M.E. DEGREE EXAMINATION, 2003

(THIRD SEMESTER)

(ENVIRONMENTAL ENGINEERING)

ENVE-302/SEE-200-B. GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS
(Elective - IV)
(Common with Structural Engg. and Part Time)

November]   [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE full questions.
All questions carry equal marks

1. a) Describe the principles of Remote Sensing.

    b) Discuss the scope of GIS in water resources systems.

2. Write down a detailed account of land use mapping with imageries and GIS.

3. Enlist the methods to evaluate water resources potential from a water shed and write down the procedure for any one method to assess the water resources potential.

4. The drought assessment is to be done at an area affected by poor rainfall and failure of crop growth. Write down the algorithm in using Remote sensing methods and GIS to asses the same.

5. State various command area studies. A catchment area is to be given detailed CAT (Command Area Treatment) using GIS. Describe how it will be done by you.

6. The area around Neyveli has got depleted ground water. A study is to be undertaken to investigate the buried streams in and around Neyveli for ground water development. Describe in detail how this is to be undertaken using GIS.

7. Childambaram city is having problem of solid waste management. Explain how this will be effectively done by this GIS.

8. Write short notes on any THREE of the following. (3×4=12)

    a) Snow melt run off assessment
    b) Thematic maps
    c) GIS softwares
    d) Urban storm water studies.

M.E. DEGREE EXAMINATION, 2004

(THIRD SEMESTER)

(ENVIRONMENTAL, STRUCTURAL & WATER RESOURCES ENGINEERING & MANAGEMENT)

WREE - 301 / ENVC - 302 / SEE 200 (B) GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS

(Elective)

(Common with Part - Time)

November]   [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE full questions.
All questions carry equal marks.

1. Explain the scope of remote sensing and GIS in water resources systems with suitable examples.

2. Give a detailed algorithm for a rain-fall run - off modelling of your choice, highlighting the use of remote sensing inputs.

3. "The Veeranam irrigation system performance is planned to be assessed". - Give your detailed programme to carry out the same with an integration of Remote sensing and GIS data.

4. Distinguish between water-shed development and water - shed management. Explain the use of GIS for water - shed management.

5. "Pichavaram mangroves are to be safeguarded for an ecological system sustenance" - Explain, how you would carry out this task with the use of R.S. and GIS.

6. Write notes on any THREE of the following :   (3 × 4 = 12)

    (a) Geomorphological mapping.

    (b) Land use mapping.

    (c) Flood plane zoning

    (d) Flood inundated area evaluation models.

7. Write notes on any THREE of the following :   (3 × 4 = 12)

    (a) Crop yield estimation.

    (b) Agricultural drought.

    (c) Catchment area treatment.

    (d) Reservoir sedimentation.

8. Write notes on any THREE of the following :   (3 × 4 = 12)

    (a) Snow melt run - off estimation.

    (b) Urban storm water studies.

    (c) Non - Point source pollution.

    (d) Solid waste management.

Register Number: 59 27

Name of the Candidate:

M.E. DEGREE EXAMINATION, 2005

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-301. PUBLIC HEALTH ENGINEERING STRUCTURES

(Elective)

(Common with Part-time)

November)   (Time: 3 Hours

Maximum: 60 Marks

Answer any five questions
All questions carry equal marks

1. Briefly discuss the principles of design of
   public health engineering structures
   relating to water treatment systems.

2. Discuss the foundations of public health
   engineering structures with reference to
   loads, bearing capacity and settlement.

3. a) Find the diameter of circular clarifier
      to treat 18 MLD of raw water.

   b) Design the bottom R.C. slab (floor) of the
      above clarifier. Show the reinforcement
      details with a neat sketch.

2

4. a) Briefly discuss about the measures, to be
      taken for corrosion prevention on public
      health engineering structures.

   b) Critically analyse the design considerations
      for designing structures below under ground.

5. a) Explain the various types of loads, that
      have to be considered while designing an
      overhead water tank.

   b) Discuss the merits and demerits of adopting
      various shapes of OHT.

6. a) Discuss the functional aspects of Ground
      level water storage tanks.

   b) What are the points to be considered while
      designing ground level water storage
      tanks with respect to public health point
      of view?

7. a) Discuss the forces to be considered while
      designing a conduct for carry water under
      pressure.

