Sl.No.E -708 Sub.Code: 41217101

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)

M.E- DEGREE EXAMINATIONS – APR/MAY-2019

ENVIRONMENTAL ENGINEERING

First Semester

APPLIED STATISTICS FOR ENVIRONMENTAL ENGINEERS

(Candidates admitted under 2017 Regulations-CBCS)

Time: Three hours Maximum:100Marks

Answer **ALL** questions

PART – A (10 x 2 = 20 marks)

1. Calculate the mean deviation about median for the items 7, 4, 10, 9, 15, 12, 7, 9, 7
2. What are the types of correlation?
3. What is Sampling Distribution?
4. Define Interval Estimation.
5. Define F distribution.
6. Write down the assumptions in ANOVA.
7. Mention any two merits and demerits of Randomized Block Design.
8. What is Factorial Experiment?
9. State the limitations of the graphical method of solving a LPP.
10. Explain Vogel's approximation method.

PART – B (5 x 16 = 80 marks)

11. a) Find the mean and standard derivation from the following data.

X:	110-120	120-130	130-140	140-150	150-160	160-170	170-180
Y:	6	25	48	72	116	60	38

OR

b) From the data given below, state which series is more consistent?

C.I	10-20	20-30	30-40	40-50	50-60	60-70
Series A	10	18	32	40	22	18
Series B	18	22	40	32	18	10

(p.t.o)

12. a) Show that the sample variance is not an unbiased estimator of the population variance, but an asymythically unbiased estimator of σ^2

OR

b) A random sample of 500 pineapples was taken from large consignment and 65 of them were found to be bad. Show that the standard derivation of the population of bad one in a sample of this size is 0.015 and reduce that the percentage of bad pineapples in the consignment lie between 8.5 and 17.5.

13. a) The nicotine content in milligrams in two samples of tobacco were found to be as follows

Sample A	24	27	26	21	25	
Sample B	27	30	28	31	22	36

Can it be said that the two samples have come from the same normal population?

OR

b) Three different machines are used for a production. One of the basis of the outputs, set up one-way ANOVA table and test whether the machines are equally effective.

Outputs		
Machine I	Machine II	Machine II
10	9	20
15	7	16
11	5	10
10	6	14

Given that the value of F at 5% level of significance for (2,9) d.f is 4.26.

14. a) Four varieties A,B,C,D of a fertilizer are tested in a randomized block design with 4 replication. The plot yields in pounds and as follows.

A(12)	D (20)	C (16)	B(10)
D (18)	A(14)	B (11)	C(14)
B (12)	C (15)	D (19)	A(13)
C(16)	B(11)	A (15)	D (20)

Analyze the experimental yield.

OR

b) Three varieties A, B, C of a crop are tested in a randomized block design with four replications. The plot yields in pounds are as follows

A6	C5	A8	B9
C8	A4	B6	C9
B7	B6	C10	A6

Analysis the experimental yield and state your conclusion

15. a) Use simplex method to solve the following linear programming problem

Maximize $z = 4x_1 + 10x_2$

subject to

$$2x_1 + x_2 \le 50$$
$$2x_1 + 5x_2 \le 100$$
$$2x_1 + 3x_2 \le 90$$
$$\& x_1, x_2 \ge 0$$

OR

b) Assign four tucks 1, 2, 3, and 4 to vacant spaces A, B, C, D, E and F so that the distance travelled is minimized. The matrix below shows the distance.

	1	2	3	4
A	4	7	3	7
B	8	2	5	5
C	4	9	6	9
D	7	5	4	8
E	6	3	5	4
F	6	8	7	3

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Sl.No.E -708

Sl.No. E-686 SUBJECT CODE: 41217102

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
FIRST SEMESTER
ENVIRONMENTAL CHEMISTRY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write a short note on homogeneous reaction.

2 What is partition coefficient?

3 What is Inductive effect?

4 What is meant by QSAR.

5 What is Biotic interaction.

6 What is Degradation?

7 Define Acid rain.

8 Write the formation of ozone molecules in the atmosphere.

9 Define global warming.

10 What are the principle methods in SO_2?

PART-B (5 x 16 = 80)

11 a. Give an account of photo catalysis with suitable example.

OR

b. Derive an expression for the second order rate constant for two cases.

12 a. Describe the various mechanism of organic reactions.

OR

b. Write short notes on : (a) Addition reactions. b) Elimination Reactions.

13 a. Explain the factors which constitute aquatic chemistry?

