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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ASSIGNMENTS**

**ACADEMIC YEAR: 2024-25 SEM: II**

**ASSIGNMENT-1**

 **PYTHON PROGRAMMING II YEAR II SEM**

1. A) **State** and **explain** the features of Python. **(CO1)**
B) **What** is operator? **Explain** various types of operators in details withappropriate example? With programs.**(CO1)**
2. A) **Write** a python program to **find** given number is prime or not. **(CO1)**
B) **How** does try-except statement work? **Demonstrate** with an examplepython code?With program example. **(CO1)**
3. A) **What** is Tuple and Set Type in python statements **explain** all methodsin detail with program.**(CO3)**
B) **Explain**the following file built in functions and methods with clearsyntax ,description illustration.
a)open()b)file()c)seek() d)tell( )e)read() **(CO2)**
4. A) **Define** Module? **Write** about importing module and module attributewith example program.**(CO4)**
B) **Explain** String type and built in function in python withExample. (**CO2)**
5. **Illustrate** common regular expression symbols and special character used in python with program.**(CO3)**

 **ANALOG AND DIGITAL ELECTRONICS II YEAR II SEM**

1. a. Effect of temperature on PN Diode.

b. V-I characteristics of a diode.

2. Explain the Full-wave rectifier with its efficiency.

3.a. Thermal Runaway.

b.operating point of a transistor.

4.**Explain** RC coupled amplifier.

5. Comparison of JFET and MOSFET.

**COMPUTER ORIENTED STATISTICAL METHODS II YEAR II SEM**

1. If the three men, the chances that a politician, a business man or an academician will be appointed as a Vice - Chancellor (V.C.) of a university are 0.5, 0.3, 0.2 respectively. The probability that research is promoted by these persons if they are appointed as V.C. are 0.3, 0.7, 0.8 respectively. **Determine** the probability that research is promoted. If research is promoted, **what** is the probability that V.C. is an academician? **(CO1)** (CO 1)

2. A continuous random variable has the probability density function

$$f\left(x\right)= \left\{\begin{array}{c}kxe^{-αx}, if x\geq 0 and ∝ \geq 0\\0, elsewhere\end{array}\right.$$

**Determine** (i) k (ii) Mean (iii) Variance **(CO1)** (CO 1)

3. (A) Four coins are tossed 160 times. The number of times x heads occur is given below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1. 0
 | 1. 1
 | 1. 2
 | 1. 3
 | 1. 4
 |
| No. of times | 8 | 34 | 69 | 43 | 6 |

Fit a Binomial distribution to this data on the hypothesis that coins are unbiased. **(CO 2)**

(B) **Find the** mean and variance of Poisson distribution. **(CO 2)**  (CO 2)

4.(A) **Find** the mean and S.D. of the normal distribution in which 7 % of the items are under 35 and 89 % are under 63. **(CO 2)**  (CO 2)

(B) **Find** 95% confidence limits for the mean of a normality distributed population from which the following sample was taken 15, 17, 10, 18, 16, 9, 7, 11, 13, 14.**(CO 3)**  (CO3)

5. Samples of size 2 are taken from the population 3,6,9,15,27 with replacement. **Find**

a. The mean of the population.

b. The standard deviation of the population.

c.The mean of the sampling distribution of means and

d. The standard deviation of the sampling distribution of means. **(CO 2)**  (CO 2)

 **SOFTWARE ENGINEERING II YEAR II SEM**

1. **Discuss** about software myths. **(CO1)**

2. a. **Explain** about SDLC. **(CO1)**

b. **Explain** about prototype model with an example. **(CO1)**

3. **Write** a short note on requirement specification and requirement validation. **(CO2)**

4. **Elaborate** about data models. **(CO2)**

5. **Write** about software quality guidelines and attributes. **(CO3)**

 **BUSINESS ECONOMICS AND FINANCIAL ANALYSIS II YEAR II SEM**

 1.**Define** Business Economics and **explain** its importance in finding solutions to business problems.**(CO1)**

2. **Discuss** the different concepts of National Income. **How** is National Income estimated? **(CO3)**

 3. **What** are the needs of Demand Forecasting? **Explain** the various steps involved in demand forecasting. **(CO1)**

4. **What** are the types and significance of elasticity of Demand? **(CO2)**

5. **Define** production function. **Discuss** in detail about the different types of production functions. **(CO1)**\

