Code No. D-2160/AICTE

FACULTY OF ENGINEERING

B. E. (Civil) VI – Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Design of Concrete Structures – I
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. Explain what are restrained and unrestrained slabs, how the restraints are provided?
2. Write a short note on Flat slabs?
3. Give the need for the Pile Foundation?
4. Differentiate between Isolated and Combine footing?
5. Mention the use of shear key in retaining wall?
6. Give any two advantages of curved beam?
7. What are the stresses for which water tanks designed?
8. State the difference in the design of base slab of water tank resting on the ground and over head water tank?
9. Why the Substitute frame method is used for multi storied buildings?
10. Define Stiffness and distribution factors?

PART – B

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

11 An interior panel of a flat slab is subjected to a superimposed load of 4.0 kN/m^2. The weight of the floor finish on the slab may be taken as 1.25 KN/m^2. The panel is supported on 550mm diameter circular columns of height 3m. Size of panel is 7.5m x 6m. Design and interior panel providing appropriate column head and drops. Adopt M_{20} concrete and Fe_{415} Steel.

12 Design a combined footing for two RCC Columns of a multi-storied residential building using the following data:

Size of the column A = 400mm x 400mm

Size of the column B = 450mm x 450mm

Axial load on column A = 650 kN

Axial load on column B = 850 kN

Spacing between the column = 5m c/c

SBC of the soil = 150 kN/m^2. Use M_{20} grade concrete and Fe_{415} grade Steel.

13 Design a counterfort retaining wall for the following data:

Height of fill retained by the wall = 9m

Surcharge angle = 10°

Density of soil = 16 kN/m^2.

Angle of internal friction = 30°

Coefficient of friction between soil and base slab = 0.50

SBC of the soil = 260 kN/m^2. Use M_{25} grade concrete and Fe_{415} grade Steel.

14 Design a circular tank having a flexible base joint for a capacity of 60,000 liters of water. The height of the tank including free board of 0.20m is 4m. Use M_{20} grade concrete and Fe_{415} grade Steel. Sketch neatly the reinforcement details. The tank is resting on the ground.

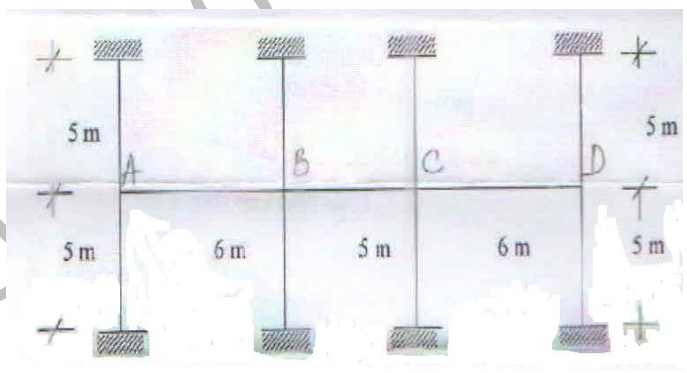
15 The Substitute frame shown in figure below has to be analyzed for maximum positive and negative moments in the beams. AB, BC and CD. Estimate the maximum moments in beams and columns. The beams are spaced at 4m intervals.

Thickness of floor = 120mm

Floor finish = 0.70 kN/m^2

Size of beams = 230 x 380 mm

Size of columns = 230 x 380 mm.



16 A square RCC column 400mm x 400mm carries a working load of 650kN axially. Design a square footing if SBC of soil is 225 kN/m^2. Use M25 grade concrete and Fe500 grade steel.

17 A circular auditorium with bottom ring beam of 6m diameter is subjected on eight columns of size 400mm x 400mm uniformly placed on the periphery of a circle. The beam is subjected to a working load of 200 kN/m. Design the beam using M_{20} grade concrete and Fe_{415} grade Steel. K_1 = 0.066, K_2 = 0.030, K_3 = 0.005.

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Code No. D-2161/AICTE

FACULTY OF ENGINEERING

B. E. (Civil) VI – Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Traffic Engineering and Management
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. Mention the need for Traffic Forecasting.
2. Discuss Travel demand functions.
3. Describe critical hour concept.
4. What are the significant uses of accident data?
5. Write short notes on traffic segregation methods.
6. Mention factors affecting LOS.
7. Explain how the points of traffic conflict are reduced by introducing one-way streets.
8. What are the causes of road accidents?
9. Explain the factors affecting level of service of a multilane highway.
10. What is Queuing theory?

