

**FACULTY OF ENGINEERING****M.E(Civil-SE,EEE,ECE-ES,ES&VLSI,ES&VLSID)/ M.Tech (CSE-CSE)****II-Semester (AICTE) (Main &Re-Registered Students)Examination,****October 2021****Subject: Industrial Safety****Time: 2 Hours****Max. Marks: 70**

**Note: (i) First question is compulsory and answer any three questions from the remaining six questions.**

**(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.**

**(iii) Missing data, if any, may suitably be assume.**

**1 Answer any four questions from the following : (4x4=16Marks)**

- (a) Suggest causes and preventive steps for electrical hazards
  - (b) Name various measures for Maintenance Performance
  - (c) How can you prevent corrosion?
  - (d) What is the working principle of pressure gauge gun?
  - (e) List the objective of Preventive Maintenance
  - (f) What do you understand from the word over hauling?
  - (g) What is Root cause analysis?
- 2(a) What are the factors that cause fire in a plant? Explain the various provisions for fire Fighting 10M
- (b) Explain drinking water layout for a process industries. 8M
- 3(a) Explain following 8M
- (1) Total productive maintenance (2) Preventive Maintenance
- (b) Define: (i) Reliability (ii) Machine Availability (iii) Equipment Life Cycle (iv) Mean Time between Failure (v) Maintainability (vi) Mean Time Down (vii) Mean Time to Repair. 10M
- 4(a) Explain the working principle of splash lubrication with the help of simple sketch. 9M
- (b) Mention various types of wear. Mention their causes and also suggest remedies for them. 9M
- 5(a) Name various types of fault in I.C. Engines and also discuss their general causes. 9M
- (b) Draw the decision tree for a problems in pneumatic control mechanism. 9M
- 6(a) Explain Maintenance strategy. 9M
- (b) Explain in brief maintenance economics. 9M
- 7(a) Explain the different types of industrial accidents and general steps to be taken for preventing the accidents in any industry. Also explain the procedure for accident reporting. 11M
- (b) Safety at Work Increase Productivity of Industry: Justify 7M

**FACULTY OF ENGINEERING****M.E. (Civil-SE) II -Semester (AICTE) (Main & Re - Registered Students)****Examination, October 2021****Subject: Theory of Plates****Time: 2 Hours****Max. Marks: 70**

- Note:**
- i) First Question is compulsory and answer any Three questions from the remaining six questions.
  - ii) Answers to each question must be written at one place only and in the same order as they occur in the question paper.
  - iii) Missing data, if any, may suitably be assumed.

**1. Answer any Four Questions from the following (4 X 4 = 16Marks)**

- a) Discuss about the boundary conditions at free edge of Rectangular Plate
  - b) A 2mm thick plate is made of steel. Calculate the flexural rigidity taking  $E=200\text{GPa}$  and  $\nu=0.3$
  - c) List out the assumptions considered in the buckling analysis of plates
  - d) Write the stress strain law for plane stress considerations in orthotropic plates
  - e) Explain briefly Galerkin method to determine the deflection of rectangular plates
  - f) Explain the utility of finite difference method
  - g) State the governing differential equation for buckling of thin rectangular plates
2. Derive the differential equation of cylindrical bending of uniformly loaded rectangular plates with simply supported edges. 18
  3. Obtain the expression for critical load in Case of a rectangular plate simply supported on all four edges and subjected to uniform axial compression in one direction. 18
  4. Using Navier's approach, derive the expression for deflection for a rectangular plate ( $a \times b$ ) subjected to udl over a portion of the plate. Using the solution show that the deflection at the center of the square plate due to central point load  $P$  is  $0.01121 Pa^2/D$ . 18
  5. A square plate of side  $a$  simply supported at the edges is subjected to a udl of intensity  $q$  per meter length. Obtain the central deflection and central bending moment using Finite Difference Method considering  $\alpha = a/2$ . 18
  6. What are orthotropic plates? Derive the differential equation of equilibrium for an orthotropic rectangular plate in bending. Also obtain the expressions for shearing forces in the plate. 18
  7. Find out the buckling load for a fixed plate considering one directional buckling using one term solution only 18

