Code No. D-2193/AICTE

FACULTY OF ENGINEERING

B.E. (MECH) VI-Sem. (AICTE) (Backlog) Examination, March / April 2022
Subject: Design for Manufacture
Professional Elective – II

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 do you mean by geometrical tolerances?
2 Name the suitable materials for stamping processes.
3 Explain press bending process.
4 Explain metal extrusion process.
5 Explain the process of improvement of weld strength.
6 Name the special forming methods.
7 Explain about rotational moulded parts.
8 Explain the role of GT in automation.
9 What do you mean by retention of assembly parts?
10 How electro chemical process is applied to advanced machine parts?

PART – B

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

11 a) Explain the general design principles of manufacturability.
b) Discuss on mechanical and strength parameters of DFM.

12 a) Mention the design recommendations of a metal extrusion process with sketches.
b) Mention the design recommendations of a metal stamping process with sketches.

13 a) Explain the design recommendations of a machined round holes with sketches?
b) What are the design recommendations for forging electroforming parts?

14 a) Explain the design recommendations of a injection moulded parts with sketches.
b) Explain the design recommendations of a planned shaped with sketches.

15 a) Discuss in detail about investment casting process with neat sketch.
b) Explain the computer aided manufacture parts in detail with sketches.

16 a) Explain the press fitted connection parts in detail with sketches.
b) Explain the heat treated parts in detail with sketches.

17 Write about:
a) Four slide parts b) Assembly design of gear box c) Low cost automation.

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Code No. D-2195/AICTE

FACULTY OF ENGINEERING

B.E. (PROD) VI - Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Entrepreneurship Development
Professional Elective - II

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 are the characteristics of entrepreneurship?
2 What is an enterprise?
3 Explain briefly the emergence of first generation entrepreneurs.
4 What are the salient features of SSI?
5 What do you mean by choice of technology?
6 What is Techno-Economic analysis?
7 Discuss the sources of project financing in India.
8 Differentiate between CPM and PERT?
9 Discuss the objectives of a project management.
10 Discuss the various approaches of time management.

PART – B

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

11 a) Explain the role of Indian Industrial Environment.
b) Explain any two forms of enterprises in detail?

12 a) Explain briefly the linkage among small, medium and heavy industries.
b) Explain the importance and the various problems associate with SSI in India?

13 “Entrepreneurs are made or born”? Give your views. Explain and outline the development of an entrepreneur.

14 What is project formulation? Explain the following terms in project formulation– financial analysis and profitability analysis in detail.

15 a) Explain the various steps involved in analysis of market?
b) Explain in brief various elements to be considered in project formulation.

16 a) Define network analysis. Discuss the terminology used in networks?
b) Explain in detail about Human aspects in project management.

17 Write short notes on:
a) Leadership concept.
b) Assessment of tax burden.
c) Personality attributes and Urgency addition factors of the entrepreneur.

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Code No: D-2201/AICTE

FACULTY OF ENGINEERING

BE (AE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Finite Element Methods
Professional Elective - II

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

Missing data, if any may be suitably assumed

PART – A

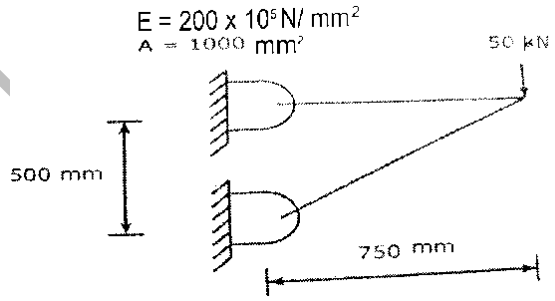
Note: **Answer all questions**. **(10 x 2 = 20 Marks)**

1. What are the advantages of local coordinate system over global coordinate system?
2. Define the terms degree of freedom, boundary conditions and nodes.
3. What are the different types of loads acting on a body?
4. What is the concept of minimum potential energy?
5. What do you understand by a compound truss?
6. Write the stiffness matrix for a truss element.
7. Define shear stress and bending moment.
8. Differentiate between a beam and column.
9. Briefly describe the finite element modeling for axi-symmetric solid.
10. Define steady state heat transfer.

