Narasaraopeta Engineering College (Autonomous)
Kotappakonda Road, Yellamanda (P.O), Narasaraopet- 522601, Guntur District, AP.

NEC

Subject Code: R16MSE202

M.Tech - II Semester Supple Examinations, October-2020
EARTHQUAKE RESISTANT DESIGN
(SE)

Time: 3 hours

Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks
Use of IS: 1893 is permitted.

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1. (a) Explain the methods of quantitative and qualitative measurements of earthquakes. [6]
1. (b) Explain the working principle of seismograph. [6]

2. (a) Explain the structural behaviour of different types of lateral load resisting systems. [6]
2. (b) Explain the significance of base-isolation and the various types of base-isolation systems. [6]

3. (a) Explain the application of response spectrum in earthquake resistant design and the factors influencing the acceleration response spectra.
3. (b) Distinguish between the elastic and inelastic response spectra and explain the tripartite response spectrum. [6]

4. (a) Explain the different types of plan and vertical irregularities influencing the behaviour of structures during an earthquake. [6]
(b) Explain the concept of earthquake resistant design of masonry buildings. [6]

5. (a) Define ductility and explain the various factors influencing the ductility of reinforced concrete structural elements. [6]
5. (b) Explain the necessity of ductile detailing provisions of reinforced concrete beam and column elements as per IS: 13920. [6]

6. (a) Explain the linear and nonlinear methods of seismic analysis of structures. [6]
6. (b) Explain the different methods of retrofitting of reinforced concrete columns. [6]

7. Using dynamic analysis, determine the seismic forces acting on a building frame subjected to seismic weights as shown in Fig. 1. The equivalent stiffness of storey columns is also indicated. [12]
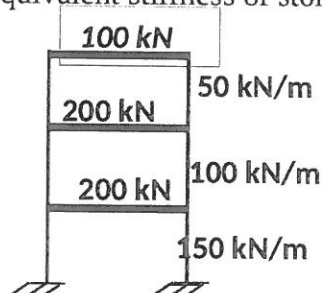

Fig. 1

8. (a) Explain the strength based and performance based seismic design. [6]
8. (b) Explain the different methods of seismic evaluation of structures. [6]

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Subject Code: R16MSE203

M.Tech - II Semester Supple Examinations, October-2020
STABILITY OF STRUCTURES
(SE)

Time: 3 hours

Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks

1) Explain Euler's theory of columns stability, write assumptions and limitations.

2) Derive the higher order governing equation for stability of columns. Hence analyze the column with one end fixed and other hinged conditions.

3) Distinguish elastic buckling and Inelastic buckling of columns.

4) Derive shape functions for a two nodded Bernoulli – Euler beam element

5) Determine the buckling load for simply supported I beam subjected to central point load

6) Derive the governing moment equilibrium equation for the buckling of a thin plate.

7) Derive the expression for deflection when buckling of simply supported rectangular plates compressed in two perpendicular directions.

8) Determine the critical load for a cantilever column subjected to a tip load using the energy method by assuming the displacement configuration approximately equal to static deflection curve.

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Subject Code: R16MSE204

M.Tech - II Semester Supple Examinations, October-2020
THEORY OF PLATES AND SHELLS
(SE)

Time: 3 hours

Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks

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1. Derive the moment curvature relationship in the case of pure bending of plates.

2. Obtain the expression for deflection in case of uniformly loaded circular plates with simply supported edges

3. Find Levy's solution for simply supported and uniformly loaded rectangular plates

4. Derive the equations of equilibrium for small deflections of laterally loaded plates.

5. Differentiate
   (a) Long and short cylindrical shells
   (b) Shells with and without edge beams

6. Describe the general theory of cylindrical shell loaded symmetrically with respect to its axis.

7. Describe Navier solution for simply supported rectangular plates.

8. Discuss about the following
   (a) Spherical shells
   (b) Cylindrical shells

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Subject Code: R16MSE205

M.Tech - II Semester Supple Examinations, October-2020
ADVANCED REINFORCED CONCRETE DESIGN
(SE)

Time: 3 hours   Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks
Use IS 456 - 2000 code

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1. Using yield line theory, design the floor slab of a class room of a multi-storeyed structure for the following data. Dimensions of the class room are 5m x 5 m. The panel is continuous on all edges. Assume M20 concrete and Fe415 grade steel. Derive the formulae involved. Sketch the reinforcement details. Assume moderate exposure condition. [12]

2. Design the exterior panel of a flat slab floor system for a warehouse 24m x 24m divided into panels of 6m x 6m. Load acting is $4kN/m^2$, Materials M20 grade concrete and Fe:415 steel, column size is 300mm diameter, height of storey is 3m, Thickness of slab in column strip is 300mm and thickness of slab in middle strip is 200mm. [12]

3. Design a ribbed slab 4 x 4 m continuous over two adjacent sides simply supported on the other two sides. Beams are spaced at 1.5 x 1.5m. Assume factored udl of 12 kN/m^2. Use M20 concrete and Fe415 steel. [12]

4. A continuous beam consists of three spans of 8m. The characteristic dead load is 15kN/m and the characteristic live load is 20kN/m. Draw the bending moment envelope after a maximum of 15% redistribution. [12]

5. Design a circular cylindrical bunker of capacity 300 kN to store coal using M20 concrete and Fc415 Steel unit weight of coal is 8.0 kN/m^3, angle of repose of coal is 20°. [12]

6. Describe in-detail the design steps for the design of chimney. [12]

7. (a)What are the principles of earthquake resistant design of RC buildings   [4+4+4]
   (b) Discuss about different types of failures of RC buildings due to earthquakes
   (c). Explain expansion and contraction joints, with neat sketches

8. Design a circular silo of 10m height and 4m internal diameter to store cement of unit weight 16 kN/m^3 and $\phi = 30^0$.