PART – B

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

11 (a) Describe in detail various analytical methods of traffic forecast.

(b) Enlist concepts of traffic regulation and highway capacity.

12 (a) Explain the concept of Passenger Car Unit. List the PCU values of some vehicle types used in India.

(b) List the factors affecting Capacity and Level of service.

13 Explain various methods of collecting accident data. How the accident data is expressed?

14 (a) Explain the vehicular factors that influence road accidents.

(b) Explain how Capacity of various design elements of a signalized intersections is determined.

15 The traffic flow for a four-legged intersection is as shown in Figure 1. Given that the lost time per phase is 1.3 sec, saturation headway is 2.6 sec, amber time is 2.0 sec per phase, find the cycle length; green time. Also, draw the timing diagram. Assume critical v/c ratio as 0.7.

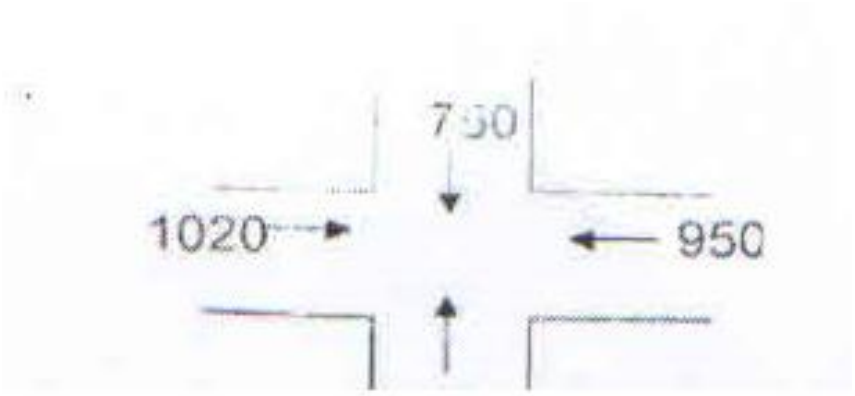

Figure 1.

16 (a) Write short notes on traffic calming measures.

(b) Describe Traffic flow theories in detail.

17 Write short notes on any two of the following:

(a) Demand relationships

(b) Design hourly volume

(c) Accident coefficients.

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Code No.D-2162/AICTE

FACULTY OF ENGINEERING

B. E. (Civil) VI – Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Sustainable Construction 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. Enlist requirements of a formwork.
2. What do you understand by modular standardization?
3. Define foundation and superstructure.
4. Enumerate applications of Precast concrete structures.
5. What is Jump form technology.
6. Draw a neat sketch of Box girder.
7. Enlist alternative cementitious materials.
8. Describe dry wall technology.
9. List the guidelines of LEED rating system.
10. Why do green buildings cost more than traditional buildings.

PART – B

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

11 (a) Write in detail about various types of formworks used in construction.

(b) Explain in detail the modular construction along with advantages and limitations.

12 (a) Write detailed notes on minimization of natural resource utilization.

(b) Discuss the limitations of various construction techniques.

13 (a) Discuss in detail construction of Suspension bridge.

(b) Write step wise procedure of precast concrete construction.

14 (a) Write about sustainable construction materials. Write in detail about recycled aggregate.

(b) How sustainable construction materials can reduce the negative environmental impacts of construction activity.

15 (a) Discuss in detail Slip form technology.

(b) How innovative construction methods have evolved into new era of construction.

16 (a) Explain the technology of green buildings through the LEED certification system.

(b) Discuss in detail a case study of recent green construction projects in India.

17 Write in short note on any two of the following:

(a) Plastering machines (b) Modular shuttering (c) green building concept.

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Code No. D-2163/AICTE

FACULTY OF ENGINEERING

B.E. (Civil) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Open Channel Flow and River Engineering
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 understand by steady and unsteady flow in the case of channels?
2 Differentiate between normal depth and critical depth in open channel flow.
3 Explain non-hydrostatic pressure distribution.
4 What are coffer dams?
5 Define sediment.
6 Write about Braided Rivers.
7 What do you mean by Dikes?
8 What is a degrading river?
9 Mention the objectives of river training works.
10 What are the social impacts of flood?

PART – B

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

11 (a) Explain in brief the various parameters responsible for the instability of rivers.
(b) Derive 1-D shallow water flow equation.

12 (a) Describe Finite volume methods for solving 1-D shallow water flow equation.
(b) Enlist various Finite difference methods. Discuss any one in detail.