OR

b. Explain the elaborate manner hazardous compounds.

14 a. Write short note on: (i).Photochemical Smog (ii).Global effect of air pollution

OR

b. Explain the reactions involved in the formation of PAN.

15 a. Explain in detail about the acid base titration with one example.

OR

b. Give on account on the oxidation of SO_2 and organic compound with their effects.

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Sl.No. E-670 SUBJECT CODE: 41217103

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
FIRST SEMESTER
ENVIRONMENTAL MICROBIOLOGY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 What are zymogenous?
2 What is meant by chemotoxis?
3 Give the role of temperature on the distribution of microbes.
4 Write notes on methanogenesis.
5 Write short note on Coliforms.
6 What is meant by endospore?
7 List out any two types of Pollutants.
8 What are the conditions of Bio degradations?
9 Write the effects of two toxicants.
10 Write notes on ATP.

PART-B (5 x 16 = 80)

11 a. What is the classification of Taxonomy?

OR

b. Explain the cell wall structure of Gram positive and Gram negative bacteria.

12 a. Explain various stages in Kreb's Cycle.

OR

b. Write an essay on carbohydrate metabolism.

13 a. Explain the role of indicator organisms in water and give a brief account on fecal coliforms.

OR

b. Give an account of general structural organization of bacteria.

14 a. Briefly explain the toxic pollutants.

OR

b. Explain the nutritional requirements of growing bacteria.

15 a. Compare the effects of acute and chronic toxicity.

OR

b. Write the various antibacterial agents and their mode of inhibition.

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Sl.No. E-646 SUBJECT CODE: 41217104

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
FIRST SEMESTER
TRANSPORT OF WATER AND WASTEWATER

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 What is meant by Major Head loss?
2 What is meant by free flow?
3 Write short note on Analyzing data.
4 Why expansion joints are necessary?
5 List out the types of sewer materials.
6 List out any two types of corrosive wastes.
7 What is meant by rainfall?
8 What is Evaporation with respect to run off?
9 What is the software application of water transmission?
10 What is computerized plumbing system?

PART-B (5 x 16 = 80)

11 a. Explain hydraulic flows in pipelines.

OR

b. Explain in detail Major Head Loss with Diagrams.

12 a. Water has to be supplied to a town with 1lakh population at the rate 150lts per capita per day from a river, 1.8km away. The difference in elevation between the lowest water level in the sump and service reservoir is 36mts. Determine the size of the main and the Horse power of the pump required. Assume suitable data where necessary.

OR

b. Explain the methods of optimization in water transmission.

13 a. Explain the different types of hydraulic sewers.

OR

b. Explain different types of distribution networks.

14 a. Explain the run-off estimation.

OR

b. Explain on rainwater harvesting with neat Sketches.

15 a. Describe the water distribution and sewer design.

OR

b. What are the advantages and disadvantages of using computer in water transmission system?

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Sl.No. E-627 SUBJECT CODE: 41217105

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
FIRST SEMESTER
UNIT OPERATIONS AND PROCESSES IN WATER AND WASTEWATER TREATMENT

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Define F/M ratio? Write its significance.

2 Define Mean Cell Residence Time.

3 What is removal ratio?

4 Mention the removal percent for BOD, SS, in a sedimentation operation.

5 What is head loss?

6 What is backwashing process?

7 Define chemical unit process.

8 What is Activated carbon?

9 Define bacterial growth.

10 What is the effect of substrate limited growth?

PART-B (5 x 16 = 80)

11 a. A reactor system reduces influent reactant concentration from 200 mg/l to 20 mg/l with detention time of 20 days. Assume the reaction is first order. Determine 'k' for CFSTR and PFR. Give comments.

OR

b. Determine the buildup of headloss through a bar screen when 50% flow area is blocked of due to accumulation of coarse solids. Assume the following
Approach velocity = 0.6 m/s
Velocity through clear bar screen = 0.9 m/s
Open area flow through clear bar screen = 0.19 m2
Head loss coefficient for clear bar screen = 0.7

12 a. Design a hopper bottom for a flow of 35,000 m3/d with 60% of suspended solids (250 mg/l) assuming a suitable design criteria.

OR

b. Write in detail about flocculent particle settling process.

13 a. Derive the expression of Gas Transfer in Liquid interface by two film theory.

OR

(P.T.O)

b. Write and explain the commonly used filters in wastewater treatment.

