

Code No: R42019

R10

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

ADVANCED STRUCTURAL ANALYSIS

(Civil Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Derive the governing differential equations in terms of stress function and potential function for plane stress problem. [8]
b) Explain Saint Venant's Principle. [7]
- 2 a) Derive the governing differential equations of equilibrium for 2-D Cartesian problem. [8]
b) Derive expressions for compatibility for a two dimensional problem. Under what conditions the compatibility equation does holds for the case of plane stress and plane strain problem. [7]
- 3 Given the following stress function
$$\phi = \frac{H}{\pi} z \left[\tan^{-1} \frac{x}{z} \right]$$

Determine the stress components σ_x , σ_y , τ_{xz} . [15]
- 4 a) Derive governing equations of equilibrium in Polar coordinates in radial and tangential directions. [8]
b) Discuss various applications of polar coordinates and advantages of considering problem using polar coordinates. [7]
- 5 a) Describe types and characteristics of typical dynamic loading with examples and essential characteristics of dynamic problem. [10]
b) An oscillating system with a natural frequency of 4Hz start with an initial amplitude of 1.5cm and initial velocity of 20cm per sec. calculate
i) Natural frequency ii) Natural period iii) Amplitude of vibration
iv) Velocity v) Acceleration vi) Phase angle vii) Time at first peak [5]



- 6 a) Derive general equation of motion for undamped free vibration of an single degree of freedom system. [10]
- b) A vibrating system consists of a mass 10kg spring of stiffness 100N/m and frequency with damping coefficient of 5N-s/m. determine a) the damping factor b) natural frequency of the damped vibration, c) Logarithmic decrement d) the ratio of two successive amplitudes e) the number of cycles after which the initial amplitude is reduced to 15%. [5]
- 7 a) Discuss the variation of Deformation response factor with frequency ratio and discuss salient observations. [8]
- b) Explain Displacement, Velocity and acceleration response factors and how they are related. [7]
- 8 a) Explain Duhamel Integral. [5]
- b) An undamped single degree of freedom system is subjected to the forcing function shown in Figure 1. The equation of the forcing function is $F = (1 - \frac{t}{q})$

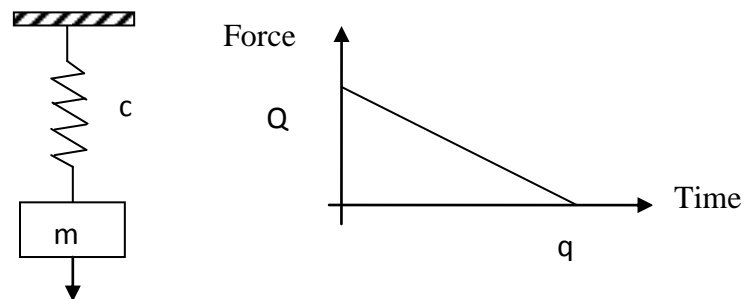


Figure 1

Obtain the response equation for $t \leq q$.

[10]



Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Derive expressions for strain at a point in terms of stress components. [8]
- b) The state of stress at a point is defined by

