

FACULTY OF ENGINEERING**B.E. VIII - Semester (CBCS)(Civil) (Make-up) Examination, December 2020****Subject: Ground Water Mgt. (E- IV)****Time: 2 Hours****Max Marks: 70****PART-A****Note: Answer any Five Questions.****(5 x 2 = 10 Marks)**

1. What is the main objective of conducting geophysical tests?
2. Draw the sketch of vertical distribution of ground water.
3. List the assumptions made in the analysis of steady radial flow into a well.
4. Write about the Chow's method of solution for radial flow in a confined aquifer.
5. What is upconing of saline water?
6. What do you understand by salt water wedge?
7. Differentiate between diffusion and dispersion mechanism of ground water contamination.
8. List out the classification of point source ground water contamination.
9. Differentiate between a true model and an analog model.
10. State how sand models are useful.

PART-B**Note: Answer any Four Questions.****(4x15 = 60 Marks)**

- 11 a) Mention the various methods of surface investigations carried out for ground water. Describe the seismic refraction method.
- b) Write a brief note on potential areas of ground water in India.
- 12 a) Discuss the image well theory with sketches.
- b) A pumping test was performed in a confined homogenous and isotropic aquifer of infinite areal extent. The constant pumping rate was $250\text{m}^3/\text{hr}$. The following draw downs were observed in an observation well located at 550m from the pumping well. Determine aquifer parameters by Cooper-Jacob's method.

| | | | | | | |
|-------------|------|------|------|-----|------|------|
| Time(hrs) | 0.15 | 0.7 | 1.75 | 8 | 20 | 120 |
| Drawdown(m) | 0.45 | 0.55 | 0.95 | 1.5 | 1.75 | 1.85 |

- 13 a) Derive Ghyben Herzberg relation. What do you understand by the term shape of interface?
- b) Explain in detail the different methods of controlling saline water intrusion with figures.
- 14 a) Derive the governing equation of ground water contamination.
- b) Explain briefly the advection and diffusion mechanisms of ground water contamination.
- 15 a) Explain the principle and working of numerical modelling of ground water.
- b) Discuss in detail the principle and working of viscous and thermal models.
- 16 a) Discuss the electrical resistivity method of surface geophysical exploration with a sketch.
- b) Derive an equation for a steady flow in a confined aquifer.
- 17 a) Discuss the important contaminants present in polluted ground water.
- b) Explain the principle and working of an electric analog model.

FACULTY OF ENGINEERING

B.E. (Civil) VIII-Semester (CBCS) (Make-up) Examination, December 2020

Subject : Intelligent Transportation Systems (E-IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

- 1 Write the significance of Intelligent Transportation Systems.
- 2 List the limitations of ITS.
- 3 What are the requirements of Route Navigation.
- 4 Name a few Traffic Management Centres in India.
- 5 State the objectives of AVCS?
- 6 Write the concept of ITS Architecture planning.
- 7 State the ITS planning stages?
- 8 Mention the applications of ITS in TMS.
- 9 What are the advantages of Electronic toll collection.
- 10 Define ATMS with its effects on ITS.

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

- 11 a) What is the fundamental concept & types of ITS.
b) Write in brief about the Historical background of ITS.
- 12 a) Write in detail about data collection techniques and the communication systems?
b) Describe the concept of AVL with a schematic diagram?
- 13 a) Describe sensor plan & its specific requirements as per ITS?
b) Briefly write any case study describing ITS deployment planning and system design?
- 14 a) Differentiate between APTs & ARTs with their applicable technologies?
b) How Transportation Systems uses ITS for its operation & Management. Discuss briefly.
- 15 a) Write the objectives and system requirements of Automated highway systems?
b) List various Evaluation methods & models used in ITS Architecture planning.
- 16 a) Discuss in detail about various applications of ITS in Regional strategic transportation planning?
b) Discuss ITS applications in Inter model freight operations?
- 17 Write any Two of the following:
 - a) ITS user needs & services.
 - b) Emergency Management using ITS
 - c) Advanced vehicle safety system
 - d) Business modules of ITS.