14 a. What is breakpoint chlorination? And explain why chlorination is necessary for municipal water supply?

OR

b. What are the Mechanisms of Disinfectant and what are the factors influencing the action of disinfectant.

15 a. Explain detailed about kinetics of biological growth.

OR

b. Describe about the trickling filter with a neat diagram.

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Sl.No. E-592 SUBJECT CODE: 41216107/41217107

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
FIRST SEMESTER
ELECTIVE - FUNDAMENTALS OF ENVIRONMENTAL SCIENCES

(Candidates admitted under 2016 & 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write two differences between homogeneous and heterogeneous reaction.

2 What is meant by precipitation?

3 What is biomass energy?

4 What are the factors which affect the bacterial growth?

5 What is meant by coliform in microbiology?

6 Write short notes on the control of algae in water supplies.

7 Define Electrometric effect.

8 Define oxidoreductase.

9 What is meant by Ozone?

10 How acid rain is formed?

PART-B (5 x 16 = 80)

11 a. Explain the factors which affect the rate of reaction.

OR

b. Define colloids and classify the colloidal solutions.

12 a. Explain in detail how the succession occurs in aquatic succession.

OR

b. Write a detail account on inter-specific interaction.

13 a. Explain bacterial growth curve.

OR

b. Explain briefly about the biological waste water treatment process.

14 a. Write short notes on: (a) Addition reactions. b) Elimination Reactions.

OR

b. Describe the detailed about region selectivity in addition reactions.

15 a. Explain the reactions involved in the reaction of Photochemical smog.

OR

b. Discuss about the effects of greenhouse effect in the atmosphere.

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Sl.No. E-730 SUBJECT CODE: 41217201

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
DESIGN AND OPERATION OF WATER AND WASTEWATER TREATMENT PLANTS

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Define Velocity Gradient.
2 What are the functions of disinfection units?
3 Define sedimentation.
4 What are the primary & secondary units of waste water treatment?
5 How will you calculate the Ionic strength of a solution?
6 Discuss in brief the method of treating waste water from a brewery.
7 How will you calculate the rotational speed for a rotary distributor?
8 How can you define coagulation?
9 Define Food to Microorganism Ration
10 Are there any "natural" ways to treat wastewater?

PART-B (5 x 16 = 80)

11 a. Explain the disinfection Process in detail.

OR

b. Write Short notes on:-
i) Diffused aeration
ii) Submerged biological contactors?
iii) Sequencing batch reactors?
iv) Membrane bioreactors
v) Surface aeration.

12 a. Explain different types of process used in activated sludge process.

OR

b. Explain Nitrification and Denitrification Process

13 a. Explain risk assessment process.

OR

b. Explain Terminology used to describe membrane processes

14 a. Explain primary sedimentaion in detail.

OR

(P.T.O)

b. Explain Types of Aeration System.

15 a. Explain in detail for the Disposal of concentrated waste streams.

OR

b. Explain Sludge Thickening Process in detail with neat diagram.

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Sl.No. E-730

Sl.No. E-728 SUBJECT CODE: 41217202

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
INDUSTRIAL WASTEWATER MANAGEMENT

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Define Individual effluent plant.
2 List out the Toxic materials.
3 Define Floatation
4 Write notes on biological oxygen demand.
5 What is Advanced Wastewater Treatment?
6 Explain briefly about micro screening.
7 Write two factors which control Residual factor
8 What is meant by gravity thickening?
9 Define waste water characteristics of Textiles.
10 Mention the different types of physical characteristics.

PART-B (5 x 16 = 80)

11 a. Describe Toxicity of Industrial Wastewater.

OR

b. Describe the Common Effluent waste water treatment.

12 a. Explain in detail about Secondary Wastewater Treatment.

OR

b. Describe in detail about types of reactors.

13 a. Describe in detail about Nutrient Removal.

OR

b. Describe in detail about the treatment of wastewater in any one industry.

14 a. Describe in detail about the Quantification of Sludge.

OR

b. Describe in detail De-Watering of Sludge

15 a. Explain in detail about the process involved in Textile Industry.

OR

b. Describe in detail about the anaerobic biological treatment process.