$$\tau_{ij} = C \begin{bmatrix} y^2 + \nu(x^2 - y^2) & -2\nu xy & 0 \\ -2\nu xy & x^2 + \nu(y^2 - x^2) & 0 \\ 0 & 0 & \nu(x^2 + y^2) \end{bmatrix}$$
- Where C is negligible body force. Does this represent true state of stress? [7]
- 2 a) Derive expressions for compatibility for a two dimensional problem. [8]
- b) Derive the governing differential equations in terms of stress function for plane stress problem [7]
- 3 a) Explain Saint Venants Principal and its significance. [5]
- b) Find the stress components for a simply supported beam having a narrow rectangular cross section of unit width subjected to a uniformly distributed load of intensity w/m run. [10]
- 4 Starting from general solution $\phi = A \log r + B r^2 \log r + C r^2 + D$, obtain the expressions for radial and hoop stresses in a thick cylinder subjected to internal fluid pressure. [15]
- 5 a) List out and explain different prescribed dynamic loadings with applications. [8]
- b) An empty elevated water tank is pulled by a steel cable by applying a 50kN force. The tank is pulled horizontally by 5cm. The cable is suddenly cut and the resulting free vibration is recorded. At the end of five complete cycles the time is 25secs and the amplitude is 2cm. Determine the Damping ratio, Natural period of Undamped vibration, Effective stiffness, Effective weight and Damping coefficient for the given data. [7]
- 6 a) Under damped / Over damped / Critically damped systems with suitable examples. [10]
- b) A single degree of freedom system is having a mass of 2.5kg is set into motion with viscous damping and allowed to oscillate freely. The frequency of oscillation is found to be 50Hz and measurement of the amplitude of vibration shows two successive amplitude to be 6mm and 5.5mm. Determine the viscous damping coefficient. [5]
- 7 a) Derive expression for response of an undamped SDOF system subjected to Harmonic excitation explaining salient features involved. [8]
- b) Explain the response of single degree of freedom system to support motion. [7]
- 8 a) Explain Duhamel Integral. [5]
- b) Derive expression for response of a structure to rectangular impulse. [10]



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Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

ADVANCED STRUCTURAL ANALYSIS

(Civil Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 b) Derive expressions for compatibility for a two dimensional problem. [8]
a) Derive the governing differential equations of equilibrium for 2-D Cartesian problem. [7]
- 2 a) Explain Saint-Venant's principle. [5]
b) Determine the stress components and sketch their variation in a region included in $Z= 0$, $Z= d$, $x= 0$ on the side x positive for the problem if plane stress satisfied by the stress function $\phi = -\frac{3F}{4d} \left[xz - \frac{xz^3}{3d^2} \right] + \frac{pz^2}{2}$ [10]
- 3 a) Explain solution of a elasticity problems using Polynomials. [5]
b) Using polynomial derive expressions for bending of a cantilever beam subjected to a concentrated load at the free end. Sketch the stress variation. [10]
- 4 Starting from general solution $\phi = A \log r + B r^2 \log r + C r^2 + D$, obtain the expressions for radial and hoop stresses in a thick cylinder subjected to external fluid pressure. [15]
- 5 a) Describe types and characteristics of typical dynamic loading with examples and essential characteristics of dynamic problem. [5]
b) Derive expression for equation of motion of single degree freedom systems from the following concepts. i) Dynamic equilibrium. ii) Stiffness, damping and mass components. [10]
- 6 a) Derive expression relating the decay of motion associated with damping. [8]
b) The successive amplitudes from a free vibration test for a structure are 1.00, 0.5, 0.25 and 0.15 units respectively. Determine the damping ratio (assuming it to be very small) of the system considering i) each cycle separately and ii) considering them all together. [7]
- 7 a) Derive expression for response of a damped SDOF system subjected to Harmonic excitation explaining salient features involved. [10]
b) Explain i) Resonance ii) situation of the structure at resonance. [5]
- 8 a) Explain Duhamel Integral. [8]
b) Derive expression for response of a structure to triangular impulse. [7]



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Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016
ADVANCED STRUCTURAL ANALYSIS
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1 a) Explain Plane stress and Plane strain problem with applications. [8]

b) Derive the governing differential equations in terms of stress function and for plane stress problem. [7]

2 a) Derive expressions for strain at a point in terms of stress components. [8]

b) Investigate what problem of plane stress is solved by the stress function.

$$\phi = \frac{3F}{4c} \left(xy - \frac{xy^3}{3c^2} \right) + Py^2/2 \quad [7]$$

3 a) Explain the concept of solution by Polynomials. [5]

b) Given the stress function

$$\phi = s \left(\frac{xy}{4} - \frac{xy^2}{4c} - \frac{xy^3}{4c^2} + \frac{ly^2}{4c} + \frac{ly^3}{4c^2} \right)$$

for providing solution for a cantilever ($y = \pm c$, $0 < x < l$) loaded by uniform shear along the lower edge, the upper edge and the ends $x = l$. being free from load. In what respects is this solution imperfect? [10]