FACULTY OF ENGINEERING

B.E. (EEE/Inst.) VIII-Semester(CBCS) (Make-up) Examination, December 2020

Subject : Power Quality (E-IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

- 1 Define Power Quality.
- 2 Explain the term "Voltage Swell"
- 3 Draw the ITI Curve and Explain
- 4 What are the types of voltage sags?
- 5 How in voltage sag characterized? Give Example.
- 6 What are effects of voltage sag on induction motor?
- 7 What are the guidelines to limit the harmonics
- 8 Explain the terms "THD and TDD"
- 9 Explain the voltage flicker.
- 10 What are the PQ measurement Devices?

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

- 11 What are the PQ Problems? List out and explain in detail?
- 12 a) Explain how voltage sag is calculated in Sub transmission loop?
b) Define voltage sag? Derive an expression for magnitude and phase angle jump versus distance.
- 13 a) With a neat sketch explain the operation of adjustable speed DC drive and Give the technical barriers in ASD's.
b) Explain the voltage sag coordination for eligible plant operation.
- 14 a) Explain the how to mitigation of the harmonics
b) Explain the effects of harmonics on Transformers.
- 15 a) Explain about the power quality monitoring.
b) Explain site surveys of power quality.
- 16 a) What are causes and sources of the power quality problems?
b) Explain the theoretical calculation of voltage sag duration.
- 17 Explain the Flicker and IEC Flicker meter.

FACULTY OF ENGINEERING

B.E. (ECE) VIII – Semester (CBCS) (Make-up) Examination, December 2020

Subject: Global Navigational Satellite Systems (E-IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

1. Differentiate between GPS time and UTC time.
2. What is the ideal value of DOP and explain.
3. Explain briefly about UERE with an example with all sources of errors.
4. List out the salient features of GPS L2 signal.
5. Compare WAAS and GAGAN.
6. Explain briefly as to why Space based augmentation system are needed.
7. Explain space segment features of Russian GLONASS.
8. Compare Compass and Galileo.
9. Explain the difference between Global and Regional Navigation Satellite Systems with examples.
10. What is GPS/ Pseudolite integration and give its applications.

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

11. (a) Explain in detail about various Orbital elements.
(b) What is significance of DOP and explain about GDOP, VDOP and PDOP.
12. (a) Elaborate the concepts of Spoofing and anti-spoofing.
(b) Explain various types of error sources encountered in GPS and define TEC.
13. List out various types of Augmentation systems along with examples and explain in details about LAAS.
14. Explain the architectural features of European and Chinese Navigation Satellite Systems.
15. (a) Explain in detail about the Signal structure of IRNSS.
(b) Write notes on various types of GPS Integration Systems.
16. (a) Discuss the architecture of EGNOS with neat diagrams.
(b) Describe in detail the principle involved in Differential GPS
17. Write short notes on:
(a) QZSS (b) LAAS Vs. WAAS

FACULTY OF ENGINEERING

B. E. (M/P/A/E) (CBCS) VIII – Semester (Make-up) Examination, December 2020

Subject: Entrepreneurship Development (E-IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

1. Define Entrepreneurship.
2. What is a large scale industry?
3. Tell about emergence of women entrepreneur.
4. State the major criteria of selecting Technology.
5. How could you formulate a project?
6. State about PERT.
7. Define attitude.
8. Recall motivation.
9. What is tax burden in relation to project management?
10. State the limit of invest on medium scale enterprises.

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

11. Analyse the opportunities and challenges of industrial environment.
12. Distinguish between Profitability & Technical analysis.
13. How do you manage project during construction phases.
14. Write a note on market demand analysis during project formulation.
15. What are the sources of ideas? Explain.
16. How do you establish link among small, medium & large scale industries?
17. Describe about the critical path model technique.

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FACULTY OF ENGINEERING

B.E. (CSE) VIII-Semester (CBCS) (Make-up) Examination, December 2020

Subject : Information Retrieval Systems (Elective – IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

- 1 Define the terms Stemming and Lemmatization.
- 2 Write down the entries in the permuterm index dictionary that are generated by the term 'mama'.
- 3 How dictionary is used for string compression?
- 4 What is F-Measure? Write its importance.
- 5 List the methods for query reformulation.
- 6 What way tf-idf weighting is different from BIM probabilistic retrieval mode?
- 7 List the various measures to evaluate the performance of a classifier.
- 8 List the applications of clustering in information retrieval.
- 9 What is shingling? Give example.
- 10 Define link analysis in web mining.