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**FACULTY OF ENGINEERING****M.E (Civil-SE, ECE-DS) M.Tech(CSE-CSE) II-Semester (AICTE)****(Main & Re-Registered Students) Examination,****October 2021****Subject: Research Methodology and IPR****Time: 2 Hours****Max. Marks: 70****Note: (i) First question is compulsory and answer any three questions from the remaining six questions.****(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.****(iii) Missing data, if any, may suitably be assume.****1 Answer any four questions from the following: (4x4=16M)**

- a) Illustrate the objectives of Research.
  - b) State the importance of Literature Survey.
  - c) What are the features of good research design?
  - d) What are the methods of data grouping?
  - e) Define IPR.
  - f) State the benefits of research to the society.
  - g) Give the classification of research designs.
- 2(a) Explain types of Research. 12M  
 (b) Appraise the problems encountered by Researchers in India. 6M
- 3(a) Examine the importance and purpose of literature survey. 9M  
 (b) Explain the types of research reports. 9M
- 4(a) Illustrate the various research designs. 12M  
 (b) Illustrate the features of a good research design. 6M
- 5(a) Infer the different types of graphic representation of data. 9M  
 (b) A sample of 10 is drawn randomly from a certain population. The sum of the squared deviations from the mean of the given sample is 50. Test the hypothesis using Chi-Square that the variance of the population is 5 at 5 percent level of significance. 9M
- 6(a) Explain about patent document. 9M  
 (b) Explain the stages involved from filing of the patent to the grant of patent. 9M
- 7(a) Explain the Research process. 9M  
 (b) Discuss the steps in writing the research report. 9M

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**FACULTY OF ENGINEERING**

**M.E (Civil-TE) II-Semester (AICTE) (Main & Re - Registered Students)  
Examination, October 2021**

**Subject: Statistical Techniques**

**Time : 2 Hours**

**Max. Marks: 70**

**Note: i) First Question is compulsory and answer any Three questions from the remaining six questions.**

**ii) Answers to each question must be written at one place only and in the same order as they occur in the question paper.**

**iii) Missing data, if any may suitably be assumed.**

**1. Answer any Four Questions from the following (4 X 4 = 16Marks)**

- a) The sum of 20 items was 180. Later it was found that observations were noted as 41 and 21 instead of 14 and 12. Find the correct mean?
- b) In a binomial distribution, sample size is 20,  $p$  is  $\frac{3}{4}$ . Find the mean and variance?
- c) Define exponential distribution?
- d) Write the applications of correlation in transportation engineering?
- e) Define ANOVA?
- f) What is principle component analysis?
- g) Write the applications of exact sampling distributions in transportation engineering?
- 2.a) Explain various measures of dispersion? 9M
- b) Consider the population with 5 units with values 1, 2, 3, 6 and 8. Write all possible samples of size 2 (without replacement) from this population. Calculate and verify the following: 9
- (i) Sample mean is an unbiased estimator of population mean.
- (ii) Sample variance is equal to the variance of the sample mean
- 3.a) State and prove Baye's theorem? 9
- b) A set of 8 symmetrical coins was tossed 256 times and the frequencies of throws observed were as follows: 9

Number of Heads	0	1	2	3	4	5	6	7	8
Frequency throws	2	6	24	63	64	50	36	10	1

Fit binomial distribution and find mean and variance of Fitted distribution

- 4.a) Explain in detail about curvilinear regression 9
- b) Given that  $r_{12} = 0.6$ ,  $r_{13} = 0.7$ ,  $r_{23} = 0.65$ , Calculate 9
- (i)  $R_{1.23}$ ,  $R_{2.13}$  and  $R_{3.12}$
- (ii)  $r_{23.1}$ ,  $r_{13.2}$  and  $r_{12.3}$
- 5.a) Fit a straight line by the method of least squares to the following data. Obtain trend values? 9

Year	2001	2002	2003	2004	2005	2006
Profits (in thousands)	80	100	50	120	90	110

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- b) Define : (i) Point estimation (ii) Interval estimation. 9
6. a) Out of 8,000 graduates in a town 800 are females, out of 1,600 graduate employees 120 are females. Use  $\chi^2$  to determine if any distinction is made in appointment on the basis of sex. Value of  $\chi^2$  at 5% level for 1 degree of freedom is 3.84 9
- b) (i) Explain t- test difference of means for small samples. 9  
(ii) A drug is given to 10 patients and the increments in their blood pressure were recorded to be 3, 6, -2, 4, -3, 4, 6, 3, 2, and 2. Test whether the drug has any effect on the change of the blood pressure?
7. a) In a certain distribution the first four moments about the point 4 are -1.5, 17, -30 and 108 respectively. Find the Kurtosis of the frequency curve and comments on it's Shape? 9
- b) A random sample of 100 items is drawn from a population with mean 64 and S.D 3 has a mean value 63.5. Is the difference in the means significant? What will be your inference, if the sample had 200 items? 9