3

7. b) Explain the procedure of join ing
      Reinforced cement concrete pipes for
      carrying water.

8. What are the raw water intake towers?
   Discuss the design and construction of an
   intake tower to draw the supply from a
   river for a water supply scheme for a town.

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Register Number: **5913**

Name of the Candidate:

M.E. DEGREE EXAMINATION, 2005

(ENVIRONMENTAL ENGINEERING)

THIRD SEMESTER

ENVE—302. GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS

(Elective)

(Common with Part Time)

November] [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE questions

All questions carry equal marks

1. Write in detail the scope of Remote Sensing and GIS in environmental systems.

2. Explain how Geomorphological mapping and land use mapping can be completed with remote sensing and GIS.

3. "A chronic drought prone area is to be assessed for providing aid and relief" — Explain how GIS can be used to carry out the mission.

4. "Recently a tributary to Sutlej river was blocked due to Land slides in inaccessible areas causing grave concern" — How remote sensing sensed this danger and explain how GIS can be used to plan mitigation of the impending disaster.

5. "Watershad development and management is to be a holistic one helped by suitable inventory and data base" — Explain this process with your understanding of GIS and remote sensing.

6. "Solid waste management is giving tough challenges to municipal engineers". Explain how this can be tackled in cities like Cuddalore having hazardous wastes in addition to municipal solid wastes. Use your knowledge of GIS and Remote Sensing to answer this question.

7. Write notes on any THREE   *(3×4=12)*
   a) Linkage of GIS and Remote Sensing
   b) Flood plain zoning
   c) Visual image interpretation in soil erosion studies.
   d) Catchment area treatment
   e) Raster GIS and vector GIS.

8. Write notes on any THREE   *(3×4=12)*
   a) Snow melt run off
   b) Urban storm water studies
   c) Preservation of Wetlands
   d) Remote sensing sensors
   e) Thematic maps

M.E. DEGREE EXAMINATION, 2008

(WATER RESOURCES ENGINEERING AND MANAGEMENT / ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

WREE-301. GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS AND ENVIRONMENTAL ENGINEERING

(Common with Part Time)

November]   [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE questions

1. How water resources potential is estimated using GIS and remote sensing application? (12)

2. What are Geomorphological studies? How are these studies carried out using GIS and remote sensing? (12)

3. Draught assessment can be done using evaluation models – Comment on this. (12)

4. What are the parameters responsible for erosion and deposition in catchment area? How the treatment is due to this? How GIS and RS useful in this studies. (12)

5. Give short notes on
   a) Estimation of sediment load
   b) Land use mapping
   c) Snow cover studies (12)

6. What parameters are taken into watershed management and water shed development? How GIS is applied to this area? (12)

7. Give notes an GIS application on
   a) Solid waste management
   b) Wetlands
   c) Rainfall runoff modeling. (12)

8. What are the models available for storm water studies? Comment on the application of GIS in urban storm water studies. (12)

Register Number: **3532**

Name of the Candidate:

B.E. DEGREE EXAMINATION, 2008

(WATER RESOURCES ENGG AND MANAGEMENT/ENVIRONMETAL ENGG)

(THIRD SEMESTER)

WREE-206/ENME-301.WATER QUALITY MODELLING

(Elective)

(Common with Part Time)

ANSWER ANY FIVE QUESTIONS

Nov)   (Time: 3 Hours

Maximum: 60 Marks

1. How mathematical models are useful in solving the realtime problems. Give an example of the problems and solve them by any one model.   (12)

2. Derive the model for oxygen sag and discuss its limitations and applications.   (12)

3. Describe Lagrangion Model in river Water Quality Studies.   (12)

4. What are the parameters that affect Lake Water quality? Describe one lake water model along with the above said parameters.   (12)

5. Define hydraulics of Estuarine Model. How estuarine models are useful in deciding Water Quality?   (12)

6. Name the different parameters governing ground water quality models. Describe the model for the mass transport in Ground Water.   (12)

7. Describe the dilution techniques in the discharge of Wastewater in Marine Environment.   (12)

Register Number: **3612**

Name of the Candidate:

M.E. DEGREE EXAMINATION, 2009

(WATER RESOURCES ENGINEERING AND MANAGEMENT / ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

WREE-206/ENVE-301. WATER QUALITY MODELLING

(Common with Part Time)