4 Given the stress function $\phi = -\left(\frac{F}{d^3} xz^2(3d - 2z) \right)$ for providing solution of an elasticity problem. Determine the stress components and sketch their variation in a region included in $Z=0$, $Z=d$, $x=0$ on the side x positive. [15]



- 5 a) Explain D'Allemberts Principal with examples. [5]
b) i) Single degree of freedom systems.
ii) Discuss force-displacement relation for linearly elastic and inelastic systems. [10]
- 6 a) Explain Under damped, Critically damped and Over damped systems with examples. [8]
b) A vibrating system consists of a mass 5kg spring of stiffness 120N/m and frequency with damping coefficient of 5N-s/m. determine
i) the damping factor
ii) natural frequency of the damped vibration,
iii) Logarithmic decrement
iv) the ratio of two successive amplitudes
v) the number of cycles after which the initial amplitude is reduced to 25%. [7]
- 7 a) Derive expression for response of a undamped SDOF system subjected to Harmonic excitation explaining salient features involved [10]
b) The damped frequency of a system is obtained as 9.8 Hz from a free vibration test during the forced vibration test with constant excitation force on the same system. The maximum amplitude of vibration is found to be at 9.6Hz. Find the damping factor for the system and its natural frequency. [5]
- 8 a) Explain Duhamel Integral. [5]
b) Derive expression for response of a structure to half Sine Wave impulse. [10]



Code No: **R42028**

R10

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

OOPS THROUGH JAVA

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) What is Object–Oriented Paradigm? Explain its features. [7]
b) Explain data abstraction and Encapsulation. [8]
- 2 a) What is a class and Object? Explain how constructors are defined in java for a class with example. [8]
b) Explain *this* key word and *garbage collection* in java. [7]
- 3 a) What is inheritance? Describe the syntax of single inheritance. [8]
b) Compare and contrast overloading and overriding methods. [7]
- 4 a) What is CLASSPATH? Explain CLASSPATH setting procedure. [7]
b) What is a Package? Explain the procedure for creating and importing the packages in java. [8]
- 5 a) What is exception? Explain the exception handling mechanism. [7]
b) Define a thread? Give syntax for creating a thread using a class and an interface. [8]
- 6 a) What is an applet? Explain the life cycle of an applet. [8]
b) Explain how applets differs an application. [7]
- 7 a) Explain the following AWT user components with their syntax and constructors. [9]
 i) Text components ii) Check boxes iii) Choices
b) Explain boarder and grid layout mangers briefly. [6]
- 8 Explain the following Swing components in detail. [15]
 i) J Labels ii) J combo Boxes iii) Tabbed panes

Code No: **R42028**

R10

Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

OOPS THROUGH JAVA

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

- 1 a) Explain inheritance and polymorphism concepts of OOP. [8]
b) Explain Message Communication in OOP. [7]
- 2 a) Explain different data types defined in java. [8]
b) Explain different control statements in java with example. [7]
- 3 a) What is inheritance? Explain different forms of inheritance with example. [10]
b) How do we construct sub-class constructor? Explain. [5]
- 4 a) Define a Package? How do we add a class or an interface to a package? [8]
b) Discuss various levels of access protection available for packages and their implications. [7]
- 5 a) List the some of the most common types of exceptions that might occur in java. Give example. [8]
b) Explain the differences between multi threading and multi tasking. [7]
- 6 a) Explain the applet architecture. [8]
b) Explain the steps to passing parameters to an applet with example. [7]
- 7 a) What is an event? Explain the event delegation model. [7]
b) Write a java program to handle keyboard events. [8]
- 8 Explain the following Swing components in detail. [15]
 - i) J Frame
 - ii) J Button
 - iii) J Radio Buttons
 - iv) Scroll panes