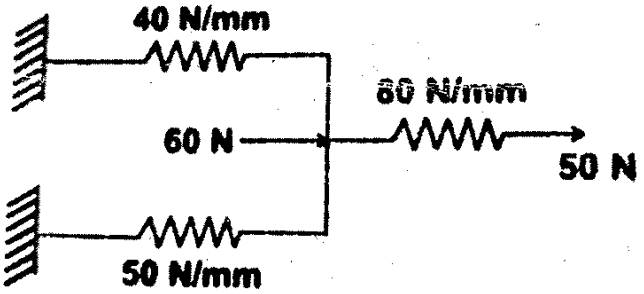
PART - B

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

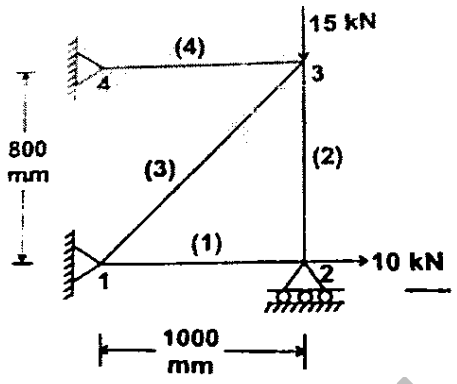
11. Determine the stiffness matrix, stresses and reactions in the truss structure shown below. Take E=200 x 10^5N/mm^2. A= 1000mm^2, p=50kN



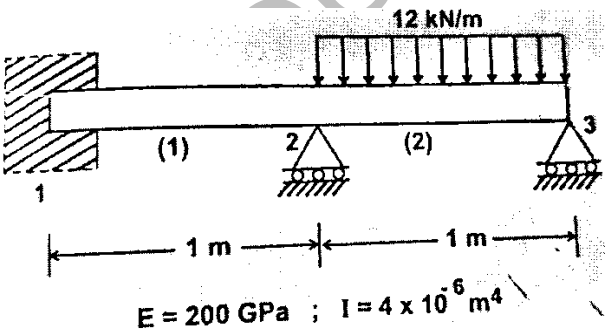
12 Determine the displacement at the nodes of the spring system shown below.



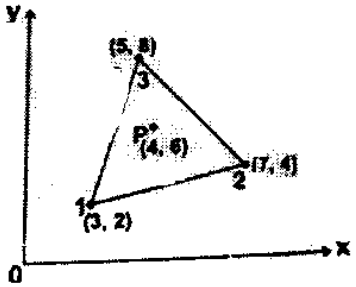
13 For a four bar truss show below. Find the element stiffness matrices and arrange the global stiffness matrix accordingly. Take E=200GPa and A=500mm2.



14 For the beam loaded as shown below, determine the global finite element equation nodal bending moments and the slopes θ_2 and θ_3



15 Evaluate the shape functions N1, N2 and N3 at the interior point P for the triangular element shown in the figure below.



16 Write the heat transfer characteristics of a composite wall

17 (i) What are the different modes of heat transfer? Explain.

(ii) What is meant by two-dimensional scalar variable problem?

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Code No. D-2202/AICTE

FACULTY OF ENGINEERING

B.E. (AE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Autotronics
Professional Elective - II

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 are the different types of actuators used in automobile?
2 What are the applications of transistor in automobile?
3 What are the Factors to be considered for designing an Ignition System?
4 What is dwell angle?
5 List out the components Power-train Control Module.
6 What is Thermal after-burning?
7 List out ABS components.
8 What are the Benefits of active suspension system?
9 Write note on Engine immobilizer.
10 Write note on adaptive noise control.

PART – B

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

11 a) What is need for electronics in automotive controls system explain in detail?
b) List and explain advantages of electronic control system in automobiles.

12 a) Explain MPFI with help of neat sketch.
b) Draw the circuit of a programmed ignition system and clearly label each part.

13 Explain combined ignition and fuel management system with help of block diagram.

14 a) Explain Active suspension system with help block diagram.
b) Explain Traction control system with help of block diagram.

15 Explain working of Air-bag and seat belt pre-tensioner systems.

16 a) Discuss closed loop lambda control system for emission control.
b) Explain the operation of a gasoline direct injection (GDI) system.

