

FACULTY OF ENGINEERING
B.E. (IT) VI - Semester (CBCS) (Backlog) Examination, March / April 2022
Subject: Internet of Things
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 Name the Service Layer protocol of IoT.
- 2 What is Z-wave?
- 3 List the MAC features of IEEE 802.15.4.
- 4 Distinguish between M2M and IoT.
- 5 What is Internet of Things?
- 6 Write the salient features of ETSI M2M.
- 7 Distinguish between Standard TCP and MPTCP.
- 8 What is the role of MQTT protocol in IoT?
- 9 Write briefly on interaction and remote control with reference in IoT.
- 10 Name few Service Layer protocols.

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

- 11 (a) Discuss in detail about the advantages and disadvantages and application of IoT.
(b) Describe IoT protocol stack and architecture layers.
- 12 (a) Explain the Architecture of IoT.
(b) Discuss IoT Real world design constraints.
- 13 Explain in detail about the constrained application protocol (CoAP) and its messaging mode.
- 14 (a) Explain the architecture of wireless HART in detail.
(b) Explain in detail about salient features of IPv6 protocol.
- 15 (a) Discuss IoT deployment and operational view with parking Lot example.
(b) Explain IoT information view with a neat diagram.
- 16 Explain in detail about the service layer protocols and security in IoT.
- 17 Write short notes on
 - (a) 6LoWPAN
 - (b) One M2M
 - (c) DHCP.

FACULTY OF ENGINEERING

**B.E. III / IV (Civil) II - Semester (NON-CBCS) (Backlog) Examination,
March / April 2022**

Subject: Water Resource Engineering - I

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 concept of formation of precipitation.
- 2 In a catchment the number of rain gauge stations are 7 and coefficient of variation from the average precipitation data was found to be 22.3. Determine the total number of stations required to maintain an accuracy of 10% error and also the additional stations required for the same.
- 3 What do you understand by Aquifer? List out the aquifer parameters and way to obtain them.
- 4 In a basin 4 types of crops are grown and average delta of crops was found to be 560mm with a base period of the crop as 110 days. Determine the duty for the basin.
- 5 List out the three important conceptual differences between Kennedy's theory and Lacey's theory.
- 6 Distinguish between Silt excluder and silt ejector.
- 7 List out the functions of canal fall.
- 8 Differentiate between Non-Modular outlet and semi-module outlet.
- 9 List out the considerations to be considered for selection of cross-drainage work.
- 10 List out the advantages of Gibb's module.

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

- 11 (a) With the aid of neat sketch, explain various phases and steps of Hydrologic cycle.
- (b) A 4hr hydrograph for a project site is given below. Calculate a 12 hr unit hydrograph.

Time	0	2	4	6	8	10	12	14	16	18	20	22	24	2
UH ordinates (cumec)	0	30	110	170	210	180	120	80	40	35	20	15	5	0

- 12 (a) The following crops are planned under the command of a reservoir by a canal system. Determine the canal capacity if the canal losses are 18% and reservoir losses are 15%.

Crop Name	Base Period (Days)	Duty of the field (Hectares per cumec)	Area of crop in Hectares
Passy	110	1050	12,000
Sugarcane	345	850	6,000
Pulses	120	1300	20,000
Jowar	110	2100	15,000
Cotton	120	1500	10,000
Chilly	110	1600	6,000
Vegetables	130	1300	8,000
Other crops	110	1200	13,000

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- (b) Design an irrigation canal to carry a full supply discharge $42\text{m}^3/\text{sec}$ by Lacey's theory. Assume Lacey's silt factor as 1.10 and section as trapezoidal with side slopes $\frac{1}{2} H : 1 V$.
- 13 (a) The length of floor on sand is 56 meters and the difference in water level between U/S and D/S is 5 meters. There are two sheet piles of depth 6m at U/S and D/S. Determine the floor thickness required at 20m and 40m distance from U/S edge and permissible exit gradient using Koshla's in method.
(b) With the aid of neat sketch explain the design steps involved in design of vertical drop weir.
- 14 (a) Explain the design principle of Trapezoidal Notch fall with the aid of neat sketch.
(b) Explain the functions of Head regulator and cross regulator.
- 15 (a) List out various data required to perform the design of cross-drainage works and state the importance of cross drainage works.
(b) Explain the steps involved in design of an Aqueduct.
- 16 (a) Design Sarada fall assuming floor thickness as 1.5 meters with the following data:
(i) Full Supply discharge at U/S and D/S $6\text{m}^3/\text{sec}$
(ii) F.S.L at U/S and D/S 102m and 101m
(iii) Full supply depth at U/S and D/S 1.3m
(iv) Bed Width at U/S and D/S 6.50m
(v) Bed Width at U/S and D/S 100.7 and 99.7m
(vi) Bligh's coefficient
(b) Explain various factors affecting the Duty of water in a command area.
- 17 (a) Compare and contrast Bligh's theory with that of Koshla's theory and state the limitations of the methods.
(b) Explain various methods of Lining materials for canals in Alluvium condition.