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Subject Code: R16MCS201
M.Tech - II Semester Supple Examinations, October-2020
INFORMATION SECURITY
(CS&E)

Time: 3 hours   **Max Marks: 60**

Answer any FIVE questions.
All questions carry EQUAL marks

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1. (a) What are the types of security attacks? Explain in detail. [6M]
   (b) Compare substitution ciphers with transposition ciphers. [6M]

2. Explain briefly about DES algorithm.   [12M]

3. (a) Explain the procedure involved in RSA public-key encryption algorithm? [6M]
   (b) What is importance Chinese Remainder Theorem in cryptography? Explain. [6M]

4. Describe the steps in message digest generation in Secure Hash Algorithm in detail. [12M]

5. (a) Explain PGP services in detail. [8M]

   (b) Explain the scope of ESP encryption and authentication in tunnel mode. [4M]

6. (a) What are the steps involved in the SSL record protocol transmission? [6M]
   (b) What is Firewall? List out various Types of Firewalls. [6M]

7. (a) Write short note on Block Cipher Design Principles. [6M]
   (b) Explain the Diffie-Hellman key exchange algorithm. [6M]

8. (a) Explain how authentication is performed in Kerberos. [4M]
   (b) What is a digital signature? List the requirements of digital signature. [4M]
   (c) Write short note on Secure Electronic Transaction. [4M]

Subject Code: R16MCS203

M.Tech - II Semester Supple Examinations, October-2020
DATA WAREHOUSING AND DATA MINING
(CS&E)

Time: 3 hours

Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks

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1. (a) What is motivated data mining? Why is it important? Explain in detail.[6M]

   (b) Explain the taxonomy of data mining tasks? [6M]

2. (a) Discuss briefly about similarities and dissimilarities between simple attributes? [6M]

   (b) What is the difference between mean and median? Explain with an examples. [6M]

3. (a) What is a concept hierarchy? Describe the OLAP operations in the Multidimensional data model. [6M]

   (b)Explain the three-tier data warehouse architecture. [6M]

4. (a) Discuss the Naïve Bayesian Classification with an example. [6M]

   (b)With an example, explain the classification by decision tree induction. [6M]

5. (a) Discuss the F-P Growth Algorithm with an example. [6M]

   (b) Discuss the Apriori algorithm with an example. [6M]

6. (a) Describe K means clustering algorithm with an example. [6M]

   (b) Explain the Agglomerative Hierarchical clustering with an example. [6M]

7. Write short notes on the following
   a) Data Quality   b) Data Pre-processing   c)OLAP queries   [4M+4M+4M]

8. (a) Explain the Measures for Selecting the Best Split for the various types of attributes.
   (b) Discuss about the Confidence Based Pruning in detail.
   (c)Describe strengths and weaknesses of DBSCAN.   [4M+4M+4M]

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Subject Code: R16MCS204

M.Tech - II Semester Supple Examinations, October-2020
WIRELESS NETWORKS AND MOBILE COMPUTING
(CS&E)

Time: 3 hours   Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks

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1. a. Compare wireless networks with wired networks. Discuss challenges of wireless networks
   b. What are the characteristics and applications of wireless mesh networks?   [6+6]

2. Explain GSM architecture and also discuss functional components of GSM.   [12]

3. a. Explain SDMA, FDMA and TDMA technologies
   b. Explain hidden and exposed terminals.   [6+6]

4. a. Explain near and far terminals.
   b. Explain CDMA. Compare CDMA with TDMA   [6+6]

5. a. Explain tunneling and encapsulation. Explain IP packet delivery in Mobile IP.
   b. Explain agent advertisement and discovery in mobile IP.   [6+6]

6. a. Discuss implications of mobility on use of traditional TCP in wireless environment.
   b. Explain Snooping TCP and Transaction oriented TCP   [6+6]

7. a. What are the characteristics and challenges of MANETs?   [6+6]
   b. Explain AODV and DSDV routing protocols

8. Write short notes on following :   [4+4+4]
   a. Next Generation Networks
   b. Dynamic host configuration protocol
   c. Proactive routing protocol.

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Subject Code: R16MCS207

M.Tech - II Semester Supple Examinations, October-2020
UNIFIED MODELLING LANGUAGE
(CS&E)

Time: 3 hours

Max Marks: 60

Answer any FIVE questions.
All questions carry EQUAL marks

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1. a) Explain OOA, OOD and OOP.

    b) Explain the features of object oriented programming.   [6+6]

2. a) Explain common modeling techniques for modeling classes.

    b) What are the different types of relationships in UML? Explain with examples   [6+6]

3. a)what is an interface ? Explain modeling static and dynamic Types.

    b) Explain class diagrams. Explain modeling techniques for simple collaborations   [6+6]

4. a) Collaboration and Sequence diagrams are isomorphic – discuss.   [6+6]

    b) Illustrate modeling a flow of control by time with an example.

5. a) what is use case view of a system. Illustrate modeling the context of a system using use
      case diagrams with an example.

    b) What are swimlanes? Explain with example.   [6+6]

6. Explain terms and concepts and common modeling techniques for activity diagrams

                                                                              [12]

7. a) What are events and signals? Explain common modeling techniques for events and signals

    b) Explain modeling lifetime of an object using state machines. Illustrate with example.   [6+6]

8. a) Define component. What are the advantages and disadvantages of component diagrams in
      maintenance of a system.   [6+6]

    b)Illustrate the use of deployment diagrams with an example of modeling a client server
      system.

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