 What is geometric interpretation of rotation matrix?
4 Compute the homogenous transformation matrix for the following motions:
(a) rotation about z axis by 30° (b) followed by rotation about current y-axis by 60° (c) followed by translation along current x-axis by 5 units.
5 Differentiate between the Lagrange-Euler and Newton-Euler form of dynamic analysis of robot manipulator.
6 What is meant by singularities of a manipulator and explain the effect of singularity on the kinematic and dynamic control of a manipulator.
7 What is interpolation in Trajectory planning?
8 Compare PID and PD control systems performances.
9 Explain any one type of Proximity sensor with a neat sketch.
10 Explain the one boundary descriptors in robot vision.

PART - B

Note: Answers any five questions. **(5 x 10 = 50 Marks)**

11 (a) What is SCARA robot configuration and explain its applications?
(b) Explain the robotic applications in material handling and inspection.

12 Describe DH convention used in kinematic analysis of robot manipulators and derive the expression for the homogenous transformation matrix relating two frames on adjacent links.

13 Derive the dynamical equations of a 2 DOF RR type of planar manipulator, consider the masses to be lumped at the end of the links.

14 Explain PD control system with block diagram and compare PID and PD control systems performances.

15 (a) Explain the applications of robot vision.
(b) With a neat sketch explain any two proximity sensors.

16 Write notes on the following:
(a) Drives used in robots
(b) Types of singularities

17 Write short notes on the following:
(a) Process of Image analysis in Robotic vision
(b) D-H convention
(c) Laws of robotics

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Code No.D-2298/AICTE

FACULTY OF ENGINEEERING

B.E. (MECH) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – IV
COMPUTATIONAL FLUID DYNAMICS

Time: 3 Hours **Max marks: 70**

(Missing data, if any may be suitably assumed)

PART – A

Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1. State the difference between Finite element and finite difference methods of Numerical methods.
2. Differentiate structured and un-structured grid.
3. Steady state 2D heat transfer equation is _____ type of partial differential equation.
4. State the limitations of explicit method of solving PDE.
5. What is upward scheme?
6. Explain Reynold's stress.
7. State limitations of Prandtl mixing length theory.
8. What is simple algorithm?
9. Differentiate FVM and FDM.
10. State the type of cells used in Finite Volume method.

PART - B

Note: Answers any five questions. **(5 x 10 = 50 Marks)**

11. a) Write about law of conservation of momentum for viscous fluids.
    b) Explain turbulence models used in CFD.
12. a) State the steps involved in CFD.
    b) Obtain the finite difference equation for Laplace equation using central difference approximation.
13. a) Explain consistency and stability of finite difference scheme.
    b) What are the different types of partial differential equation? Explain with examples.
14. a) Explain explicit Lax-wendraff scheme of finite difference.
    b) Explain Lax-equilance theorem.
15. a) State salient features of ADI scheme.
    b) State different methods used in FDM.
16. a) Explain the various grid or meshes used with their limitations.
    b) Differentiate Cell vertex method and cell Center method of finite volume method.
17. Write short notes on
    a) Prandtl mixing length theory
    b) Crank Nicholson scheme

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Code No. D-2304/AICTE

FACULTY OF ENGINEERING

B.E. (PROD) VII - Semester (AICTE) (Main) Examination, March / April 2022

Subject: Professional Elective – IV
Metal Forming Technology

Time: 3 Hours **Max. Marks: 70**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1 What is plasticity? Explain.
2 Distinguish compressive and progressive die.
3 What is the shunt height of a die?
4 What are stretch forming and bending operations? Explain.
5 List out defects in drawing.
6 Distinguish between redrawing and reverse drawing.
7 What is cutting off and parting operation in sheet metal forming?
8 What do you mean by powder rolling? Explain.
9 What is Hot indirect Extrusion?
10 Explain lubrication in wire drawing.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 (a) Discuss the vonmise criteria and tresca criteria of yielding materials.
(b) What are the specific merits of cold working over hot working processes?

12 (a) Discuss the methods of reducing cutting forces in blanking and piercing operations.
(b) Discuss the design parameters in drawing.

13 (a) Explain the differences between direct and indirect extrusion processes.
(b) How lubrication is done in hot extrusion?

14 (a) Discuss about hot isostatic pressing with neat sketch.
(b) What are the advantages of press forging over press forging?

15 (a) How the cold working differs with hot working in terms of process and products?
(b) Sketch and explain the rolling equipment and rolling mills.

16 Write short notes on any of two following:
(a) Coining and embossing
(b) Hydrostatic extrusion
(c) Types of presses
(d) Combination die.