FACULTY OF ENGINEERING**B.E. III / IV (EEE/EIE/ECE) II - Semester (NON-CBCS) (Backlog) Examination,****March / April 2022****SUBJECT: Managerial Economics and Accountancy****Time: 3 Hours****Max. Marks: 75****(Missing data, if any, may be suitably assumed)****PART – A****Note: Answer all questions.****(25 Marks)**

1. What is demand?
2. Define Monopoly.
3. Book cost and out of pocket cost.
4. What are subsidiary books?
5. Explain about price demand.
6. Write about production function.
7. Write Journal Entries for the following.
 - a) Purchased goods for cash Rs.10,000/-
 - b) Paid Rent to land lord Rs.5,000/
 - c) Received cash from suresh Rs.7,000/-
8. What is the significance of capital management
9. Write about current ratio.
10. What are subsidiary books?

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

11. Define Managerial Economics its usefulness to Engineers.
12. Define cost & explain different cost concepts used in the process of cost analysis.
13. Define Market and differentiate between perfect and imperfect market.
14. a) What are the factors of determinants of demand?
b) Explain the law of supply and concept of equilibrium.
15. What are the assumptions of break-even analysis. 5 b) Calculate P/V ratio, margin of safety and margin of safety ratio from the following information. Sales Rs. 6,00,000 Fixed cost Rs. 1,80,000 Variable cost Rs. 3,00,000
16. a) A project requiring an investment of Rs. 1,00,000, the expected profit after tax are as follows. Calculate profitability index.

Year	1	2	3	4	5
Rs.	16,000	20,000	25,000	27,000	22,000

- b) A project investment of Rs. 50,000 are expected to generate net cash flows as under: Evaluate the project proposal under pay back period.

Year	1	2	3	4	5	6
Rs	10,000	12,000	18,000	25,000	8,000	4,000

17. From the following particulars prepare Trial Balance as on 31-12-2010.

Particulars	Rs.
Capital	25,000
Opening stock	6,200
cash	1,700
Sundry debtors	9,100
purchases	61,300
sales	93,600
Return outwards	1,000
Return inwards	500
Frieght inwards	3,700
Frieght outwards	7,200
salaries	10,500
rent	6,000
Sundry creditors	4,000
Commission received	100
Drawing	6,300
Furniture and fittings	10,800
Printing and stationery	1,200
Closing stock	12,000

FACULTY OF ENGINEERING

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

Subject: Refrigeration & Air Conditioning

Time: 3 hours

Max. Marks: 75

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

PART – A

Note: Answer all questions.

(25 Marks)

- 1 Define C.O.P of refrigerator.
- 2 Define Ozone depletion potential.
- 3 What is the function of accumulator in vapour compression system?
- 4 Draw P-H and TS diagram for vapour compression system for dry and saturated refrigerant at the end of the compression.
- 5 Give the principle of working of Pulse tube refrigeration.
- 6 List the common properties of refrigerant and absorbant in vapour absorption system.
- 7 Define (i) Wet bulb temperature (ii) Relative humidity.
- 8 List out material that can be used for ducting.
- 9 Define Gross sensible heat factor (GSHF).
- 10 Define By-pass factor in air conditioning.