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Sl.No. E-660 SUBJECT CODE: 41217203

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
ENVIRONMENTAL IMPACT ASSESSMENT

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Explain the scope of EIA

2 List any four methods to mitigate social impacts due to development projects.

3 List any four projects that could affect soil environment..

4 What are the benefits of Post Environmental Audit?

5 What is the necessity of expert systems in EIA?

6 What are the environmental impacts of noise?

7 Write short notes on check list method

8 Differentiate pre project audit and post project audit

9 Discuss the components of EMP

10 What are the steps involved in the Assessment of EIA?

PART-B (5 x 16 = 80)

11 a. i) What are the typical impacts of development projects on land environment?

OR

b. (i) Describe the importance of environmental monitoring at different stages of EIA.

12 a. How do you predict impacts on the surface water environment?

OR

b. With the help of a neat schematic, explain phases of municipal wastewater

13 a. What are the evaluation criteria for EIA process? Explain in detail.

OR

b. Explain in detail about steps to be taken for Methodology.

14 a. Describe about the Detailed Planning Phase.

OR

b. Briefly discuss the purpose and content of an Environmental Management Plan (EMP)

15 a. Explain the main objectives of E.I.A

OR

b. Environmental Impact Assessment on Noise. Explain any case study

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Sl.No. E-634 SUBJECT CODE: 41217204

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
ELECTIVE - REMOTE SENSING AND GIS APPLICATION IN ENVIRONMENTAL ENGINEERING

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Define particle theory.
2 Write short notes on spectral reflectance curve for water.
3 What are the different types of platforms related to Remote Sensing?
4 What do you mean by Geo synchronous satellite?
5 What are the techniques of image enhancement?
6 What is meant by filtering techniques?
7 Mention the components of GIS
8 What are the different types of Map Projections?
9 What is the role of remote sensing in soil conservation?
10 What is meant by AM/FM?

PART-B (5 x 16 = 80)

11 a. How does the electromagnetic energy interact with atmosphere?

OR

b. Explain in detail about the EMS and wavelength regions important to remote sensing.

12 a. Explain the Orbital characteristics of IRS group of satellites

OR

b. Explain in detail about earth resource and weather satellites.

13 a. Briefly explain the common interpretation techniques used in visual interpretation.

OR

b. Write short notes on i). Level slicing ii). Thresholding technique iii).Platforms

14 a. Explain in detail about the GIS data base management system.

OR

b. Briefly explain the overlaying techniques in GIS

15 a. Write the role of Remote sensing and GIS in Water resources Engineering

OR

b. Discus in detail about the different GIS packages available in the market

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Sl.No. E-602 SUBJECT CODE: 41217205

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
ELECTIVE - AIR POLLUTION CONTROL

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write a note on Atmospheric stability and temperature inversions
2 Differentiate aliphatic and aromatic air pollutants
3 What do mean by wet adiabatic lapse rate?
4 What are the self cleaning properties of environment?
5 Define with an example of Recovery system.
6 What is the role of moisture on air pollutants?
7 In Paint Manufacture which gas is released.
8 Name the common adsorbents used in air pollution control equipments
9 What is meant by Equivalent Noise (Leq
10 What is Road Traffic Noise?

PART-B (5 x 16 = 80)

11 a. Explain photo chemical smog and coal – induced smog

OR

b. Explain the effect of air pollution on human beings.

12 a. What are wet collectors? Discuss the advantages and drawbacks of wet collectors and mention the salient features of spray tower, wet cyclone scrubber and venture – scrubber.

OR

b. Explain the principle and working of a cyclone separator, with a sketch

13 a. Write Short Note on Bubble cap packed Tower.

OR

b. Discuss the adverse effects of carbon monoxide on human health. How can the reduction in carbon monoxide emission help mitigate these effects?

14 a. Describe in detail about the pollution in the Glass Industry.

OR

b. Steel Industrial Pollution. Explain in Detail.

15 a. What are the sources and causes of noise pollution?

OR

b. Write Short Notes on : a) Noise from consumer products b) Rail Road Noise

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Sl.No.E- 507 SUBJECT CODE: 41217206

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH-DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
SECOND SEMESTER
ELECTIVE - CLEANER PRODUCTION

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 What is an effective Indicator?
2 What are roles of an industry in achieving CP?
3 List out the benefits of CP
4 List out the criteria for good CP audit.
5 Write a short note on employee awareness.
6 Enumerate the steps involved in CP audit
7 What is difference between costing a product or project versus life-cycle?
8 List out the characteristics of industrial ecology?
9 Name some points in the cleaner Production Program.
10 What is capitol cost?

PART-B (5 x 16 = 80)

11 a. Name the Barriers and explain any two.

OR

b. Describe environmental evaluation.