17 Write short note on:
a) Electromagnetic interference
b) OBD-II
c) Security system.

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Code No. D-2210/AICTE

FACULTY OF ENGINEERING

B.E. (CSE) VI Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Data Mining

Professional Elective – V

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 Data Mining.
2 Compare supervised and unsupervised learning techniques.
3 How to compute confidence for an association rule $X \rightarrow Y$?
4 What are frequent patterns? Give an example.
5 Define classifier accuracy.
6 List the characteristics of k-nearest neighbour algorithm.
7 What are the objectives of clustering?
8 What are the weaknesses of hierarchical clustering?
9 List the Complex data types for Data Mining.
10 Classify the major components to characterize time-series data.

PART – B

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

11 a) Describe the various phases in knowledge discovery process with a neat diagram.

b) Suppose that the values for a given set of data are grouped into intervals. The intervals and corresponding frequencies are as follows:

Age	Frequency
1-5	200
6-15	450
16-20	300
21-50	1500
51-80	700
81-110	44

Compute an approximate median value for the data.

12 a) How are association rules generated from frequent item sets?

b) Find the frequent item sets and strong association rules for the following transactional Data base table using Apriori algorithm. Consider the thresholds as support = 30% and confidence = 40%.

TID	ITEM IDs
1	i1,i2,i3,i5
2	i2,i5,i7,i9
3	i1,i3,i5,i7
4	i2,i4,i6,i8
5	i1,i2,i3,i4
6	i2,i3,i4,i5
7	i3,i4,i5,i6
8	i4,i5,i6,i7
9	i5,i6,i7,i8,i9
10	i9,i1,i2,i5
11	i8,i2,i9,i7
12	i5,i6,i3,i2

13 a) State Bayes theorem. How can it be applied for data classification?
b) With example explain Bayesian belief network.

14 a) Compare k-means with k-medoids algorithms for clustering
b) How to evaluate clustering algorithms?

15 a) Discuss about the various Data Mining applications
b) Describe some of the trends in data mining.

16 a) What is the significance of CF (Clustering Feature) in BIRCH Algorithm?
b) How will you solve a classification problem using Bayesian Belief Networks?

17 a) Differentiate between data retrieval and data mining.
b) How can we compute the dissimilarity between two binary objects?

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Code No. D-2212/AICTE

FACULTY OF ENGINEERING

B.E. (CSE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Internet of Things

Professional Elective – V

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 characteristic of IoT.
2 List any three IoT enabling technologies.
3 What is an Actuator, give two examples?
4 What is done in processing layer of IoT?
5 Give a short note on assigning values to variables.
6 Write a short note on Python escape sequences.
7 Name any four services offered by Raspberry Pi.
8 Two reasons why Linux OS is useful in IoT.
9 Name any two Languages used with arduino.
10 Which function run infinitely on every startup till the power is supplied to the Arduino?

PART – B

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

11 a) Explain logical design of IoT.
b) Explain any two IoT enabling technologies.

12 a) What is the use of middleware in IoT?
b) What are actuators, what are the different types of actuators?

13 a) List the components needed and write the program for controlling a Relay using Arduino.
b) Write about ‘pinMode’ function.

14 a) What is the purpose of else clause for a loop?
b) Write a Python program that prints multiplication table of given number.

15 a) List the components needed and write the program for interfacing a Light sensor using Raspberry Pi.
b) Write about Beaglebone black.

16 a) Write about Amazon ECZ.
b) Design an IOT system for Air Pollution monitoring.

17 a) Write about the different components present on the Arduino board.
b) Write about different communication models of IoT

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Code No. D-2225/AICTE

FACULTY OF ENGINEERING

B.E. (IT) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Adhoc and Sensor Networks
Professional Elective - IV

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 design challenges of Ad hoc Networks.
2. Explain the concept of flooding.
3. What are wireless sensor networks?
4. What is fading in wireless transmission? What are its ill effects?
5. Give the need of medium access control.
6. What are Reactive routing protocols?
7. What are the basic components of Sensor Network?
8. State the Design goals of QOS routing
9. List various potential attacks to Ad hoc networks.
10. Briefly write about Ad hoc Transport Protocol.