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

- 11 a) What are the limitations of Carnot refrigeration cycle
b) An air refrigeration open system operating between 1 MPa and 100kPa is required to produce a cooling effect of 2000KJ/min. The temperature of air leaving the cold chamber is -5°C and at leaving the cooler is 30°C . Neglecting losses and clearance in the compressor and expander, determine:
 - (i) Mass of air circulate per hour,
 - (ii) Compressor work, and cycle work,
 - (iii) Coefficient of performance and power required to run the machine.
- 12 (a) Explain the working of simple vapour compression refrigeration and derive its C.O.P.
b) A standard vapour compressor refrigerator using F-12 as refrigerant operates between the condenser pressure of 10 bar and evaporator pressure of 1.5 bar. The evaporator absorbs 75KJ/min of energy as heat and the vapour is dry saturated at exit from the compressor. Represent on the T-S plane and calculate:
 - (i) Flow rate of refrigerant
 - (ii) Power consumed and
 - (iii) COP of the cycle.
 Also calculate COP of the Carnot refrigerator operating between the same temperature limits. The relevant properties of F-12 are given below:

Pressure (bar)	Saturation temperature ($^{\circ}\text{C}$)	Enthalpy (kJ/kg)		Entropy (KJ/kg)	
		Liquid	Vapour	Liquid	Vapour
10	41.7	76.8	203.65	-	0.682
1.5	-20.1	17.82	178.84	0.073	0.709

- 13 a) Explain the working of lithium bromide absorption system.
b) What are the advantages, limitations and application of steam jet refrigeration.

- 14 a) Explain the psychometric process:
(i) Cooling and dehumidification
(ii) Heating and humidification.
b) What are different types of duct layout?
- 15 a) Explain various types of humidifiers and de-humidifiers used in air conditioning System.
b) Explain summer and winter air condition system.
- 16 a) Mention few applications of air conditioning.
b) What are the alternative refrigerants to reduce ozone depletion and global warning?
- 17 a) Explain working of Electrolux refrigeration system. What are its limitations?
b) Explain the phenomenon sub cooling in vapour compression system.

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

Subject: Web Programming and Services

Time: 3 hours

Max. Marks: 75

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

PART – A

Note: Answer all questions.

(25 Marks)

- 1 Mention the MIME format for PDF documents.
- 2 What is CSS? Enumerate inline styles with examples.
- 3 Differentiate between Servlet and CGI.
- 4 Differentiate between jsp include directive and include action tag.
- 5 What is the purpose of deployment descriptor?
- 6 List the Life Cycle methods of filter.
- 7 Write the syntax of UseBean tag.
- 8 What is Servlet? Explain different life cycle methods of a Servlet.
- 9 Distinguish between Statement and PreparedStatement object.
- 10 What is the difference between ResultSet object and Rowset object?

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

- 11 (a) Write the XHTML program to create employee registration form with fields employee id, name, gender (radio button), designation, DOB, email-id, skillset (check boxes), and provision to upload photo of the employee. Write JavaScript code to validate employee name and email-id.
(b) Write JavaScript code to greet the user based on time.
- 12 (a) Write in detail the steps required to deploy a J2EE application.
(b) What is session? Explain different session handling mechanism.
- 13 (a) What is webserver? Explain different webserver and describe the sequence of steps for deploying a web application.
(b) Write a JSP page demonstrating the usage of JSP include and forward tag.
- 14 (a) Explain in detail different JSP elements.
(b) What is filter? Explain the life cycle methods of filter and write a filter to Authenticate the user.
- 15 (a) Describe the trends in ASP. Write an ASP.Net program to validate fields and display date.
(b) Write a program demonstrating .Net Remoting.
- 16 (a) Create a dynamic Web page with JSP which illustrate the usage at actions and scripting.
(b) What is well-formed XML document?
- 17 Write notes on:
 - (a) Filter
 - (b) Connection Pooling.

FACULTY OF ENGINEERING**B.E. (EEE/EIE) VI - Semester (AICTE) (Backlog) Examination, March / April 2022****Subject: Entrepreneurship
Open 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 Define Entrepreneur, Entrepreneurship and Enterprise.
- 2 What are the objectives of Small Scale Industries?
- 3 List out various favorable conditions for women entrepreneurs in India.
- 4 Explain about profitability analysis.
- 5 List out various approaches of time management.
- 6 Differentiate between CPM and PERT.
- 7 Describe briefly about the environmental influence.
- 8 What are the different sources of finance?
- 9 Define a project and mention different parameters to be considered in project formulation?
- 10 Write the major motives influencing entrepreneurs.