12 a. Explain the role of Government and institutions in cleaner production

OR

b. How recycling and reuse techniques are helpful for cleaner production?

13 a. Write an essay on criteria for selection of projects

OR

b. Write the elements of Total Cost Assessment

14 a. Give a detailed account of Type – 2 LCC Model

OR

b. What are the environmental objectives and targets.? Describe in detail.

15 a. Case Study of Effluent Treatment Plant. Detail with a neat sketch.

OR

b. What is aim of Environmental Audit? Explain in detail.

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Sl.No. E-712 SUBJECT CODE: 41217301

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
THIRD SEMESTER
ELECTIVE - INDUSTRIAL POLLUTION PREVENTION

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write any two types of indicators of sustainability.

2 What are the environmental effects of pollution?

3 Write short note on environmental management.

4 Write some PP resources.

5 Write short note on environmental impact of wastes?

6 What is a tie compound in a material balance analysis?

7 What is life cycle Assessment?

8 Draw the framework for LCA.

9 Write the guide lines for environmental auditing.

10 List out the site inspection process in an industry.

PART-B (5 x 16 = 80)

11 a. Describe the effects of industrialization on environment.

OR

b. Describe the ways to support sustainable development.

12 a. Explain the various source reduction techniques for prevention of pollution.

OR

b. Explain the various steps involved in environmental management.

13 a. Write a detailed note on evaluating and refining material balance.

OR

b. Discuss about the components of environment management system.

14 a. Explain the Design for International Environmental Standards.

OR

b. Explain the strategies of Design for Environment.

15 a. Explain sustainable strategies with strategic planning model.

OR

b. Explain about the materials reuse, recycle and recovery strategies.

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Sl.No. E-692 SUBJECT CODE: 41217302

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
THIRD SEMESTER
ELECTIVE - SOLID AND HAZARDOUS WASTE MANAGEMENT

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 What is solid waste management?

2 What is the nature of MSW?

3 What is the role of earth worms in vermin composting?

4 What is a bio medical waste?

5 Define maximum permissible concentration (MPC).

6 Name few ill effects of radioactive waste.

7 Name few chemical treatment of hazardous waste.

8 Write about the gases in landfill.

9 Name some industrial solid waste.

10 Draw the typical aerobic process for treatment of leachate.

PART-B (5 x 16 = 80)

11 a. Explain the impact of monthly variation in the composition of solid wastes.

OR

b. How will you estimate the moisture content of a solid waste sample?

12 a. With the aid of a neat sketch, explain the incineration process.

OR

b. Describe the volume reduction process of solid waste.

13 a. What are the problems posed by present disposal method for hazardous waste?

OR

b. Write about the generation of hazardous waste in municipal waste.

14 a. Explain the process of encapsulation and solidification.

OR

b. In what way encapsulation is better than other methods.

15 a. Write the guidelines for control of leachate from landfills.

OR

b. Briefly write about the physical treatment techniques for leachate control.

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Sl.No. E-674 SUBJECT CODE: 41217303

VINAYAKA MISSIONS RESEARCH FOUNDATION
(Deemed to be University)
M.TECH -DEGREE EXAMINATIONS- APR/MAY - 2019
ENVIRONMENTAL ENGINEERING
THIRD SEMESTER
ELECTIVE - OCCUPATIONAL HEALTH AND INDUSTRIAL SAFETY

(Candidates admitted under 2017 Regulations-CBCS)

Time : Three Hours Maximum Marks:100 Marks

Answer **ALL** questions

Part-A (10 x 2 =20 Marks)

1 Write a short note on safety sampling techniques.

2 Define fire hazard.

3 Define industrial psychology.

4 List out the pollutants from motor vehicles.

5 What is biological hazard?

6 What are the requirements for respirator use?

7 What are the work measurement skills?

8 State any three principles of safety management.

9 Define the term management.

10 Write the note on walk through safety audit.

PART-B (5 x 16 = 80)

11 a. Write Factories act and some of its sections.

OR

b. Write a short note on Job safety analysis and damage control.

12 a. What is ergonomics? Discuss the main objectives and importance of ergonomics.

OR

b. Discuss about causes of reduced ability to concentrate.

13 a. Explain the factors influencing the effects of toxic materials.

OR

b. List out the physical hazard with their effects.

14 a. Explain the types and their causes for accidents.

OR

b. Explain the industrial safety management skills.

15 a. Describe the role of OSHA.

OR

b. Explain safety management and their elements.

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