17 Write short notes on the following:
(a) Isothermal forging
(b) Stretch forming.

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Code No. D-2311/AICTE

FACULTY OF ENGINEERING

B. E. (A.E) VII – Semester (AICTE) (Main) Examination, March / April 2022

Subject: Vehicle Body Engineering

Time: 3 hours **Max. Marks: 70**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(10 x 2 = 20 Marks)**

1. Draw a car body and indicate its main parts.
2. What are visibility regulations?
3. Define the term yawing.
4. What are different flow visualization techniques?
5. List out the loads acting on the vehicle frames.
6. Write short notes on symmetric and asymmetric loads.
7. What is safety sandwich construction?
8. Define – active and passive safety system.
9. State the advantages of GRP.
10. List out the various types of noise develops in the vehicle.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 Explain the integral type of bus body construction with a neat sketch.

12 Explain in detail the influence of engine, entrance and exit location in bus body design with relevant sketches.

13 (a) Explain the constructional and operational details of wind tunnel.

(b) How do you optimize the front end of vehicle for minimum drag?

14 (a) Explain different types of car doors and window regulators.

(b) Explain body space nomenclature.

15 (a) List out the major components of dash board.

(b) Write short notes on ingress and egress.

16 Describe the techniques used to enhance the visibility of the driver of a passenger car?

17 (a) Discuss in detail selection of paint.

(b) Explain the various anti corrosion methods.

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Code No: 3189/NON-CBCS

FACULTY OF ENGINEERING

BE IV / IV (Civil) I - Semester (NON-CBCS) (Backlog) Examination,
March / April 2022
Subject: Water Resources Engineering - II

Time: 3 Hours **Max. Marks: 75**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(25 Marks)**

1. Define live and dead storage in a reservoir
2. Compute the limiting height of a concrete dam when permissible stress is 2400 kN/m^2 with G=2.20?
3. State few functions of Galleries in Dam.
4. Write about Uplift pressure in Gravity Dam
5. Define phreatic line
6. List out different types of Gates adopted for spillways
7. Sketch a section of stilling Basin
8. Differentiate between mass curve and demand curve
9. Mention few Electrical equipment that are provided in hydro power plants
10. What is the function of trash racks?

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11. a) Describe about the various criterion for selection of site for a dam in detail.
    b) Discuss in detail how Reservoir sedimentation control process is carried out.

12. a) Explain the Elementary profile of a gravity dam.
    b) A gravity dam has the following dimensions:
    Height of the dam = 100m
    Free broad = 1m
    Slope of upstream face – 0.5:1
    Take $\alpha = 0.1$
    Determine i) hydrodynamic earthquake pressure ii) its moment at a joint below 50m from the maximum water surface.

13. a) What are the different forces acting on Gravity Dam? Discuss in detail about uplift pressure.
    b) Describe in brief the causes of failure of earth dams.

14. a) Define spillway. Discuss in detail about Syphon spillway with neat sketch
    b) What is energy dissipater. List out their functions.

..2

15. a) Calculate the discharge over an Ogee spillway with coefficient of discharge, C = 2.4 at a head of 2.5m. The length of the spillway is 120m, the spillway crust is 10m above the bottom of the approach channel having the same width as that of spillway for the following criterion a) By neglecting the approach velocity and b) By considering approach velocity.
    b) Differentiate between Homogenous and zoned embankment dams.

16. a) Draw a neat sketch of power house. Discuss in brief about functions of its components.

    b) Discuss briefly various functions of surge tank

17. Write notes on any two of the following
    a) Hydraulic jump
    b) Low and High Gravity dams
    c) Types of filters
    d) Penstock

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Code No. D-3219/NON-CBCS

FACULTY OF ENGINEERING

B.E. IV/IV (ECE) I - Semester (NON-CBCS) (Backlog) Examination,
March / April 2022

Subject: Industrial Administration and Financial Management

Time: 3 Hours **Max. Marks: 75**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(25 Marks)**

1 List out various types of organization structures.
2 List out the merits and demerits of product layout.
3 State the factors considered in deciding performance rating factor.
4 Differentiate between job evaluation and performance appraisal.
5 Where do you use assignment problem?
6 State the various elements of cost.
7 Define method study.
8 What are the different kinds of inspection?
9 Define linear programming.
10 What is breakeven point?

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11 (a) What are the various types of Business organizations? Explain any one of them in detail.
(a) Explain about functions of Management.

12 (a) Discuss in detail about the concept and significant aspects of statistical quality control.
(b) Explain in detail about sampling plans.

13 (a) Derive the equation for EOQ for ideal condition of material flow.
(b) Explain two types of performance rating of worker.

14 Draw network diagram and find the critical path and duration of the project.

Activity	1-2	1-3	2-3	2-4	3-4	3-5	4-6	5-6
Duration (in days)	6	4	7	3	5	4	6	3

15 (a) Solve the material transportation problem between sources to destinations for minimum cost.