13 (a) Explain in detail flood routing in large channel networks.
(b) Describe dam break flow in detail.

14 (a) Differentiate between Aggrading and degrading rivers.
(b) What do you mean by spurs? Explain different types of spurs.

15 (a) What do you understand by river morphology? Explain bifurcations in detail.
(b) Write short notes on mathematical models for aggradation.

16 (a) Classify the river training works and describe them in detail.
(b) Describe in detail measurements in rivers giving importance of each.

17 Write short notes on any two of the following:
(a) Numerical methods
(b) Local scour
(c) Gabions.

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Code No. D-2171/AICTE

FACULTY OF ENGINEERING

B.E. (EEE/EIE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Electrical Measurements and Instrumentation

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

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

PART – A

Note: Answer all questions. **(5 x 2 = 10 Marks)**

1 What is the purpose of an instrument? And how are they classified.
2 Discuss how the friction compensation and creep prevention is done in an energy meter.
3 List the advantages of potentiometer.
4 List and discuss the common sources of errors in A.C bridges and how are they eliminated.
5 Explain the need for A.C. magnetic testing.
6 What is a galvanometer? And list the various types of Galvanometers?
7 List the applications of potentiometers.
8 How are detectors classified in measurement of parameters?
9 Explain the factors affecting permeability and Hysteresis loss.
10 What is the differences between Transducer and sensor?

PART – B

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

11 (a) Explain the importance of damping mechanism in an instrument and how are they Classified?
(b) Derive an expression for the force of attraction between the plates in a parallel plate electrostatic voltmeter.

12 Explain the principle of operation of the moving iron power factor meter with a neat connection diagram.

13 (a) Explain how measurement of Resistance and power can be done using a dc Potentiometer.
(b) Explain the working of Drysdale Polar Potentiometer with a neat circuit diagram.

14 Explain Wien Bridge for measurement of frequency and derive the necessary relation.

15 Explain the procedure for measurement of flux density in a ring specimen with a neat connection diagram.

16 With the help of a neat sketch. Explain the construction and operation of a D'Arsonval galvanometer.

17 The four arms of an A.C. bridge network are as follows: Arm AB: an unknown capacitance; Arm BC: a standard capacitor C3 of 1000 pF; Arm CD: a non inductive resistor R4 of 100 Ω in parallel with a capacitor C4 of 0.01μF; Arm DA: a non – inductive resistor R2 of 1000 Ω. The A.C. supply is connected across terminals B, D and the supply frequency is 50 Hz. If the bridge is balanced with the above values, determine the components of the unknown impedance, while deriving the balanced conditions.

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Code No. D-2177/AICTE

FACULTY OF ENGINEERING

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

Subject: Electronic Measurements and Instrumentation

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 the significance of limiting error?
2 State the difference between accuracy and precision of a measurement.
3 Differentiate between active and passive transducers.
4 Explain the principle of Velocity Transducer.
5 Differentiate between sound pressure level and sound power level.
6 Classify the different types of Microphone.
7 A 3 ½ digital voltmeter has an accuracy specification of $\pm$0.5% of reading $\pm$1 digit. What is possible error in volt, when the instrument is reading 5.0 V on the voltage range?
8 What are the advantages of dual slope over ramp type DVMs?
9 Draw typical ECG waveforms and explain its significance.
10 Name three basic types of electrodes for measurement of Bio-potential.

PART – B

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

11 Explain different types of errors and give example for each.

12 (a) Explain any three classification of Transducers.
(b) Describe different modes of operation of piezo-electric transducers.

13 (a) List out the characteristics of power.
(b) List the basic requirement for the resistance wire thermometers.

14 List out various types of DVMs. Draw the block diagram for Successive approximation type DVM and explain its operation.

15 Show how Capacitive transducer can be used to monitor the thickness if an insulating sheet in motion, without making physical contact. Comment about the linearity and sensitivity of the system.

16 (a) Explain the working of Capacitive transducers.
(b) Describe different modes of operation of photo-conductive transducers.

17 Write short notes on:
(a) IEEE standards of measurements
(b) SCADA
(c) Magnetic resonance systems.

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Code No. D-2188/AICTE

FACULTY OF ENGINEERING

B.E. (MECH) VI - Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: CAD/CAM
Professional Elective – I

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 CAD and CAM.
2 Explain concatenation transformation.
3 State any four properties of Bezier curves.
4 Define synthetic curves.
5 Indicate the G codes for tool length and cutter radius compensation.
6 Classify various types of APT statements.
7 Sketch polar configuration robot
8 Describe, how do you specify a Industrial Robot?
9 Define CAPP.
10 Define is machine vision.