 **DESIGN ANDANALYSIS OFALGORITHMS III YEAR II SEM**

1.**Define** algorithm and **explain** the steps that algorithm is involved. **(CO1)**

2. a) **Write** and **explain** the recursive binary search algorithm. **(CO1)**

b) **Explain** Quick Sort with example. **(CO1)**

3. **Discuss** the N-queens problem and solve 8-Queens problem for feasible sequence 6,4,7,1. **(CO2)**

4. a) **Explain** weighted union operation with example and algorithm.**(CO2)**

b) **Explain** collapsing find operation with example.**(CO2)**

5. **Explain** the OBST With example.**(CO3)**

 **MACHINE LEARNING III YEAR II SEM**

1. **Explain** the different types of machine learning and provide examples of each.**(CO1)**

 2. **Describe** the version spaces and candidate elimination algorithm.**(CO1)**

3.**What** are Radial Basis functions(RBFS)? **How** do they differ from Multi-layer perception.**(CO2)**

4.**How** does the Back propagation algorithm work in training neural networks.**(CO2)**

5.**Define** decision trees,**explain** its step by step construction and **what** are the key factors to consider.**(CO3)**

 **WEB TECHNOLOGIES III YEAR II SEM**

Q1. **Differentiate** between session and cookies with an example. **(CO1)**

Q2. **Explain** different types of arrays in php and provide example for each.**(CO1)**

Q3. **How** does PHP interact with database like Mysql **explain** with an example.**(CO2)**

Q4.**What** are the different types of nodes in XML DOM? **Explain** with example.**(CO2)**

Q5. **Explain** the life cycle of Servlet.**(CO3)**

 **SOFTWARE PROJECT MANAGEMENT III YEAR II SEM**

1. Using a table, **compare** the conventional, transition, and modern software development processes regarding ROI, environment, size, process technologies, and predictability. **[CO1]**

2. **How** can software economics be improved? **Explain** different approaches. **[CO1]**

3.**What** are the different phases of the Software Life Cycle? **Explain** the Engineering and Production stages in detail. **[CO2]**

4. **How** can achieving the required quality to improve software economics? **[CO2]**

5. **Write** a note on: **[CO3]**

(a) Management Artifacts (b) Engineering Artifacts

**PRINCIPLES OF ELECTRONIC COMMUNICATIONS III YEAR II SEM**

1. Draw and **describe** the various frequency ranges in the electromagnetic spectrum with its applications. **(CO1)**

2. **Explain** the communication system with the help of block diagram. **(CO1)**

3. **Define** FSK and **describe** the modulation process with a neat diagram.**(CO2)**

4. **Define** amplitude modulation and derive the expression in time domain. **(CO2)**

5. **Explain** the advantages and applications of satellite communication. **(CO3)**

 **INFORMATION RETRIEVAL SYSTEMS III YEAR II SEM**

1.**Define** IRS? Briefly **explain** the functional overview of IRS.**(CO1)**

2.**What** are the capabilities of IRS? **Describe**.**(CO1)**

3.a) **Define** objectives of indexing and **Explain** the automatic indexing Process. **(CO2)**

 b) **What** is stemming? **Explain** the porter and successor stemming algorithm.**(CO2)**

4.a) **Explain** the N-Gram algorithm.**(CO2)**

 b) **Explain** the Inverted file structure.**(CO2)**

5.a)**Wha**t is the vector weighting? **Explain** the inverse document frequency with example? **(CO3)**

 b) **Explain** the classes of indexing.**(CO3)**

**BLOCKCHAIN TECHNOLOGY IV YEAR II SEM**

1.A.**What** is a Block in Block chain? **How** does a Blockchain work?**(CO1)**

**Write**applications of Blockchain.**What** are the benefits of Block chain? **(CO1)**

 B. **Explain** about crowd funding? **What** technologies are used in crowd funding? **How** does Blockchain support crowd funding? **(CO1)**

2.A.**Explain** about crypto currency in block chain? **How** are crypto-currency different from

 Blockchain? **(CO1)**

 B.**Discuss** about any example of crypto currency.**(CO1)**

|  |
| --- |
| 3.A.**What**is Digital identity verification? **How** do you create a digital identity in block chain? B. **Elaborate** Block Chain Environment in detail. **(CO2)** |
| 4. **Explain**about Proof of work and Proof of stake in detail.**(CO2)** |
| 5.A.**Explain** about folding coin in Block chain science? **How** much is folding coin worth? **(CO3)** |
|  B. **Explain** about Grid coin in Block chain Science? **How** do you get Grid coin? **(CO3)** |