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

- 11 Explain the various steps in determining the vocabulary of terms.
- 12 Draw and explain the components of an information retrieval system.
- 13 Describe the differences between vector space relevance feedback and probabilistic relevance feedback.
- 14 Define classification. Explain Naïve Bayes text classification with an example.
- 15 Explain k-means clustering algorithm in detail. Give example.
- 16 Explain Latent semantic indexing in detail. Illustrate with example.
- 17 Explain query likelihood model. How to Estimate the query generation probability?

FACULTY OF ENGINEERING**B. E. VIII – Semester (CBCS) (CSE) (Make-up) Examination, December 2020****Subject: Machine Learning (E-IV)****Time: 2 Hours****Max Marks: 70****PART-A****Note: Answer any Five Questions.****(5 x 2 = 10 Marks)**

1. Explain the concepts of Entropy.
2. Define concept learning.
3. Distinguish between classification and regression.
4. What is the maximal margin classifier?
5. Define Bayesian network.
6. What is Bias-Variance trade-off?
7. What is bagging?
8. What is Dimensionality Reduction?
9. Differentiate between partitioning method and hierarchical methods.
10. How to choose the right K in k-means clustering algorithm?

PART-B**Note: Answer any Four Questions.****(4x15 = 60 Marks)**

11. a) What are the capabilities and limitations of ID3 decision tree algorithm.
- b) Write candidate elimination algorithm. Apply the algorithm to obtain the final version space for the training example.

| S. No | Sky | Air temp. | Humidity | Wind | Water | Forecast | Enjoy sport |
|-------|-------|-----------|----------|--------|-------|----------|-------------|
| 1 | Sunny | Warm | Normal | Strong | Warm | Same | Yes |
| 2 | Sunny | Warm | High | Strong | Warm | Same | Yes |
| 3 | Rainy | Cold | High | Strong | Warm | Change | No |
| 4 | Sunny | Warm | High | Strong | Cool | Change | Yes |

12. a) Suppose that the following are a set of points in two classes.

| X | Y | Class |
|----|----|-------|
| 1 | 6 | 1 |
| 1 | 10 | 1 |
| 4 | 11 | 1 |
| 5 | 2 | 0 |
| 7 | 6 | 0 |
| 10 | 4 | 0 |

What are the support vectors and what is the margin?

- b) Design a two-layer network of perceptron's that implements A XOR B.

13. a) Discuss the Naïve Bayes classifier.

- b) The following table gives data set about stolen vehicles. Using Naïve Bayes classifier classify the new data (Red, SUV, Domestic).

| Colour | Type | Origin | Stolen |
|--------|--------|----------|--------|
| Red | Sports | Domestic | Yes |
| Red | Sports | Domestic | No |
| Red | Sports | Domestic | Yes |
| Yellow | Sports | Domestic | No |
| Yellow | Sports | Imported | Yes |
| Yellow | SUV | Imported | No |
| Yellow | SUV | Imported | Yes |
| Yellow | SUV | Domestic | No |
| Red | SUV | Imported | No |
| Red | Sports | Imported | Yes |

14. a) What is Boosting in ensemble learning? Explain the Ada-boost algorithm?
 b) Compute the principal components to the following matrices.

$$A = \begin{pmatrix} 8 & -6 & 2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{pmatrix}$$

15. a) Given the following measurement for the variable age: 18, 22, 25, 42, 28, 43, 33, 35, 56, 28 Standardize the variables by the following:
 (i) Compute the mean absolute deviation for age.
 (ii) Compute the Z-score for the first four measurements.
 b) Use single link agglomerative clustering to group the data described by the following table. Show the den-diagrams.

| variables | a | b | c | d | e |
|-----------|---|---|---|---|---|
| Features | 1 | 2 | 4 | 5 | 6 |

16. a) Find the least square regression line for given data points and estimate the value of GDP when Year = 2020.