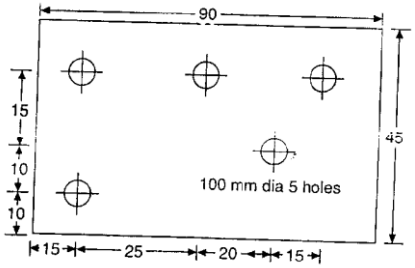
PART – B

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

11 a) Write the 3D rotation matrix equation.
b) Evaluate the new co-ordinates of the triangle A (1,1), B(2,1) and C(1,3), when it is rotated by an angle of 45^0 about the point A.

12 a) Explain B-Rep and C-Rep approach of solid modeling with examples.
b) Determine seven points on the Bezier curve Four vertices of Bezier polygon are P0(1,1), P1(2,3), P2(4,3) and P3(3,1).

13 Write an APT part program for the profit shown in fig.1 with cutting speed and feed rate as 500 rpm and 100 mm/min. The cutter is of 10 mm diameter and depth of the job is 15 mm. Use macro statements for drilling operation.



14 a) Explain the term DNC. Discuss types of DNC with sketch.
b) List various drives used in Robots? Describe programming methods in Robots.

15 a) Explain adaptive control. Explain ACC and ACO adaptive control system.
b) Interpret computer aided quality control. Explain the working of scanning laser beam device.

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16 a) Differentiate retrieval and generative types of CAPP.
b) Discuss about rapid prototyping. Explain FDM method with sketch.

17 a) Explain GT. Describe OPTIZ and MICLASS coding system.
b) State, what is FMS? Explain the role of AGV in FMS.

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Code No. D-2189/AICTE

FACULTY OF ENGINEERING

B.E. (MECH/PROD) VI - Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Automobile Engineering
Professional Elective – I

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 parts of a 4-stroke engine?
2 Explain the piston rings with sketches.
3 What are the functions of a spark plug?
4 What is a thermostat and what is it used for?
5 What do you understand by wheel alignment?
6 What are the qualities of a good suspension system?
7 What do you understand by Caster and Camber angle?
8 Explain the principle of a clutch.
9 What are the functions of a propeller shaft and universal coupling in an automobile?
10 What is the need of pollution control?

PART – B

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

11 a) Explain the differences between integral and semi-integral frames in automobiles.
b) Explain the working of a piston used in a 4-stroke engine.

12 Explain the working of a radiator with the help of a neat sketch.

13 a) What is the importance of maintaining tyre pressure?
b) State any five functions of a differential unit.

14 Sketch and explain the Ackerman's steering mechanism.

15 Write short notes on rack-and-pinion steering mechanism.

16 Write about the hand brake system in automobiles.

17 a) Explain the principle of a torque converter.
b) Explain the general over hauling procedure.

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Code No. D-2197/AICTE

FACULTY OF ENGINEERING

B.E. (AE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Performance & Testing of Automotive Vehicles
Professional Elective – I

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 Tractive effort and Drag Coefficient.
2 Explain Draw bar pull and its relation with Tractive effort.
3 Explain Epicyclical gear box with a neat sketch.
4 What are the desirable properties of friction material to be used for clutches?
5 Explain how fuel economy will effects with tyre and road conditions.
6 Explain about linkage power steering.
7 What are the types of front end suspension?
8 Explain the working of Torsion bar and stabilizer bar.
9 Write a short note on VIth stage pollution norms implemented in India.
10 What are the parameters required to be observed during road and track testing?

PART – B

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

11 a) Explain the following front end geometry of a vehicle and its effect on drag coefficient.
b) Pressure, Temperature and Humidity on power output of a vehicle.

12 a) Describe the construction and working of Single plate clutch with a neat sketch.
b) Sketch and list out the parts of sliding mesh gear box.

13 Describe the working of a synchromesh gear box with a neat sketch. What are the merits and demerits of it compared to constant mesh gear box and Epicyclical gear train?

14 a) What are the factors that affect thermal efficiencies of the IC engines?
b) How does the traffic conditions and driving habits effects the fuel economy.

15 a) Sketch and explain the construction and working principle of the recirculating Ball type steering gear?
b) Classify the suspension system. Explain with a neat sketch working of a shock absorber.

16 a) Explain about anti-lock brake system (ABS) in detail?
b) Explain clearly how the King-Pin inclination produces directional stability?