November]   [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE questions

1. Simulation, optimization are useful in solving problems in water quality? Explain with examples. (12)

2. a) What are the different parameters included in the river water quality? (4)

    b) What are the limitations of optimization models? Explain the model of discharge. (8)

3. Explain the factors affecting lake water quality. Develop a model covering the parameters and Constraints. (12)

4. a) How estuaries are different form lakes? (4)

    b) What are the survey and data requirement for an estuarine model? What are the models for estuarine analysis? Give an example of model for the study of quality parameter of estuarine. (8)

5. a) What are the hydraulics in ground water transport? (4)

    b) How the governing equation of these hydraulics useful in studying the quality parameters of Ground water. (8)

6. a) Draw the view of diffusions of neutrally buoyant jet in an ocean current. (5)

    b) Develop a model for the diffusion of buoyant jet in a marine environment. (7)

7. Derive a model of waste discharge into a marine environment by giving salient features. (12)

Register Number:

3613

Name of the Candidate:

M.E. DEGREE EXAMINATION, 2009

(WATER RESOURCES ENGINEERING AND MANAGEMENT / ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

WREE-301/ENVE-302. GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS

(Elective)

(Common with Part Time)

November]   [Time : 3 Hours

Maximum : 60 Marks

Answer any FIVE questions

1. Describe the scope of remote sensing and GIS in water resources and Environmental systems.   (12)

2. Discuss the remote sensing and GIS in hydrological and land use mapping studies.   (12)

3. a) What are inundated areas in flood and drought studies?   (4)

    b) How the drought assessment and monitoring done using GIS model?   (8)

4. Give a model for the study of estimation of sediment load and apply the same for the treatment of sediment load.   (12)

5. Give short notes on the following:
    a) Crop yield estimation
    b) Flood plane zoning
    c) Erosion of catchment area   (12)

6. How GIS and remote sensing useful in watershed development.   (12)

7. Discuss the remote sensing application in snow cover areas.   (12)

8. Discuss application of GIS and RS in solid waste management.   (12)

3730

M.E. DEGREE EXAMINATION, 2010

(WATER RESOURCE ENGINEERING AND MANAGEMENT)

(THIRD SEMESTER)

WREE-301.GIS FOR WATER RESOURCES AND ENVIRONMENTAL SYSTEMS

(Elective)

Nov)   (Time: 3 Hours

Maximum: 60 Marks

Answer any FIVE questions
All questions carry equal marks

1. Explain in detail ground water potential mapping using GIS and remote sensing.

2. What are geologic studies? How are these studies carried out using GIS and remote sensing?

3. Explain in detail the geomorphological studies using a sound remote sensing.

4. What are the parameters?

5. Explain in detail about the GIS application in finding.
    i) Housing suitability of an area.
    ii) Shortest route for a place.

6. Explain in detail watershed management of a river basin using GIS and RS.

7. Explain in detail ground-water modelling.

8. Explain Land use and land cover changes of an area over a decade using GIS and remote sensing.

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3742-A

M.E. DEGREE EXAMINATION, 2010
ENVIRONMENTAL ENGINEERING
(THIRD SEMESTER)

ENVE-302.REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS

Nov)   (Time: 3 Hours

Maximum: 60 Marks

Answer any FIVE questions
All questions carries equal marks

1. Describe electromagnetic spectrum with sketch. (12)

2. Describe the various satellite data products available at present and explain their applications.   (12)

3. Discuss the types of platforms for remote sensing sensors.   (12)

4. List out various types of maps — elaborate with examples on how the digital maps serve as effective communication tool in the context of current information technology revolution.
                                                         (12)

5. Describe how raster and vector data analysis are carried out in GIS.   (12)

6. Describe the application of remote sensing and GIS in solid waste management.   (12)

7. Discuss the various hardware and software requirement of GIS.   (12)

8. Write short notes any three of the following
                                                       (3X4=12)

    a. Scattering
    b. Orthophotos
    c. GIS Files
    d. DEM
    e. Supervised classification.

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Register Number:

Name of the Candidate:

3442-A

M.E. DEGREE EXAMINATION, 2012

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-301.WATER QUALITY MODELING

Nov]

[Time : 3 Hours

Maximum: 75 marks

(Max: 60 marks those who joined before 2011-12)

Answer any FIVE questions

All questions carry equal marks

1. a) Derive the finite difference approximations of a differential equation Taylor's series.
    b) Elucidate the explicit and implicit methods for partial differential equations.