| | | | | | | | | | |
|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| GDP | 6.81 | 7.17 | 8.17 | 8 | 7.41 | 6.39 | 5.46 | 5.24 | 8.5 |
| Year | 2018-2019 | 2017-2018 | 2016-2017 | 2015-2016 | 2014-2015 | 2013-2014 | 2012-2013 | 2011-2012 | 2010-2011 |

- b) Suppose that 1000 people attended a disease prediction test. Among 300 patients having heart related disorders, 280 of them tested positive, 20 tested negative. Among the 700 people, without having any heart diseases, 685 tested negative and 15 tested positive. Find accuracy, precision, recall and specificity.

17.a) Consider the following set of training examples:

| Instance | Classification | a1 | a2 |
|----------|----------------|----|----|
| 1 | + | T | T |
| 2 | + | T | T |
| 3 | - | T | F |
| 4 | + | F | F |
| 5 | - | F | T |
| 6 | - | F | T |

- (i) What is the entropy of this collection of training examples with respect to the target function classification?
- (ii) What is the information gain of a2 relative to these training examples?
- b) Discuss the various types of machine learning.

FACULTY OF ENGINEERING

B.E. (I.T.) VIII-Semester (CBCS)(Make-up) Examination, December 2020

Subject : Adhoc & Sensor Networks (Elective – IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

- 1 What re the benefits using Adhoc networks?
- 2 Differentiate between Adhoc mode and infrastructure mode.
- 3 Discuss the parameters needed to evaluate Adhoc network protocol.
- 4 List the message types on AODV protocol.
- 5 Write the differences between soft state and hard state topology maintenance.
- 6 Give advantages of using probe packets for detection of a new path.
- 7 Give QoS definitions at various layers.
- 8 What is wormhole attack?
- 9 What are the basic components of a sensor network?
- 10 Differentiate idle listening and overhearing in WSN.

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

- 11 (a) Examine the fundamentals of MAC protocols.
(b) Explain differences between WSN and Adhoc networks.
- 12 (a) What is route establishment and route maintenance in AODV?
(b) Write the differences between table driven and on demand protocols.
- 13 (a) Examine the variation used in TCP for Adhoc networks.
(b) Explain Broad cast storm problem.
- 14 (a) Examine various security attacks in Adhoc wireless networks.
(b) Explain QoS related issues in Adhoc networks.
- 15 (a) Discuss Sensor Taxonomy.
(b) Write notes on Zigbee.
- 16 (a) Evaluate different wireless technologies.
(b) Write a short note on LEACH protocol.
- 17 (a) Explain the intrusion detection techniques.
(b) Write about MAC layer of Bluetooth.

FACULTY OF ENGINEERING**B.E. (IT) VIII-Semester (CBCS) (Make-up) Examination, December 2020****Subject : Natural Language Processing (E-IV)****Time: 2 Hours****Max Marks: 70****PART-A****Note: Answer any Five Questions.****(5 x 2 = 10 Marks)**

- 1 State one typical problem attempted by Computational Linguists.
- 2 How dialog based applications are not speech recognition problems?
- 3 Give two examples to show how Open Class Words are continuously introduced to the language as it evolves.
- 4 Explain briefly the significance of determining the most likely lexical category for each word in a sentence.
- 5 Give a list notation and structure for the sentence: "*Monkey ate an apple*".
- 6 What items are augmented on the arc in an Augmented Transition Network?
- 7 The representation of context-independent meaning is called the Logical Form. Give an example and explain.
- 8 What are Thematic Roles?
- 9 What is PoS tagging?
- 10 What is Context Dependent Lexical Probability?

PART-B**Note: Answer any Four Questions.****(4x15 = 60 Marks)**

- 11 a) Explain the following (i) Semantic Knowledge (ii) Pragmatic Knowledge (iii) Discourse Knowledge
b) Show how statistical modelling helps in NLP.
- 12 a) Perform syntactic analysis to get the logical form for the sentence the sky is blue. Develop Contextual Interpretation for the same.
b) Explain Encoding Ambiguity in Quasi-Logical Form.
- 13 a) Illustrate depth-first Top-Down Parsing for the sentence "*the naughty monkey howled*" using grammar given below.
 1. $S \rightarrow NP VP$
 2. $NP \rightarrow ART N$
 3. $NP \rightarrow ART ADJ N$
 4. $VP \rightarrow V$
 5. $VP \rightarrow V NP$
 b) Analyze morphological issues for design of lexicon.