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

- 11 a) What are the opportunities and challenges for entrepreneurial growth in India? Explain.
b) Explain in detail role of entrepreneurs in improving economic status of a country.
- 12 a) Define an idea and explain the necessity to have new ideas in an entrepreneurial journey.
b) Explain in detail the linkage between small, medium and large scale industries.
- 13 Draw the network diagram and find the critical path for the following data.

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

- 14 What is project formulation? Explain the following terms in project formulation – financial analysis and cost-benefit analysis in detail.
- 15 What is urgency addiction? Is it good for an entrepreneur? How is influences the market?
- 16 a) “Entrepreneurship and innovation goes together” – Explain.
b) Explain in detail about the choice of technology.
- 17 Write short notes on:
 - a) Types of enterprises
 - b) Assessment of tax burden.

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

**Subject: Green Building Technologies
Open 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 Discuss few typical features of green building.
- 2 List the guidelines of LEED rating system.
- 3 What is the importance of day lighting in Green building?
- 4 Write short notes on organic waste management on-site and off-site.
- 5 Define Solar Heat Gain co-efficient.
- 6 What do you mean by zero ozone depleting potential materials?
- 7 Write about the concepts of embodied energy.
- 8 How fly ash bricks from industrial waste are used in Green buildings?
- 9 What is indoor air quality?
- 10 List various rain water harvesting methods.

PART – B

Note: Answer any five questions.

(5 x 10 = 50 Marks)

- 11 (a) Discuss in detail the uses of Green buildings over traditional buildings in India.
(b) Describe in detail GRIHA rating system.
- 12 (a) What is the concept of green building? Explain the factors considered in selecting a site for green building.
(b) What are the measures adopted to maximize for lighting and ventilation systems in Green buildings?
- 13 Explain the different techniques of recycling of industrial waste materials and demolition waste for reuse.
- 14 (a) What do you mean by life cycle energy?
(b) Discuss in detail any two methods to reduce operational energy.
- 15 (a) Discuss the economic benefits of sustainable developments.
(b) Write short notes on reuse of waste and salvaged materials.
- 16 (a) Explain rainwater harvesting methods for roof and non-roof building.
(b) Describe the process of waste water treatment.
- 17 Write short notes on any two of the following:
 - (a) Water conservation
 - (b) Codes used in Green building
 - (c) Urban heat island effect.

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

**Subject: Data Science Using R
Open 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 is data science?
2. What is an outlier?
3. What is Regression?
4. Design a Decision Tree in R.
5. List the clustering algorithms.
6. Explain the Data Types In R.
7. How to Load Data Frames?
8. Discuss about the Model Fitting.
9. Why Prefer Short Hypotheses?
10. Define Text Mining.

PART – B

Note: Answer any five questions.

(5 x10 = 50 Marks)

11. Explain the downloading and Installing R in detail.
12. Discuss about vectors and variables in R with examples.
13. Explain Descriptive Statistics and Spotting Problems in Data with Visualization.
14. Differentiate Linear Regression and Logistic Regression in detail.
15. Demonstrate the issues in Decision Tree Learning.
16. What is clustering and Explain the K-Means Algorithm?
17. Explain the following:
 - (a) Time Series in R
 - (b) Challenges of Analytical Data Processing

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B. E. (EEE/EIE) VI – Semester (AICTE) (Backlog) Examination, March / April 2022

Subject: Cyber Security (Open 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 is layering in cyber security?
2. What are the three principles of the CIA triad?
3. What are the fundamentals of data privacy?
4. What type of attack is data breach?
5. What are the three types of security policies?
6. What six elements should be included in a security policy?
7. What are the elements of encryption?
8. What are the basic elements required for a symmetric encryption?
9. Why message digest is used?
10. What is SSL and why it is used?

PART – B

Note: Answer any five questions.

(5 x10 = 50 Marks)

- 11 (a) Explain the different layers of security?
(b) Discuss briefly the taxonomy of attacks.
- 12 (a) Explain the basic concept of data privacy?
(b) Discuss the privacy policies and their specifications.
- 13 (a) What are the layers in security architecture design? Explain.
(b) Briefly explain intrusion detection system.
- 14 (a) Explain the DES with neat sketch.
(b) Discuss the RSA public key encryption with an example.
- 15 (a) Explain the MD-5.
(b) Discuss briefly the SSL protocol.
- 16 (a) Discuss the various cyber threats.
(b) Explain the concept of data profiling.
- 17 Write notes on
 - (a) SHA
 - (b) SET protocol.