17 Explain the following
a) Vehicle testing chassis Dynamometer.
b) Engine testing: like noise, vibration and fuel consumption.

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Code No. D-2190/AICTE

FACULTY OF ENGINEERING

B.E. (MECH) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Modern Machining & Forming Methods
Professional Elective – I

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 various types of transducers used in Ultrasonic machining?
2 Write the applications of AJM.
3 Enlist the various flushing mechanisms adopted in EDM?
4 Distinguish between the Transferred and Non-transferred arc.
5 Describe briefly, the principle of Rotary Machining process.
6 Explain the principle of tube spinning.
7 Briefly explain the principle involved in PAM.
8 State the advantages of rubber pad forming over conventional forming.
9 What do you understand by lon Etching? Explain.
10 What are the limitations of Hydrostatic Forming?

PART – B

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

11 Explain about Abrasive jet machining process with a neat sketch. State its advantages and disadvantages.

12 Sketch and explain the process of Electro Discharge machining, mentioning its applications.

13 a) Discuss the process capabilities of LBM; also mention its applications.
b) Describe the principle involved in EBM; also write the advantages.

14 What do you understand by 'HERF'? Briefly explain the types of HERF methods.

15 a) Discuss Guerin process with a neat sketch.
b) Explain Stand-off and Hydro-Static head in explosive forming.

16 a) Discuss in detail about Stretch Forming methods.
b) Mention the advantages, limitations and applications of WHF process.

17 Write short notes on the following:
a) Water Jet Machining Process.
b) Wire Electro Discharge Machining Process.
c) Electro Hydraulic Forming Process.

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Code No. D-2194/AICTE

FACULTY OF ENGINEERING

B.E. (PROD) VI - Semester (AICTE) (Backlog) Examination,
March / April 2022
Subject: Additive Manufacturing Technologies
Professional Elective – I

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 Classify the additive Manufacturing processes.
2 Distinguish between AM & CNC.
3 Mention the advantages & disadvantages of SLA.
4 Mention the applications of Polyjet liquid based AM process.
5 Discuss briefly the working principle of LOM.
6 Mention the advantages & disadvantages of FDM.
7 Mention the advantages & applications of LENS.
8 Distinguish between Conventional Tooling & Rapid Tooling.
9 Enlist at least six AM softwares.
10 Discuss briefly GIS application in AM.

PART – B

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

11 a) Explain the fundamental automated processes in AM.
b) Explain the need and the importance of AMT.

12 a) Explain the layering technology in liquid based AM system.
b) Explain the working principle of a SGC process with a neat sketch.

13 a) Explain the working principle of LOM with a neat sketch in solid based AM system.
b) Mention the applications, advantages & disadvantages of MJM.

14 a) Explain the working principle of a SLS with a neat sketch in powder based AM system.
b) Explain arc spray metal deposition of RT method with a neat sketch.

15 a) Explain STL formats and file repairs in AM data formats.
b) Explain the features of Rhino AM software.

16 a) Explain the application part for automotive & jewelry industries in AM.
b) Explain the application part for forensic science & anthropology in AM.

17 Write short notes on:
a) 3D Printing Technology
b) 3D Keltool process
c) Web based RP systems.

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Code No. D-2199/AICTE

FACULTY OF ENGINEERING

B.E. (AE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Electric and Hybrid Vehicles
Professional Elective – I

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 Explain the design objectives of electric vehicles.
2 What are the different DC motors drive systems?
3 List the different types of batteries for hybrid vehicles?
4 What is principle of Chopper control of DC motors?
5 Classify the charging modes for hybrid drives.
6 List the types of HEV and specify which has highest efficiency.
7 Mention the various battery state of charge measurement.
8 Explain the working principle of fuel cell.
9 Write short note on traction motor characteristics of electrical vehicles.
10 List the different manufacturers of electric and hybrid vehicles.

PART – B

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

11 (a) Explain in brief about the configuration of EVs and its transmission requirements.
(b) Compare and contrast alternative vehicle with IC engines in terms of economical and environmental impact.

12 (a) Compare and contrast Lead acid and Nickel based storage batteries.
(b) Write short note on chopper control of DC motors.

13 Explain the desirable features and functional classification of hybrid drives.

14 Explain with a neat sketch, the architecture of hybrid electric drive train.

15 (a) Explain detail about non-hydrogen fuel-cell.
(b) Explain in detail about fuel cell system characteristics.