- 14 a) Present an illustration to capture the following : An important aspect of context-independent meaning is the co-occurrence of constraints that arise between word senses. Often the correct word sense can be identified because of the structure and the meaning of the rest of the sentence.
- b) Write a note on recent trends in Natural Language Processing.
- 15 a) Present a Bigram model along with assumptions illustrating typical Computations involved.
- b) Explain the following Markov assumption: the probability of a category occurring depends only on the category before it.
- 16 a) Explain Semantic Interpretation and Compositionality.
- b) Explain Encoding Ambiguity.
- 17 Write notes on
- a) Statistical Methods in Ambiguity Resolution
- b) Applications of NLP.

FACULTY OF ENGINEERING

B.E. (CBCS) (IT) VIII - Semester (Make-up) Examination December 2020

Subject : Information Storage and Management (E-IV)

Time: 2 Hours

Max Marks: 70

PART-A

Note: Answer any Five Questions.

(5 x 2 = 10 Marks)

1. List the challenges faced in information management
2. What is the role of LVM in efficient storage management?
3. Explain the two methods of RAID implementation
4. What is hot spares?
5. What are the categories of zoning?
6. What are the benefits of object based storage?
7. What are the modes of Remote replication?
8. What is virtual tape library?
9. List the characteristics of Cloud Computing.
10. What are the security goals to be achieved by Information Security Framework.?

PART-B

Note: Answer any Four Questions.

(4x15 = 60 Marks)

- 11a) Explain in brief about the evolution of storage technology & architecture?
 - b) What is Direct Attached Storage (DAS)? What are its Benefits and Limitations.
- 12 Explain the components of an Intelligent storage system? What are the types of intelligent storage system?
- 13.a) Explain in detail about FCIP
 - b) List the benefits of NAS
14. Explain BC Planning Life Cycle with an appropriate diagram.
- 15.a) Write about Information Lifecycle Management.
 - b) How to secure Application Access Domain? Explain
- 16.a) Explain the Fibre Channel Protocol Stack.
 - b) Explain the key features of Content – Addressed Storage.
- 17.a) Explain in detail the Backup and Restore Operation.
 - b) Write about Host-Based Local Replication.

FACULTY OF ENGINEERING

B.E. 4/4 II Semester (Civil) (Backlog) Examination, December 2020

Subject: Advanced Environmental Engineering (E-II)

Time: 2 hours

Max. Marks: 75

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions.

(7 x 3 = 21 Marks)

1. Give a brief description about the characteristics of industrial wastes.
2. List five options for the management and control of hazardous waste.
3. What is meant by site remediation and mention the difference between off site and on site remediation options?
4. Define the terms negative lapse rates and inversions.
5. Name five important devices to control particulate matter.
6. What factors are considered in evaluating the performance of electrostatic precipitators.
7. List out the measures to be taken to combat air pollution.
8. What is the impact of moisture and precipitation on dispersion of air pollutants?
9. Name the objectives of environmental impact assessment.
10. What do you understand by the term legal provisions of EIA.

PART – B

Answer any three questions.

(3 x 18 = 54 Marks)

11. a) Discuss few methods used to sample sediment, surface water and groundwater at hazardous waste remediation sites.
b) Discuss some of the safety factors related remediation site field observations.
12. a) Give a composition of cotton textile industry and explain the waste water treatment with help of a flow diagram.
b) Draw a line diagram to manufacture cement and explain the working of waste water treatment plant with the aid of a flow chart.
13. a) What do you understand by atmospheric dispersion, write the equation for determining ground level concentration of pollutant?
b) What do you understand by aerosols, describe various types of aerosols along with their characteristics?
14. a) Explain the working of gravitation and centrifugation methods in controlling suspended particulate matter with the aid of neat sketches.
b) What are the specific problems faced for controlling NO_x formation in gas turbine power plants.