**COMPUTER VISIONIV YEAR II SEM**

1. **Discuss** in detail the following morphological operations:**(CO1)**

        a) Erosion b) Dilation

2. **List** and **explain** the fundamental steps in digital image processing. **(CO1)**

3. **Name** different types of boundary tracking procedures, **explain** the square tracing algorithm.**(CO2)**

4. **Write** a short note on following:**(CO2)**

a) Fourier descriptors b) Region descriptors

5. **Explain** about Line detection using Hough Transform.**(CO3)**

 **CLOUD COMPUTING IV YEAR II SEM**

* + - 1. a) **What** is cloud computing?**What** are the five essential characteristics of cloud computing. **(CO2)**

b) **What** are advantages of cloud computing? **(CO2)**

* + - 1. **What** are working models of cloud computing? **Explain**one.**(CO2)**
			2. **Define** computing paradigm and **explain** different types of computing paradigms.**(CO1)**
			3. a) **Differentiate** between parallel and distributed computing. **(CO1)**

b) **Differentiate** between parallel computing and serial computing.**(CO1)**

5. a) **What** are some popular cloud service providers and **what** type of services do they offer?**(CO3)**

 b) **What** is Heterogeneous computing and homogeneous computing? **(CO3)**

**DESIGN PATTERNS IV YEAR II SEM**

1.**Discuss** the MVC architecture in small talk.**(CO1)**

2.**Explain** the organizing the catalogue of design pattern. **(CO1)**

3.**Describe** formatting in Lexi’s design.**(CO2)**

4.**Explain** about Intent,Known Uses Related Patterns and structure of Abstract Factory and Builder.**(CO3)**

5.a.**Describe** Design Patterns.**(CO1)**

b. **Explain** the role of pattern elements in design of a particular problem.**(CO2)**

**IOT PROTOCOL AND ITS APPLICATIONS IV YEAR II SEM**

1. **Explain** about the Networks and Communications in IoT. **[CO1]**

2. (a) **What** are the main design principles and needed to M2M to IoT. **[CO2]**

(b) **Differentiate** between M2M and IoT. **[CO2]**

3. **Describe** the components of IoT architecture and **explain** their interdependencies. **[CO1]**

4. (a) **Explain** about the emerging industrial technologies in IoT .**[CO1]**

(b) **Describe** the role of 6LoWPAN in IoT architecture and its interaction with IPv6. **[CO3]**

5. **Explain** about the M2M value chains and international driven global value. **[CO2]**

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 **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ASSIGNMENTS**

**ACADEMIC YEAR: 2024-25 SEM: II**

**ASSIGNMENT-2**

 **PYTHON PROGRAMMING II YEAR II SEM**

1. A)**Describe** in detail about python SQL Alchemy ORM with case study of employee role database.**(CO4)**

B)**Discuss** DB-API in detail? **(CO5)**

2. A) **Illustrate** common regular expression symbols and special characters used in python **(CO3)**

B) **What** is Web surfing? **Explain how** to build CGI application advanced CGI. **(CO5)**

3. **Discuss** the following in detail:

i) Global interpreter lock **(CO3)**

ii) Accessing threads from python **(CO3)**

4. A) State and **explain** various types of Tk widgets.**(CO4)**

B) **Explain** client / Server environment in detail in python.**(CO5)**

5. A) **What** is GUI?**Explain** the components widgets, buttons, in details.**(CO5)**

 B) **Explain** ORM in detail. **(CO4)**

 **ANALOG AND DIGITAL ELECTRONICS II YEAR II SEM**

1. **Explain** the operation NAND and NOR DTL circuit.**(CO6)**

2. Draw the logic circuit of a 16x4 encoder with 4x2 and 8x3 and **explain** its working? **(CO5)**

3. **Minimize** the following function using k-map F(A,B,C,D)=∑m(0,3,4,7,8,10,12,14 )+d(2,6)? **(CO4)**

4. **Design** 4 bit synchronous and asynchronous counter using J-K and D flip flop. **(CO5)**

5. Draw the logic diagrams of clocked RS flip flop using NAND gates and **explain** its working. **(CO5)**

**COMPUTER ORIENTED STATISTICAL METHODS II YEAR II SEM**

1.An oceanographer wants to check whether the mean depth of the ocean in a certain region is 57.4 fathoms, as had previously been recorded. **What** can he conclude at the level of significance 𝛼=0.05, if soundings taken at 40 random locations in the given region yielded a mean of 59.1fathoms with a standard deviation of 5.2 fathoms? Also calculate 95 % confidence interval.**(CO3)**