16 (a) Explain in detail about EV conversion process.
(b) Explain about charging techniques of non-aqueous batteries

17 (a) Explain in detail about Super capacitor.
(b) Derive the equation of hybrid drive train with torque and speed coupling.

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Code No. D-2198/AICTE

FACULTY OF ENGINEERING

B.E. (AE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Material Handling & Earth Moving Vehicles
Professional Elective - I

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 Enumerate the principle components of a Belt conveyor.
2 What are the factors influencing selection of equipment in material handling?
3 List the uses of Pillar Cranes.
4 What are shovels and dragline?
5 List any four Off-road vehicles.
6 What are the functions of Platform lift truck?
7 What are the components of Dozers?
8 List out the applications of Rippers.
9 Compare Mechanical & Hydraulic Graders.
10 What are the advantages and disadvantages of Chain Conveyor?

PART – B

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

11 (a) Briefly explain the objectives of a Material Handling System.
(b) Write a brief outline on Bucket Elevators.

12 Explain in brief about the EOT-Cranes with neat sketches.

13 (a) What is slewing mechanism.
(b) Write about the Hydraulic Control Unit of Towed Scraper.

14 (a) Give the classification of Rippers. Mention their uses.
(b) Compare Crawler and Wheel dozers.

15 Discuss the factors relating to the feasibility study on a proposed fork lift truck for material handling.

16 Discuss the role of tractors in earth moving and what considerations that govern solution of wheel type or crawler type tractor on a job. Compare the application of these two types of tractors.

17 Write the functions of following components is a belt conveyor: Belt, Feeder and Idlers.

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Code No. D-2206/AICTE

FACULTY OF ENGINEERING

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

Subject: Advanced Operating System

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 What are the issues in Distributed Operating Systems?
2 Mention and brief the various features of shell programming.
3 What is system call?
4 What are commit protocols?
5 Define caching.
6 What is memory coherence?
7 Difference between public and private key.
8 List the issues in load distribution in distributed scheduling.
9 List different types of interrupts.
10 What are Threads?

PART – B

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

11 What are the types of operating systems you have worked with so far and enumerate the advantages and disadvantages of each one of them?

12 (a) Explain Load Distributing Algorithm and Performance.
(b) List different types of interrupts explain in brief.

13 What is Mutual Exclusion? Explain Token ring algorithm to achieve Mutual Exclusion.

14 Narrate the advantages and disadvantages of distributed and centralized systems.

15 (a) Describe the Sun NFS, Sprite File system.
(b) Write short notes on Byzantine agreement and the consensus problem.

16 (a) Describe in detail the Basic Multiprocessor System Architecture.
(b) Differentiate between Resource and communication deadlock.

17 Write short notes on:
(a) Process scheduling
(b) Edge-chasing
(c) Voting protocols.

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Code No. D-2207/AICTE

FACULTY OF ENGINEERING

B.E. (CSE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Cloud Computing
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 Define SaaS.
2 Write about Cloud Characteristics.
3 What is a Virtual Server?
4 Define a Ready-made Environment.
5 What is meant by Resource Cluster?
6 Define Audit Monitor.
7 Discuss about Virtualization Attack.
8 What could be the risks in cloud security?
9 What is meant by Open Stack?
10 Define Google App Engine.

PART – B

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

11 (a) Explain various Cloud Deployment models.
(b) Compare between Cloud Delivery Models (IaaS, PaaS & SaaS).

12 (a) Discuss in detail case study example on cloud usage monitor mechanisms.
(b) Write about Automated scaling Listener.

13 (a) Explain Billing Management System in Cloud.
(b) Discuss in brief cloud management mechanisms.

14 (a) Explain about Encryption in cloud with an example.
(b) What are the various cloud security threats?

15 (a) Write about Eucalyptus Cloud.
(b) What can you do with AWS? Explain.

16 (a) What is meant by scaling and discuss its types?
(b) Write about Cloud Storage Device.

17 (a) Write about Denial-of-Service Cloud Security Threat.
(b) Compare AWS and Google App Engine.

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Code No: D-2208/AICTE

FACULTY OF ENGINEERING

B.E. (CSE) VI – Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Speech and Natural Language Processing

Professional Elective - IV

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. List the methods of word components
2. What is Natural Language Processing? Discuss with some challenges
3. Define stemming.
4. What is smoothing?
5. Explain in detail text normalization.
6. What is noun phrase?
7. Briefly explain Grammar based LM.
8. Define N-Grams
9. List the various issues n PoS-Tagging
10. What is cohesion-reference?