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**FACULTY OF ENGINEERING****M.E. (Civil-CM) II-Semester (AICTE) (Main & Re - Registered Students)****Examination, October 2021****Subject : Construction Safety Management****Time : 2 hours****Max. Marks : 70****Note : i) First Question is compulsory and answer any Three questions from the Remaining six questions.****ii) Answers to each question must be written at one place only and in the same order as they occur in the question paper.****iii) Missing data, if any, may suitably be assumed.****1. Answer any Four Questions from the following (4 X 4 = 16Marks)**

- a) Discuss about the various safety organizations?
  - b) What are the various protective equipments and their importance, for workers to avoid accidents?
  - c) List the hazards associated with the usage of cranes in the construction industry?
  - d) What are the various direct costs and indirect costs involved in an accident?
  - e) Briefly explain the auditing procedure and types?
  - f) Differentiate actual primary losses and actual excess losses?
  - g) What is the basic concept of case reasoning?
2. a) Explain the concept of safety responsibility and accountability in construction industry? 6
  - b) Imagine you are responsible for implementing a safety management program for the organization in the CI. What could be the various actions you would like to take to prevail safety at site. 12
2. a) How are accidents measured? Explain 6
  - b) What are the different methods for hazard identification and control techniques? Explain how end result of such of studies are obtained. 12
3. a) What is the difference between accident, hazard and risk? Explain with a suitable example. 6
  - b) Discuss in detail various legal and financial aspects of an accident. 12
4. a) What are the ways by which fires and explosions are prevented and controlled in processing flammable materials? 9
  - b) Elaborate on safety measures in erection, inspection, operation of heavy load lifting equipments. 9
5. a) What are the various objectives of workers compensation law? 6
  - b) Explain the step by step procedure for obtaining the Experience modification rating. 12
6. a) What are the various applications of case based reasoning? 6
  - b) What is system safety analysis? Explain in detail various methods of system safety analysis? 12

**FACULTY OF ENGINEERING**

**M.E(ECE-DS,Mech-CAD/CAM) (AICTE) II-Semester (Main &Re-Registered Students) Examination, October 2021**

**Subject: Business Analytics**

**Time : 2 Hours**

**Max. Marks: 70**

**Note: (i) First question is compulsory and answer any three questions from the remaining six questions.**

**(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.**

**(iii) Missing data, if any, may suitably be assume.**

**1 Answer any four questions from the following: (4x4=16Marks)**

- a) What are the permutations of five letters A, B, C, D, and E taken two at a time?
  - b) Differentiate between big data and little data.
  - c) How to calculate simple linear regression analysis?
  - d) How does a firm change its culture of work and business operations to encourage collaboration?
  - e) Why we cannot simply use average values for the uncertain inputs in a decision model and eliminate the need for Monte Carlo simulation?
  - f) Compare decision strategies based on aggressive, conservative and opportunity-loss strategies.
  - g) List out various applications of business analytics.
- 2 a) How is the business analytics process similar to the organization decision making process? 9M
  - b) Explain in detail on review of probability distribution and data modeling. 9M
- 3 a) What are different types of Business Analytic personnel? Explain in detail. 9M
  - b) What are different types of technology used in Business Analytics? Explain in detail. 9M
- 4 a) Explain the advantages and disadvantages of outsourcing BA. 9M
  - b) Why is predictive analytics analysis the next logical step in any business analytics (BA) process. 9M
- 5 a) What is statistical forecasting model? Describe it in detail. 9M
  - b) Explain the concept and importance of analyzing risk in business decisions. 9M
- 6 a) Discuss in detail decision strategies without outcome probabilities. 9M
  - b) Explain in detail the concept of Data journalism. 9M
- 7 Write a short note on
    - a) Typical BA team roles and reasons for their failures. 4M
    - b) Cash budget model. 7M
    - c) Expected value strategy. 7M