2. a) Explain in detail the molecular diffusion governed by Fick's law.

    b) With a suitable example, describe the applications of optimization model in river water quality studies.   (8)

3. a) Discuss the factors affecting water quality in lakes.

    b) List the various techniques used in the modeling of estuarine pollution. Also, explain in detail the segment models of water quality in estuaries.

4. a) Discuss the governing equations of grand water hydraulics.

    b) Explain in detail the mechanisms that are responsible for the transport of dissolved and suspended solutes in natural waters.

5. a) Describe the physical processes that takes place during the discharge of wastewater in to marine environment.

    b) Explain in detail the effect of ocean current on diffusion process.

6. a) With a neat sketch , explain the various steps involved in creating a simulations model.
    b) Classify the simulation techniques. Also explain the difference between the simulation and optimization.

7. a) Discuss in detail the moving segment model of water quality in rivers.

    b) Explain the finite difference estuary models.

8. a) With a neat sketch ,explain the salient features of an oxygen sag curve for a stream having a source of pollution.
    b) Describe the hydraulic approach to aquifer modeling in ground water quality studies.

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Register Number:

Name of the Candidate:

3458

M.E. DEGREE EXAMINATION, 2012

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-302. REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS

Nov.]   [Time: 3 Hours

Maximum: 75 Marks

(Max: 60 marks those who joined before 2011-12)

Answer any FIVE Questions
All questions carry equal marks

1. Describe the energy interactions with earth surface features with sketch.   (15)

2. Explain in detail the data acquisition and interpretation in remote sensing.   (15)

3. Discuss how the visual interpretation is carried out in remote sensing.   (15)

4. Discuss the types of platforms for remote sensing sensors.   (15)

5. Explain in detail the various components of GIS.   (15)

6. Describe the application of remote sensing and GIS in coastal zone management.   (15)

7. Explain in detail the various steps in managing the data obtained from GIS.   (15)

8. Write short notes any THREE of the following: (3x5=15)
   a) Infrared sensing
   b) Passive photographs
   c) DEM
   d) Software requirement of GIS
   e) Vector data analysis in GIS

M.E. DEGREE EXAMINATION. 2014

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-302: REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS
(Elective)

November]

[Time : 3 Hours

Maximum : 75 Marks
(Maximum 60 Marks for those who joined before 2011-12)

Answer any FIVE questions.
All questions carry equal marks   *(5 × 15 = 75)*

1. Explain the physics of remote sensing with required sketches. Also describe the advantages of remote sensing techniques.

2. Describe in detail about the interaction of EMR with earth surface features with neat sketches.

3. What are the basic elements to be considered for aerial photo interpretation? Explain.

4. Explain about landsat imageries with neat sketches. Also give its applications.

5. What is meant by digital image processing? Explain about the processes involved in it.

6. Explain about the spectral sensitivity of black & white and colour film.

7. Explain the Application of GIS in Environmental Engineering also write short notes on DEM.

8. How remote sensing and GIS can be applied in coastal zone management studies? Explain in detail.

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M.E. DEGREE EXAMINATION, 2014

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-302. REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS

May]

[Time : 3 Hours

Maximum : 75 Marks

(Max: 60 Marks for those who joined before 2011-12)

Answer any FIVE questions   (5 × 15= 75)
All questions carry equal marks

1. Describe about the interaction of energy with earth surface features with its spectral reflectance curves. Explain in detail about various types of aerial photographs.

2. Draw Electromagnetic spectrum and explain about various regions of it.

3. Discuss in detail about parallax concepts and to rectify its effect in aerial photograph.

4. What are the basic elements to be considered in aerial photo interpretation? Explain in detail.

5. Describe in detail about image enhancement techniques adopted in digital image processing.

6. Describe the procedure involved in land use studies and classification using remote sensing.

7. Describe in detail about Landsat imageries with required sketches.

8. Write short notes on any THREE of the following:

   a) Infrared sensing

   b) Passive photographs

   c) DEM

   d) Software requirements of GIS

   e) Vector data analysis in GIS

M.E. DEGREE EXAMINATION, 2015

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE – 302. REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS

May]   [Time: 3 Hours

Maximum: 75 Marks

Answer any FIVE questions   **(5 × 15 = 75)**

1. Explain the principle of working of remote sensing platforms and data processing.   (15)

2. Write a detailed description on the elements of visual interpretation quoting suitable examples for each.   (15)

3. Explain the different types of EMR and its interactions of EMR with atmosphere.   (15)

4. Explain in detail the different types of data utilized in GIS technology.   (15)

5. Discuss in detail the application of GIS in municipal solid waste management.   (15)

6. Explain on the different methods of data input in GIS.   (15)

7. Discuss in detail the different classification of maps.   (15)

8. Write short notes on:

    a) Energy interactions with atmosphere   (5)

    b) Image rectification   (5)

    c) Raster data analysis in GIS.   (5)

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Register Number:

Name of the Candidate:

0627-A

M.E. DEGREE EXAMINATION, 2015

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE – 301. WATER QUALITY MODELING

May]   [Time: 3 Hours

Maximum: 75 Marks

Answer any FIVE questions   **(5 × 15 = 75)**

1. Why do we need modeling studies? Write classification of models and its   (15)
   application.

2. Discuss the concepts involved in the prediction of ground water contaminants   (15)
   movement.

3. Write in detail about the modeling of estuarine pollution.   (15)

4. Explain the following:

   a) Factors affecting water quality in lakes   (7½)

   b) Effluent and stream standards.   (7½)

5. Explain in detail the exposure of computer models for the following:

   a) Surface water quality   (7½)

   b) Ground water quality.   (7½)

6. Explain in detail on reliability considerations and key roles in modeling the ground   (15)
   water quality.

7. Discuss in detail various equations used of governing equations of ground water   (15)
   hydraulics.

8. Explain the method of assessing model performance and creation of simulation   (15)
   model with example.

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Register Number:

Name of the Candidate:

M.E. DEGREE EXAMINATION, 2015

(WATER RESOURCES ENGINEERING MANAGEMENT / ENVIRONMENTAL ENGINEERING)

(SECOND SEMESTER)

WREE – 206. WATER QUALITY MANAGEMENT FOR AGRICULTURE / ENVE – 301. WATER QUALITY MODELING

Nov
~~May~~]   [Time: 3 Hours

Maximum: 75 Marks

Answer any FIVE questions

1. a) Discuss in detail an iterative method in solving the systems of simultaneous linear equations.

    b) Explain the difference between simulation and optimization. Also, classify the simulation techniques.

2. a) Describe the dissolved oxygen sag curve for a stream having a source of pollution, with a neat sketch.

    b) Discuss the applications of operational model in river water quality studies, with suitable examples.

3. a) Write about the application of finite difference models.

    b) Classify and explain and 2 types of lake model with neat sketch.

4. a) Discuss the mechanisms that are responsible for the transport of suspended matter in natural waters.

    b) Explain in detail the hydraulic approach to aquifer modeling.

5. a) Elucidate the importance of mathematical model for discharge of wastewater into a marine environment.

    b) Discuss the effect of ocean current on diffusion process.

6. a) Explain about the application of dispersion model in predicting a water quality parameter.

    b) Discuss the various models of discharge.

7. a) Write in brief about the factors affecting water quality in lakes.

    b) Discuss in detail the estuarine hydraulics.

8. a) Explain the thermal patterns in lakes.

    b) Discuss about the physical processes that occur in marine environment while discharging waste water into it.

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M.E. DEGREE EXAMINATION, 2015

(ENVIRONMENTAL ENGINEERING)

(THIRD SEMESTER)

ENVE-302. REMOTE SENSING AND GIS FOR ENVIRONMENTAL APPLICATIONS

November]   [Time : 3 Hours

Maximum : 75 Marks

Answer any FIVE questions   (5 × 15= 75)

1. Discuss on spectral signatures and its rule in identifying objects with neat diagrams. (15)

2. With a suitable diagram explain the electromagnetic spectrum and its characteristics used in remote sensing. (15)

3. Discuss in detail about the various the different image processing techniques used in digital image processing. (15)

4. What is a map projection and explain the different types of map projection with their characteristics? (15)

5. Describe the procedure involved in the land use studies and its classification using remote sensing technologies. (15)

6. Explain the different types of DBMS used in GIS. (15)

7. Explain in detail the different types of data input in GIS. (15)

8. Write short notes on:

   a) Data acquisition (5)

   b) Active and passive aerial photo graphs (5)

   c) Vector data analysis in GIS (5)