15. Discuss in detail about the preparation of environmental management plan and also about the preparation of environmental impact assessments of road projects.
16. a) Discuss the major techniques; absorption and adsorption and the devices used to sample and measure gaseous air pollutants.
b) With the aid of a neat sketch discuss the principle of self purification of natural streams.
17. Write notes on:
 - a) Base line data collection for EIA.
 - b) Characteristics of pharmaceutical and fertilizer industries.
 - c) Source correction in air pollution control.

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FACULTY OF ENGINEERING

BE 4/4 (EEE) II-Semester (Backlog) Examination, December 2020

Subject : Utilization

Time: 2 Hours

Max. Marks : 75

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions.

(7 x 3 = 21 Marks)

1. Why electric heating is preferred over other forms of heating?
2. How power is controlled in arc welding?
3. Why synchronous motor is not inherently self – starting? Explain.
4. What are the applications of float switches?
5. What are the factors to be considered for street lighting?
6. Define Luminance.
7. Compare a.c and d.c systems of traction
8. What are different systems of track electrification?
9. Mention the application of lead acid batteries
10. Explain suitability of 3-phase induction motor for traction work?

PART – B

Answer any three questions.

(3 x 18 = 54 Marks)

11. Describe with neat sketches the various methods of electric resistance welding. Give its merits and demerits with respect to arc welding
12. Explain the following with neat schematic diagram
 - a. Jogging operation of 3-phase induction motor
 - b. Two supply sources for 3-phase induction motor.
13. a. Explain the construction of Rousseau diagram
b. (i) A lamp emits a total flux of light of 1500 Lumens. What is its MSCP. (ii) A plane surface is placed 3 meters from a 200-cp uniform source of light Calculate the intensity of illumination on the surface when it is normal and inclined at 60° .
14. a. What is specific energy consumption and what are the factors affecting the specific energy consumption?
b. Briefly explain about charging and rating of batteries
15. A low frequency induction furnace operating at 10V in the secondary circuit takes 400 kw at 0.5 p.f. when the hearth is full. If the secondary voltage be maintained at 10V, estimate the power absorbed and the p.f. when the hearth is half full. Assume the resistance of the secondary circuit to be thereby doubled and the reactant to remain the same
16. a. Explain the main transition connections from series to parallel operation of traction motors. And compare their relative merits
b. Advantages and disadvantages of 25kV ac traction systems
17. Write short notes on the following
 - a. Speed-time curve
 - b. Mechanics of train movement
 - c. Mercury vapour lamp

FACULTY OF ENGINEERING**BE 4/4 (ECE) II Semester (Backlog) Examination, December 2020****Subject: Design of Fault Tolerant Systems (Elective-II)****Time: 2 Hours****Max. Marks: 75****Note: (Missing data if, any can be assumed suitable)****PART – A****Answer any seven questions.****(7 x 3 = 21 Marks)**

1. Define a) Reliability b) Mission Time Improvement Factor.
2. Graphically show the relation between Reliability and Time incorporating MTBF.
3. Give the reliability of i) Hybrid ii) Triplicated TMR Redundancy Schemes.
4. Define a) parallel simulation b) Deductive simulation.
5. Give the block diagram of Hybrid Redundancy System to obtain Fault Tolerance.
6. Give the requirements for Fail-Soft operation.
7. Graphically represent the relation between Density and Test Generation Time.
8. Define the Two properties of Self-checking circuits.
9. Graphically represent optimization in constrained design of a circuit.
10. Explain N-version Programming.

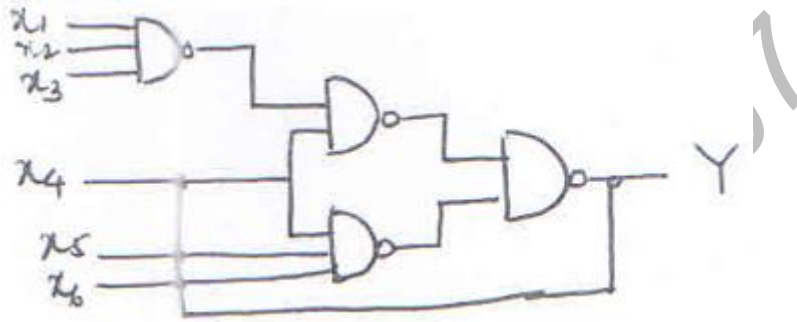
PART – B**Answer any three questions.****(3 x 18 = 54 Marks)**