PART – B

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

11. (a) Explain about Radio Technology Primer.
    (b) Discuss the fundamentals of MAC protocols for WSN.
12. Compare DSR and AODV routing protocol of Ad hoc networks.
13. Discuss the issues in the design and deployment of Ad hoc Network.
14. Discuss various techniques of optimizations of on-Demand routing protocols
15. (a) Explain any one proactive routing protocol.
    (b) Discuss any one reactive routing protocol.
16. What is location based routing? Explain and compare the routing procedures of LAR and DREAM protocols.
17. Write notes on
    (a) Cross-layer Design for data accessibility.
    (b) INSIGNIA.

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Code No. D-2227/AICTE

FACULTY OF ENGINEERING

B.E. (IT) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Information Storage and Management
Professional Elective - IV

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 key management activities of a data center.
2 Write the features of Flash Drives.
3 Compare Software and Hardware RAID.
4 Define Cache vaulting used for Cache data protection.
5 Draw the structure of FCIP protocol stack.
6 Write about the ports used in Switched Fabric.
7 Define MTBF and MTTR.
8 Write the limitations of LVM-Based replication.
9 Write the steps to secure Application Access Domain.
10 Write the benefits of Information Lifecycle Management.

PART – B

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

11 a) List and explain the key characteristics of a data center.
b) What is Disk Native Command Queuing? Illustrate Seek Time Optimization algorithm with an example.

12 a) Compare RAID levels with respect to different performance metrics.
b) Define the following cache parameters
(i). cache page size (ii). read versus write cache allocation, (iii). cache prefetch size, and (iv). read aside size

13 a) What is zoning. List the types of zoning. With an example illustrate the types of Zoning.
b) Explain the process of Object Storage on OSD.

14 a) Explain the BC planning life cycle.
b) Draw the structures of Synchronous + Asynchronous and Synchronous + Disk Buffered three-site replication.

15 a) Write the characteristics of cloud computing.
b) Explain the key storage infrastructure management activities performed in a data center.

16 a) List the parameters affecting disk drive performance and define them.
b) With a neat diagram explain the components of an Intelligent Storage System

17 a) Draw the structure of FC frame and explain the fields.
b) Write the sequence of steps involved in Backup and Restore operations.

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Code No: D-3663/CBCS

FACULTY OF ENGINEERING

B.E (Civil) VI - Semester (CBCS) (Backlog) Examination, March / April 2022

Subject: Waste Water Treatment
Professional Elective - II

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

(Missing data, if any may be suitably assumed)

PART – A

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

1 What is achieved by flocculation and elutriation in waste water treatment?

2 List the various considerations in planning treatment facilities

3 List the types of aerated lagoons

4 Describe aerobic flow through lagoons and dual powered aerated lagoons

5 What is the primary objective of a waste stabilization pond?

6 List the various factors affecting pond ecosystem

7 Compare the demerits of over land flow systems and rapid infiltration systems.

8 List the salient features of rapid infiltration systems

9 What is meant by “receiving water” in the context of waste water treatment? According to environment protection rules of 1988 what are the permissible values for suspended solids, pH, residual chlorine and mercury.

10 List the four phases involved in the design of an outfall.

PART - B

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

11. a) Describe briefly the various chemical and biological processes involved in domestic waste water treatment process.
    b) Describe with the help of neat sketches wherever necessary (i) screening and (ii) Sedimentation.

12 a) Design an aerated lagoon for the following data : waste water flow = 12400m^3/d BODs = 300mg/L, Population = 70,000, Detention period = 3d K’=0.015d^{-1} at 20^oC , y=0.5, Kd=0.07d^{-1} (BOD_5 basis) by using ideal complete mixing model.
    b) Draw a neatly labeled facultative aerated lagoon.

13 a) Discuss the mechanism of purification of a facultative stabilization pond with the help of a neat sketch.
    b) Describe in detail (steps & formulae) involved in the design of and aerobic stabilization pond.

..2

14 a) Discuss rapid infiltration systems with the help of a flow chart

b) Express daily sludge production in a waste water treatment plant as a formula along with terms used and their notation.

15 a) Explain the mathematics of mass transport for steady state reaction

b) Write briefly about outfall design.

16 a) Draw a flowchart depicting overland flow systems

b) Explain the following terms: Hydraulic Retention time, Field oxygen Transfer Efficiency, Dispersion Number, Biomass and Overflow rate.

17 a) Discuss in detail the disposal of waste water into water environment

b) List the important aspects concerned with disposal of effluents into the ocean.

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