2. A researcher wants to know the intelligence of students in a school. He selected two groups of students. In the first groupthereare150studentshavingmeanIQof75witha S.Dof15.Inthesecond group there are 250 students having mean IQ of 70 with S.D of 20. Is there a significant difference between the means of two groups?**(CO3)**

3.Two horses A and B were tested according to the time(in seconds) to run a particular track with the following results. **Test** whether the two horses have the same running capacity. **(CO4)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Horse A | 28 | 30 | 32 | 33 | 33 | 29 | 34 |
| Horse B | 29 | 30 | 30 | 24 | 27 | 29 | - |

4.A)Pumpkins were grown under two experimental conditions. Tworandomsamplesof11and9 pumpkins, show the sample standard deviations of their weights as 0.8and 0.5 respectively. Assuming that the weight distributions are normal, rest the hypothesis that the true variances are equal. **(CO4)**

B)From the following data,**find** whether there is any significant liking in the habit of soft drinks. Among the categories of employees.Use chi-Squared distribution test with level of significance0.05.**(CO4)**

|  |  |  |  |
| --- | --- | --- | --- |
| Soft Drinks | Clerks | Teaches | Officers |
| Pepsi ThumsupFanta | 101550 | 253060 | 656530 |

* 1. 0.2 0.3

5.**Find** the equilibrium vector for P=[0.1 0.4 0.5]

0.2 0.2 0.6

**(CO5)**

 **SOFTWARE ENGINEERING II YEAR II SEM**

1. **What** is Class diagram? **What** are the main components in Class diagram? **Explain** with an example. **(CO3)**
2. a. **What** is integration testing? **(CO4)**

b. **Distinguish** between verification and validation? **(CO4)**

1. **Discuss** about the metrics for Analysis model.**(CO4)**
2. **Explain** about RMMM. **(CO5)**
3. **Explain** about the ISO 9000 Quality Standards. **(CO5)**

 **BUSINESS ECONOMICS AND FINANCIAL ANALYSIS II YEAR II SEM**

1. **Explain** the concept of “Break Even Analysis”.**What** are its limitations?**(CO3)**

2. (a) **What** is Accounting ?**What** do you mean by Accounting Principles? **(CO4)**

 (b) Journalise the following transactions of Mr. Rama **(CO4)**

 1.3.2022 Rama started business with cash Rs.1,00,000

2.3.2022 Purchased Furniture Rs.25,000

 3.3.2022 Sold goods worth Rs.15,000

5.3.2022 Purchased goods from Mr. Lakshman on credit Rs 20,000

 6.3.2022 Goods returned to Mr. Lakshman Rs.3,000

 7.3.2022 Sold goods to Mr. Srinivas Rs.1000

 8.3.2022 Cash received Mr.Srinivas Rs. 15,000

 9.3.2022 Paid Rent Rs. 10,000

 10.3.2022 Paid Advertisement Rs.2000

3. **Explain** the importance of Ratio analysis as a technique for analyzing financial statements? **(CO5)**

4. From the following trial balance of Vikram foundary works, prepare Trading account & Profit & Loss account for the year ending March 31, 2023.Also prepare a balance sheet as on that data:**(CO4)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name of the Account** | **Dr. Amount** | **Name of the Account** | **Cr. Amount** |
| Electricity | 14,000 | Interest | 16,000 |
| Land | 1,40,000 | Discount received | 6,000 |
| Interest | 16,000 | Sales | 8,00,000 |
| Wages | 50,000 | Purchase Returns | 10,000 |
| Opening stock | 20,000 | Sundry Creditors | 60,000 |
| Rent | 24,000 | Capital | 3,02,000 |
| Purchases  | 3,00,000 | Bills payable | 15,000 |
| Office expenses | 30,000 |  |  |
| Building | 4,00,000 |  |  |
| Salaries  | 90,000 |  |  |
| Power Gas & water | 30,000 |  |  |
| Sales Returns | 20,000 |  |  |
| Furniture  | 15,000 |  |  |
| Sundry Debtors | 60,000 |  |  |
|  | **12,09,000** |  | **12,09,000** |

Adjustments:

1. Outstanding Salaries Rs. 10,000

2. Closing Stock Rs. 80,000

3. Depreciation Buildings @ 10%

4. Interest received in advance Rs. 2,000

5. Return off bad debts Rs.10,000

5. **Write** a difference between Cash Flow and Funds Flow Analysis.**(CO5)**

 **DESIGN AND ANALYSIS OF ALGORITHMS III YEAR II SEM**

1. **Find** Least Cost (LC) branch and bound of the following with given total weight of knapsack is 15 and number of items i.e. n=4.**(CO5)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pr PROFIT** | 10 | 10 | 12 | 18 |
| **WEIGHT** | 2 | 4 | 6 | 9 |

1. Single source shortest path for the following graph.**(CO4)**

9

2

6

15

11

 14

1. 10

7

1. **Find** the Reliability design for the following:**(CO4)**

|  |  |  |
| --- | --- | --- |
| **Di** | **Ci** | **Ri** |
| D1 | 30 | 0.9 |
| D2 | 15 | 0.8 |
| D3 | 20 | 0.5 |

Given budget is 105.

4) a) **Explain** Traveling sales person problem using Branch and Bound with an example.**(CO4)**

b) **Explain** different tree traversals with example.**(CO4)**

5)a) State and **prove** Cook’s theorem. **(CO5)**

b) **Differentiate** NP-Hard and NP-complete problems.**(CO5)**

 **MACHINE LEARNING III YEAR II SEM**

1.**Explain** Gaussian Mixture Models? **[CO3]**

2. **Discuss** about K-Means Algorithm with an example? **[CO3]**

3. **Explain** about Principal Component Analysis and Independent Component Analysis with an example? **[CO4]**

4. **Discuss** about Genetic Offsprings and Genetic Operators with an example? **[CO4]**

5. Briefly **discuss** about Markov Chain Monte Carlo? **[CO5]**

6. **Write** a short notes for the following,

a) Boosting and Bagging. **[CO3]**

b) Least Squares Optimization Evolutionary Learning. **[CO4]**

c) Bayesian Networks. **[CO5]**

d) Hidden Markov Models. **[CO5]**

 **WEB TECHNOLOGIES III YEAR II SEM**

1. a. **Explain** the methods defined by Servlet request interface.  **(CO3)**

 b. **Explain how** to connect to a database using JDBC. **Illustrate** with example.**(CO3**

1. a. **What** is session management? **Explain** about session management in servlets. **(CO3)**

b.**Discuss** various implicit objects in JSP. **(CO4)**

1. a. **How** to access a database from a JSP? **Explain** in detail. **(CO4)**

 b. **Write** a JSP to **demonstrate** the usage of page and include directives.**(CO4)**

1. a. **Discuss** about various categories of JSP tags. **Explain** each of them with syntax and suitable examples.**(CO4)**
2. **Write** a short note on Event handlers in JavaScript. **(CO5)**
3. a. **Describe** about form validation concept in JavaScript. **Explain** with an example program. **(CO5)**

b. **Discuss** the Document Object Model in JavaScript in detail.**(CO5)**

 **SOFTWARE PROJECT MANAGEMENT III YEAR II SEM**

 1) **Explain** model-based software architecture. (**CO3)**

2) Briefly **explain** the flow of the process (workflow process)**(CO4)**

3) **Write** about the point of the process. **(CO4)**

4) **Explain** project management. responsibilities (project organisation responsibilities). **(CO5)**

5) **Write** about different indicator types (7 core metrics) with diagrams. **(CO5)**

 **PRINCIPLES OF ELECTRONIC COMMUNICATIONS III YEAR II SEM**

1. a) **List** the main subsystems commonly found in satellites. **(CO3)**

b) **Discuss** working principle of the Global Positioning System. **(CO3)**

1. **Explain** about the Wavelength Division Multiplexing. **(CO4)**
2. a) **Define** total internal reflection. **(CO4)**

b) **Explain** the block diagram of optical fiber communication system with Transmitter and receiver. **(CO4)**

1. **Explain** Zigbee network and Bluetooth. **(CO5)**
2. **Discuss** Global System for Mobile Communication in detail. **(CO5)**

 **INFORMATION RETRIEVAL SYSTEMS III YEAR II SEM**

1. a)**Develop** the term cluster using following existing clusters with 7 terms.**(CO3)**

Class1(term1,term2)

Class2(term3,term4)

Class3(ter5,term6)

b) **Explain** the one pass assignments with example.