11. (a) Give the properties of Boolean Difference for product and Sum of Two functions.
(b) Explain in detail the path sensitization method.
12. Explain in Detail the 5 MP Reconfiguration scheme for Fault Tolerance.
13. Explain the following practical Fault Tolerant Systems i) sift ii) pluribus.
14. For the given mealy Machine Give a Fail-Safe design using partition Theory.

| Present State | Input | | | |
|---------------|----------------|----------------|----------------|----------------|
| | I ₁ | I ₂ | I ₃ | I ₄ |
| A | C,0 | C,0 | A,0 | A,0 |
| B | B,1 | C,0 | D,1 | A,0 |
| C | C,0 | B,0 | A,0 | A,0 |
| D | B,1 | A,0 | D,1 | A,0 |
| E | E,0 | E,0 | A,0 | A,0 |

-2-

15. a) Explain in detail the various means employed to Incorporate testability into Logic boards.
 b) Explain in detail how built-in-Test is used to detect and isolate a faulty component in a circuit.
16. (a) Find the input combination for which the given circuit will behave as an asynchronous sequential circuit in the presence of the specified bridging fault.



- (b) Explain the sift-out Modular Redundancy Scheme to incorporate fault tolerance in a system.
17. Explain the following
- Partially self-checking circuits
 - Reed-Muller Expansion Technique for Testable Design
 - Design for Autonomous Self-test

Code No: 2320/BL

FACULTY OF ENGINEERING

B.E. 4/4 (ECE) II - Semester (Backlog) Examination, December 2020

Subject : Wireless Sensor Networks (Elective – II)

Time: 2 Hours

Max. Marks: 75

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions.

(7 x 3 = 21 Marks)

1. Define unicast, multicast and broadcast transmission?
2. Explain two main objectives of sensor mode deployment
3. List out any 5 applications of WSN
4. Enumerate the commoners in a node and explain the significance
5. What is a gate way? How it works
6. Explain different characteristics of contention free MAC protocol
7. Name different clustering techniques
8. Explain about localization and positing in WSN
9. What are the operating systems for WSN
10. List out Noderlevel software platforms for WSN

PART – B

Answer any three questions.

(3 x 18 = 54 Marks)

11. a) Explain in detail single – mode architecture for WSN with neat diagram
b) List and explain the characteristic of WSN
12. a) Differentiate between mobile – adhoc sensor networks
b) Explain any five application of WSN
13. a) Explain in detail IEEE802.15.4 standard
b) Explain in detail zigbee functional layer architecture and protocol stack with neat diagram.
14. a) Explain in detail Geographical routing protocol
b) Explain about Energy efficient routing prates
15. a) Discuss in detail congestion and packet loss recovery for transport protocol in WSN
b) Discuss in detail clustering protocols
16. a) Explain in detail low duty cycle MAC protocols
b) Generalize the concept s on impetus class of MAC proctors
17. Write short notes on :
 - a) SMACS
 - b) Tiny OS

FACULTY OF ENGINEERING**BE 4/4 (ECE) II-Semester (NEW) (Backlog) Examination, December 2020****Subject : Design of Fault Tolerant System (Elective-III)****Time: Hours****Max. Marks : 75****Note: (Missing data if, any can be assumed suitable)****PART – A****Answer any seven questions.****(7 x 3 = 21 Marks)**

1. Define a) Reliability b) Unreliability
2. Draw and explain the bath tub curve
3. Give & explain the condition when a combinational circuit behaves as an oscillator in the presence of bridging fault.
4. What do you mean by fail-safe operation?
5. Give the reliability expression for a hybrid (N,S) system
6. Draw the block diagram to implement triplicated TMR
7. Explain software redundancy
8. Give the basic logic diagram of a 2-rail checker
9. Graphically represent optimization in constrained design of a circuit
10. Define the two properties of self-checking circuits