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**FACULTY OF ENGINEERING****M.E (ECE-ES,Mech) II-Semester (AICTE) (Main & Re - Registered Students)****Examination, October 2021****Subject : Waste -to - Energy****Time : 2 Hours****Max. Marks: 70****Note: i) First Question is compulsory and answer any Three questions from the****remaining six questions.****ii) Answers to each question must be written at one place only and in the same order as they occur in the question paper.****iii) Missing data, if any may suitably be assumed.****1. Answer any Four Questions from the following (4 X 4 = 16Marks)**

- a) List the various resources required to set up a Waste-To-Energy Plant?
- b) What is the effect of moisture content in solid waste?
- c) What is leachate and its effect on the environment?
- d) If  $0.65\text{m}^3$  of biogas produces 1kW/hr of energy. How much gas per month is required to run a 5kW generator operating at three hours each day?
- e) What is the composition of biogas?
- f) State the 3R Principle?
- g) List the sources of hazardous wastes and plastic waste?
- 2.a) Explain the process of Waste-to-Energy with a diagram, detailing the stages and the forms of energies? 9
- b) What is pyrolysis and the different types? Explain the pyrolysis process with a diagram? 9
- 3.a) Describe the design factors for efficient operation of a stove? Mention some problems that may arise during operation of stoves and how they can be managed? 9
- b) Compare the following forms of Energy available for Cooking : Biomass, Solar, LPG and Electric? 9
4. a) Define the following terms: i. Cooking System ii. Products of In-complete combustion iii. Fire Triangle iv. 3T's for cleaner combustion 9
- b) What is a grated furnace and different types? Explain its functioning with a diagram? 9
- 5 a) With the given data, compute the total biogas produced in a month and Compute the total KWh given  $1\text{M}^3$  of biogas = 2KWh 11

Types of Dung	Gas Production Per Kg Dung (M3)	Dung available / day (Kg)
Cattle (cows and buffaloes)	0.035	50
Pig	0.055	30
Poultry (Chickens)	0.110	10



- b) Enumerate the hurdles in Waste-To-Energy implementation? 7
6. a) What is anaerobic digestion? List the stages and explain i. batch and continuous process ii. Single – Stage and multi – stage process? 9
- b) List the fuel properties of gasifier? Compare up-draft and down – draft gasifiers with diagrams? 9
7. a) What are the various strategic and financial benefits of Waste-To-Energy process implementation? Detail them? 12
- b) Differentiate solar stoves and biogas stoves? 6

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**FACULTY OF ENGINEERING****M.Tech (CSE-CSE) II-Semester (AICTE) (Main & Re-registered students)****Examination, October 2021****Subject: Cloud Computing****Time: 2 Hours****Max. Marks: 70**

**Note: (i) First question is compulsory and answer any three questions from the remaining six questions.**

**(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.**

**(iii) Missing data, if any, may suitably be assume.**

**1 Answer any four questions from the following: (4x4=16M)**

- (a) Where do the clouds reside?  
 (b) What is auto-scaling? How does it work?  
 (c) What is Multi-tenant software?  
 (d) Define portability and interoperability in Cloud.  
 (e) What is Enterprise Analytics?  
 (f) Explain IaaS?  
 (g) Why is Load Balancing required in Cloud Computing?
- 2(a) Discuss the Challenges in Cloud Computing paradigm. 8M  
 (b) Compare and Contrast Full Virtualization, Para Virtualization and hardware Assisted Virtualization? 10M
- 3(a) Elucidate the steps for Capacity Planning? 10M  
 (b) Why Map Reduce model is considered so important in data-intensive computation? 8M
- 4(a) Explain Security Reference Model? 10M  
 (b) Why governance, risk and Compliance(GRC) have become so important? 8M
- 5(a) Elucidate how the interoperability and portability issues are deal in cloud computing? 9M  
 (b) Compare AWS, AXURE and GOOGLE CLOUD? 9M
- 6(a) What is the role of SOA in Enterprise architecture? 9M  
 (b) Elucidate Enterprise Cloud Computing Ecosystem? 9M
- 7(a) Analyze various cloud programming models and Explain how to apply them to solve problems on the cloud? 10M  
 (b) Discuss Resource pooling, sharing and provisioning? 8M

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