2. a)**Explain** different similarity measures & ranking and with example calculate similarity between the item & search statement? **(CO4)**

   b) **Explain** the selective dissemination of information search. **(CO4)**

3. **Explain** the following visualization techniques. **(CO4)**

     a)Perspective Wall

     b)CONE tree

     c) Envision interface

4. a)**Demonstrate** Boyre-Moore Algorithm for the following scenario, **explain** each step. **(CO4)**

String to be searched: abcac

Input String: ababdcabcdacabcac

b)**What** are hardware text search algorithms? **Explain** them in detail. **(CO5)**

 5.**Explain** the following:**(CO5)**

  a)Non speech audio retrieval

  b)Multimedia Retrieval.

 **BLOCKCHAIN TECHNOLOGY IV YEAR II SEM**

1. a. **Explain** Grid coin, Folding coin and Bit coin MOOC’s?**(CO3)**

b. **What** is the use of Blockchain in Genomics? **What** are the Technologies used in Blockchain Genomics? **(CO3)**

2. **What** is a coin drop as a strategy in Blockchain? **(CO4)**

3. **Explain** about Demurrage currency with example.**(CO4)**

4. a. **Explain** about Currency Multiplicity.**(CO4)**

 b. **Define** the concept of tokenization and provide examples of assets that can be tokenized. **Discuss** the potential benefits and challenges associated with tokenizing assets.**(CO4)**

5. a. **Explain** the Technical Challenges of Blockchain? **(CO5)**

 b. **Explain** the Government Regulations of Blockchain? **(CO5)**

 **COMPUTER VISION IV YEAR II SEM**

1. **What** is line detection? **Explain** the line detection by using HT? **(CO3)**

2. **What** is the Generalized Hough Transform (GHT), and **how** does it differ

from the Conventional Hough Transform?  **(CO4)**

3. **Explain** about photometric stereo.  **(CO4)**

4. **Discuss** about combining views from multiple cameras.  **(CO5)**

5. **Explain** the identifying road signs in vehicle vision system.  **(CO5)**

 **CLOUD COMPUTING IV YEAR II SEM**

1. **Explain** the concepts of Managing Cloud Infrastructure. **(CO3)**

And Managing Cloud Application.

* 1. **Describe what** managing cloud infrastructure entails.
	2. **Explain** the key responsibilities involved in managing cloud applications.
1. **What** are the different Phases of Cloud Migration. **(CO4)**

approaches for Cloud Migration?

* 1. **List** and **explain** the phases involved in cloud migration.
	2. **Discuss** the steps typically taken during each phase.
1. **Explain** the Cloud Service Model of Infrastructure as a Service (IaaS).**(CO4)**
	1. **Define** IaaS and describe its characteristics.
	2. **Discuss** the suitability of IaaS for businesses.
	3. Highlight the key pros and cons of using IaaS.
2. **Explain** the Cloud Service Model of Platform as a Service(PaaS).**(CO5)**
	1. **Define** PaaS and its key characteristics.
	2. **Discuss** the suitability of PaaS for specific use cases.
	3. Outline the pros and cons of using PaaS for application development.
3. **Write** a short note on the following Cloud Service Providers:**(CO5)**
	1. EMC and EMCIT
	2. Captiva Cloud Toolkit
	3. Google Cloud Platform and Google Cloud Storage
	4. Google Cloud Connect and Google Cloud Print
	5. Google App Engine
	6. AmazonWeb Services(AWS)

 **DESIGN PATTERNS IV YEAR II SEM**

1. **Explain** abstract Factory Method design pattern? **(CO3)**
2. **What** is Decorator Design pattern? **Explain** with example?**(CO4)**
3. **Explain** in detail about the visitor object behavioral pattern?**(CO5)**
4. **What** is the motivation for the flyweight pattern? **Explain** in detail? **(CO4)**
5. a)**Write** a short note on Chain of responsibility?**(CO5)**

b) **Explain** mediator design pattern?**(CO5)**

 **IOT PROTOCOL AND ITS APPLICATIONS IV YEAR II SEM**

1. **Describe** about IoT Smart objects and their smart applications. **[CO1]**

2.  **Explain** about information view, operational view for IoT Reference architecture in detail. **[CO3]**

3. **Explain** the need of IoT for Oil &Gas industry in details. **[CO4]**

4. **Discuss** about IoT applications for Future factory concepts. **[CO4]**

5. **Describe** the overview of privacy, security and governance in IoT.**[CO5]**