PART – B**Answer any three questions.****(3 x 18 = 54 Marks)**

11. a. Explain the technique pioneered by Hewlett-packard to detect errors in data streams due to hardware faults
- b. For the given state table give the state assignment and the state table to obtain fault tolerance using error correcting codes

| Present State | Input | |
|---------------|-------|-----|
| | X=0 | X=1 |
| A | C,1 | B,0 |
| B | A,0 | D,1 |
| C | B,1 | A,1 |
| D | D,1 | C,0 |

12. Explain in detail the 5MR Reconfiguration scheme for fault tolerance
13. Explain in detail the following practical fault tolerant system i) COMTRAC ii) Pluribus
14. a. Explain in detail the design of k-out-of-2k checker assuming k=2
- b. Explain the type 2 partially self checking network
15. a. Explain the use of control logic for testability
- b. Explain Reed-muller expansion technique
16. a. Explain a simple scheme to incorporate fault tolerance in VLSI chips
- b. Explain in detail the design of Autonomous self- test.
17. Write short notes on the following
 - a. Boolean Difference
 - b. Relation between reliability and hazard rate
 - c. Berger codes

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BE 4/4 (CSE) II - Semester (Backlog) Examination, December 2020

Subject: Human Computer Interaction (Elective-II)

Time: 2 Hours

Max. Marks: 75

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions.

(7 x 3 = 21 Marks)

- 1) Define User Interface?
- 2) What is wizard, where is it useful.
- 3) Write about 5W+H heuristic?
- 4) Write short notes on “mapping”?
- 5) What is interaction design how it is relates to HCI?
- 6) What is prototyping? What is the advantage in process development
- 7) What is WIMP Interface?
- 8) What is user-centered approach?
- 9) Write about the two distinct application of speech recognition?
- 10) What are agents? Explain in short?

PART – B

Answer any three questions.

(3 x 18 = 54 Marks)

- 11) a) What are the advantages and disadvantages of menu based interfaces?
b) What is Interaction Framework? Give applications of it.
- 12) a) What is DSDM? Explain in detail?
b) What are the benefits of high level software tools?
- 13) What are screen based controls? Explain in detail?
- 14) a) What is GOMS in Interaction Design models?
b) Explain different GOMS models?
- 15) a) What are the different types of control in WIMP interfaces?
b) How Haptic Techniques are used in Interaction Design?
- 16) Explain in detail about the Discovery Phase Framework?
- 17) Describe the following
 - a) Cognitive
 - b) Usability Testing
 - c) Human Visual System.

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B.E. 4/4 (CSE) II – Semester (Backlog Examination, December 2020

Subject: Software Reuse Techniques (Elective – II)

Time: 2 Hours

Max.Marks: 75

Note: (Missing data if, any can be assumed suitable)

PART – A

Answer any seven questions.

(7 x 3 = 21 Marks)

- 1 With example emphasize the advantage of Object oriented software engineering.
- 2 What is the goal of Reuse driven software engineering business.
- 3 What are the benefits of singleton pattern?
- 4 Define design pattern with an example.
- 5 What is the basic idea behind model-view-controller architectural pattern?
- 6 List out the consequences of singleton pattern.
- 7 Discuss the importance of requirements capture unit?
- 8 What is the intent of Adapter and Bridge pattern?
- 9 List the applications of Master-Slave Architecture.
- 10 Define visitor class and visitor pattern.

PART – B

Answer any three questions.

(3 x 18 = 54 Marks)

- 11 a) Explain how analysis model shapes system architecture.
b) Explain how software reuse can be adapted systematically and incrementally.
- 12 Explain the intent, structure, participants, motivation and consequences of abstract factory pattern.
- 13 Explain the intent structure, participants, applicability and implementation of Flyweight pattern.
- 14 Write about the motivation, implementation, sample code and consequences of Mediator pattern.
- 15 Write the intent, motivation, structure and known uses of the following patterns.
a) Master – slave
b) Mediator.
- 16 Write about the intent, motivation, implementation, sample code and consequences of Chain of responsibility behavioral pattern.
- 17 Write short notes
a) Presentation-abstraction-control architecture
b) Publisher-Subscriber pattern