PART - B

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

11. a) Explain the terms verb phrases and simple sentences, five verb forms and some common verb compliment structure in English.
    b) Briefly explain about the detecting and correcting spelling errors.

12. Explain in detail about the phonetics and correcting spelling errors.

13. Explain the issues in computational morphology with suitable example.

14 Explain in detail about the speech synthesis.

15. Describe in detail about the Word Level Analysis.

16. a) Discuss language as a rule – based system
    b) Discuss stochastic part-of-speech tagging

17. Write notes on
    a) Tokenization
    b) Part-Of-Speech-tagging
    c) Word sense disambiguation

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Code No: 2223/AICTE

FACULTY OF ENGINEERING

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

Subject: Data Science Using (R) Programming
Professional Elective - III

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 Differentiate between Data Science, Data Mining, Machine Learning, Deep Learning and Artificial Intelligence.

2
```
> X<-1:12
> X
> mat<-Matrix(X,3,4)
```
What is the output of the above R Code?

3 Create a data frame by the name "Employee" to store three vectors "Emp No", "Emp Name" and "Poj Name" and then print the data frame.

4
```
> numbers<-c(1,3,5,2,8,7,9,10)
> barplot (numbers)
```
What is the output of the above R Code?

5 What is the general equation for computing linear regression?

6 Which function is used to implement Logistic Regression?

7 Which packages build decision trees in R?

8 What is the ts() function in R?

9 Explain the k-means() function with syntax and example.

10 What is the formula for calculating Support?

PART - B

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

11 a) Discuss the R Objects: VECTORS, LIST, MATRIX, FACTOR and DATA FRAMES with examples.
b) Explain with examples inbuilt functions for text manipulation in R.

12 a) Elucidate how R can load data into data frames from EXTERNAL FILES.
b) Create a Histogram by filling the bar with "blue" colour.

13 a) Explain Regression Analysis to predict the value of an outcome variable based on predictor variables.
b) Discuss how to create binomial, multinomial and ordinal regression models.

14 a) Explain the various attribute selection measures used to split data while inducting a decision tree for classification.

..2

b) What is Time Series Data? How to read time series data using ts() and scan()functions in R.

15 a) Explain implementing k-means clustering in R.

b) How apriori() function is used to implement association rule mining in R?

16 a)
```
> H<-c(7,12,3,41,35)
> M<-c("jan","FEB","mar","APR","may")
>
barplot(H,names.arg=M,xlab="MONTH",ylab="revenue",col="Blue",main="BA
R PLOT",border="red")
```
Explain the above R code with the output.

b)
```
>  <- matrix (1: 6,2,3)
  For (I in eq_len(nrow(x))) {
          For (j in seq_len (ncol(x))) {
                  Print (x[I, j]}
          }
  }
```

Write the R commands to work with the Directory.

17 a)
```
volCylinder=function(dia=5,len=100,r=10)
{
 volume=pi*dia^2*len/4
surfacearea=pi*dia*len
result=list("volume"=volume,"surface area"=surfacearea)
return(result)
print(result)

}
> result=volCylinder(10,5)
```
Explain the above R code with the output?

b) With examples explain various algebraic operations on matrices in R.

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Code No. D-2209/AICTE

FACULTY OF ENGINEERING

B.E. (CSE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022
Subject: Machine Learning
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 What is meant by "learning" in the context of machine learning?
2 What is a binary classification problem? Explain with an example. Give also an example for a classification problem which is not binary.
3 Explain why dimensionality reduction is useful in machine learning.
4 Describe an algorithm for k-means algorithm.
5 What is a base learner? How do we select base learners?
6 Define the terms underfitting & overfitting.
7 Define perceptron.
8 What are the applications of sequence modeling?
9 What is the need for semi supervised learning?
10 What is Reinforcement Learning?

PART – B

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

11 a) Given the following data on a certain set of patient seen by a doctor, can the doctor conclude that a person having chills, fever, mild headache and without running nose has the flu? (use naïve Bayes algorithm).

chills	running nose	headache	fever	has flu
Y	N	Mild	Y	N
Y	Y	no	N	Y
Y	N	Strong	Y	Y
N	Y	Mild	Y	Y
N	N	No	N	N
N	Y	Strong	Y	Y
N	Y	Strong	N	N
Y	Y	mild	Y	Y

b) What is meant by kernel trick in context of support vector machines? How is it used to find a SVM classifier.