	E	F	G	H
A	3	7	1	4
B	7	4	3	8
C	4	5	7	9
D	3	3	1	2

Sources

(b) Explain the working of MRP of material planning.

..2

16 (a) Explain any two types of overheads in financial planning.
(b) Explain two methods of depreciation.

17 Write short notes on:
(a) Principles of motion economy
(b) Quality circles, salient features and advantages.

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FACULTY OF ENGINEERING

B.E. IV / IV (MECH/PROD) I - Semester (NON-CBCS) (Backlog) Examination, March / April 2022

Subject: Finite Element Analysis

Time: 3 Hours **Max. Marks: 75**

(Missing data, if any, may be suitably assumed)

PART – A

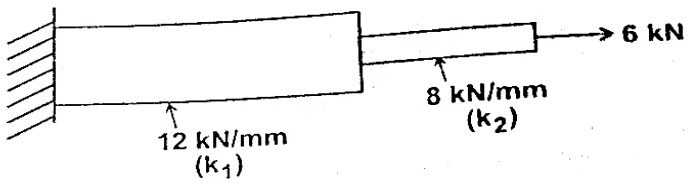
Note: Answer all questions. **(25 Marks)**

1. State the significance of FEA in engineering field.
2. What is Poisson's ratio?
3. What is minimum potential energy equation?
4. What is meant by shape functions?
5. Differentiate between local and global stiffness matrices.
6. Write short notes on loading of beams.
7. Specify the applications of a frame structure.
8. What do you understand by the term axi-symmetric analysis?
9. What is dynamic analysis?
10. Define steady state heat transfer.

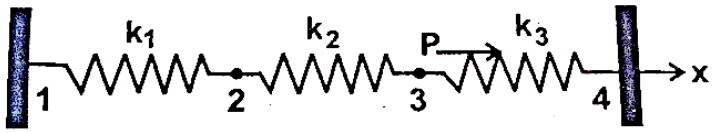
PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

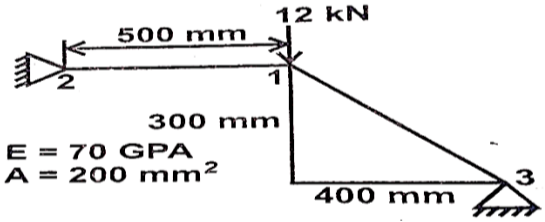
11. Calculate the nodal displacements and forces for the bar loaded as shown below.



12. For a spring system shown below, calculate the global stiffness matrix, displacement of nodes 2 and 3, the reaction forces at nodes 1 and 4. Also calculate the force in the spring 2. Assume $k_1 = k_2 = 100$N/m, $k_3 = 200$ N/m and $U_1 = U_4 = 0$ and P = 500N.



13. For a two bar truss shown below, determine the displacement of nodes and stresses in each element. Take E= 70GPa and A =200mm^2



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14. Describe the analsing procedure and formulation of FEA equations for a beam.
15. Determine the shape functions for a triangular element at a point P (6,9).The nodal coordinates are (4,8), (10, 5) and (8, 12).
16. Write the heat transfer characteristics for a composite wall.
17. What are the constituents of thermal stiffness matrix and thermal force vectors?

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Code No.D-3265/NON-CBCS

FACULTY OF ENGINEERING

B.E. IV/IV (CSE/IT) I - Semester (NON-CBCS) (Backlog) Examination, March /April 2022

Subject: Information Security

Time: 3 Hours **Max. Marks: 75**

(Missing data, if any, may be suitably assumed)

PART – A

Note: Answer all questions. **(25 Marks)**

1. What are the six components of an information system?
2. Distinguish between passive and active security attacks.
3. Name the four risk control strategies
4. State the impact of cultural differences in ethics of information security.
5. What are the different firewall processing modes?
6. Explain about security blueprint.
7. What is Steganography?
8. Distinguish between symmetric and asymmetric encryption.
9. Justify the need for internal control strategies
10. List the services provided by SSL.

PART – B

Note: Answer any five questions. **(5 x 10 = 50 Marks)**

11. (a) Discuss about the security systems development life cycle.
    (b) Outline any four threat groups.

12. (a) What are measures required for controlling risk?
    (b) What are the ethical components in information security?

13. (a) Explain Security Design Architecture.
    (b) Discuss how VPN's are used in protection of remote connections.

14. (a) Explain DES Encryption and Decryption Algorithms with neat diagram.
    (b) Describe the steps involved in the RSA encryption algorithm

15. (a) Explain technical and non-technical aspects of implementation.
    (b) Write about various information security positions.

16. (a) Outline any five attacks
    (b) Discuss about the Risk Assessment

17. Write short notes on the following:
    (a) Digital signatures
    (b) Vulnerabilities
    (c) Honeypots

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