12 a) Describe with the use of diagrams the basic principle of PCA.
b) Applying the k-means algorithm, find two clusters in the following data.

x	185	170	168	179	182	188	180	180	183	180	180	177
y	72	56	60	68	72	77	71	70	84	88	67	76

13 a) Suppose 10000 patients get tested for flu out of them, 9000 are actually healthy and 1000 are actually sick. For the sick people, a test was positive for 620 negative for 380.For the healthy people, the same test was positive for 180 and negative for 8820. Construct a confusion matrix for the data and compute the accuracy, precision and recall for the data.
b) Explain different evaluation metrics for regression problems.

14 a) What is Deep learning explain how feature extraction is performed?
b) Explain different generative models.

15 a) Explain active learning cycle.
b) How various machine learning techniques are used for IoT applications?

16 a) What do you mean by information gain and entropy? How is it used to build the decision trees?
b) Explain how matrix factorization can be implemented for recommendation system. And also explain how missing entries problem is resolved.

17 Write notes on:
a) Boosting
b) Random Forests.

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Code No. D-2220/AICTE

FACULTY OF ENGINEERING

B.E. (IT) VI - Semester (AICTE) (Backlog) Examination, March/April 2022
Subject: Objected Oriented Analysis and Design
Professional Elective - III

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. Name the phases of unified software development process and explain briefly.
2. What is meant by stereotypes? Explain.
3. Define association class with an example.
4. What is an aggregation relationship between classes?
5. What are use-cases?
6. Describe the structures of state chart diagrams.
7. Write about advanced relationships.
8. Define Interface with an example.
9. List the five standard stereotypes applicable to Components.
10. List the four P's in Software Development.

PART – B

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

11. a) Explain about the collaboration diagrams and deployment diagrams.
    b) Describe about types of relationships in UML.

12. Explain different types of things in UML.

13. a) Explain about interactions, use cases and their representations.
    b) Describe component diagrams.

14. a) Explain activity diagram with swim lanes with an example.
    b) Discuss in detail about packages.

15. Explain about patterns and frame works.

16. Describe Requirement workflow in Detail.

17. Explain about:
    a) Events and signals.
    b) Use case realization.
    c) Object Diagrams

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Code No. D-2221/AICTE

FACULTY OF ENGINEERING

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

Subject: MULTIMEDIA TECHONOLOGIES

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 Multimedia and write Component of Multimedia?
2. Differentiate between HTTP and HTML.
3. What is a Bit plane for 8-bit grayscale image?
4. Define White-Point Correction.
5. What is Digitization of sound?
6. What are various Types of Video signals?
7. What is Multimedia Data Compression?
8. What is MPEG Video coding?
9. What are multimedia networks?
10. Define Qos

PART – B

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

11. Explain in detail about Multimedia Authoring and Tools.
12. Discuss in detail about Graphics and image Data Representations.
13. Explain about Musical Instrument Digital Interface?
14. Describe briefly about Variable-Length Coding in Lossless Compression Algorithms.
15. Explain about Multiplexing Technologies in Multimedia Communication and Retrieval.
16. Explain in detail about Quantization in Lossy Compression Algorithms.
17. Write short notes on
    (a) Multimedia over IP
    (b) Multimedia over ATM Network

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Code No. D-2222/AICTE

FACULTY OF ENGINEERING

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

Subject: MACHINE LEARNING

Professional Elective - III

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 Machine Learning.
2. What is Version Space?
3. What is mean by linear separability?
4. What is the role of Kernels?
5. Define Variance & Covariance.
6. Discuss Bayes theorem.
7. List various method of ensemble learning.
8. What is Dimensionality Reduction?
9. Define outliers in clustering.
10. List the partitional algorithms.

PART – B

Note: Answer any five questions. **(5 x10 = 50 Marks)**

11. Explain Candidate Elimination Algorithm in detail give an example.

12. (a) Describe about Optimal Separation.
    (b) Distinguish between perception and multilayer perceptron.

13. (a) Illustrate Naïve Bayes Classifier in detail with an example.
    (b) Write Forward Algorithm.

14. (a) Write the Genetic Algorithm which updates the population of individuals.
    (b) What is Linear Discriminant Analysis?

15. (a) Compare various Clustering Algorithms.
    (b) Explain any one Hierarchical Methods with an example.

16. (a) Identify various basic statistics used in Bayesian learning.
    (b) Discuss about classification example.

17. Discuss the below in short:
    (a) Bayes optimal classifier
    (b) Decision Trees
    (c) Bagging

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