Code No: **R42028**

R10

Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

OOPS THROUGH JAVA

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

- 1 a) Explain benefits and applications of OOP. [8]
b) Explain dynamic binding and overriding in OOP. [7]
- 2 a) Explain Structure of Java Program with example. [7]
b) What is method overloading? Explain it example. [8]
- 3 a) What is inheritance? Explain the limitations and benefits of inheritance. [8]
b) Explain the member access rules in inheritance. [7]
- 4 a) Define an Interface? Explain implementation of multiple inheritance using interfaces. [8]
b) What is a Package? Explain frequently used Java API package briefly. [7]
- 5 a) What is exception handling? Explain the built exceptions briefly. [8]
b) What is thread? Explain the life cycle of thread. [7]
- 6 a) Explain the procedure for creating and deploying an applet. [8]
b) Write a program to create a simple banner applet. [7]
- 7 a) Discuss various event sources and event listeners. [7]
b) Write a java program to handle mouse events. [8]
- 8 a) What are the Limitations of AWT? Explain the advantages of Swings. [7]
b) Explain the following Swing components. [8]
 - i) J Applet
 - ii) J Button Class



Code No: **R42028**

R10

Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

OOPS THROUGH JAVA

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

- 1 Distinguish between the following terms. [3]
 - a) Objects and classes [4]
 - b) Data abstraction and data encapsulation [4]
 - c) Inheritance and polymorphism [4]
 - d) Dynamic binding and message passing [4]
- 2 a) Explain creation, compilation and running of simple java program. [7]
b) Explain any four String handling functions in java. [8]
- 3 a) Explain the following forms of inheritance. [10]
 - i) Specialization
 - ii) Specification
 - iii) Construction
 - iv) combination
b) Explain abstract classes with example. [5]
- 4 a) What is an interface? List the similarities and difference between an interface and class. [8]
b) Describe various forms of implementing interfaces. Give example for each case. [7]
- 5 a) Explain the usage of try, catch, throw, throws and finally in exception handling. [10]
b) What is synchronization? When do we use it? [5]
- 6 What is Applet? Explain the life cycle of the Applet? Write a java program which draws a dashed line and dotted line using applet. [15]
- 7 a) Explain AWT hierarchy. [6]
b) Explain the following AWT user components with their syntax and constructors. [9]
 - i) labels
 - ii) buttons
 - iii) checkboxes
- 8 a) Explain MVC architecture. [7]
b) Explain the following Swing components. [8]
 - i) Tabbed panes
 - ii) Scroll panes

Code No: R42038

R10

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

ADVANCED MATERIALS

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions

All Questions carry equal marks

- 1 a) Outline the importance of composites as a substitute for conventional materials with suitable examples. [8]
b) What are the functions of a matrix in composite materials? [7]
- 2 a) Explain the important characteristics of different fiber materials used in Composites. [8]
b) Explain in detail the characteristics and applications of glass fibers. [7]
- 3 a) Explain the following with neat sketch Pultrusion technique. [8]
b) Tape production method. [7]
- 4 a) Discuss various types of laminate configurations and their structural features. [8]
b) Derive the elastic constants of lamina and matrix of a composite. [7]
- 5 a) Compare the characteristic features of polymer matrix and metal matrix composites. [10]
b) Identify the field of applications of metal matrix composites. [5]
- 6 a) What are the superior properties of functionally graded materials? [8]
b) Compare functionally graded materials with a Nano material. [7]
- 7 a) What are shape memory alloys (SMAs)? What is shape memory effect? Explain with examples. [8]
b) Explain the production methods of the quasi crystal and nano crystalline materials. [7]
- 8 a) Demonstrate the relative advantages and disadvantages of Nano material when compared with bulk materials. [8]
b) Which is a smart material in above? Why? [7]



Code No: R4205G

R10

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

E – COMMERCE

(Common to Computer Science & Engineering and Information Technology)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Discuss about information process categorization in e-commerce. [8]
b) Write notes on secure messaging in e-commerce. [7]
- 2 a) Explain how pre-purchase is determined in e-commerce. [7]
b) Discuss about mercantile transaction using credit cards. [8]
- 3 a) Discuss about legal issues and operational risks in electronic cash. [8]
b) What are the factors for design of electronic payment system? [7]
- 4 a) Present various issues and limitations in EDI. [8]
b) What are VANs? Discuss in detail about VANs. [7]
- 5 a) Explain about intra-organizational electronic commerce. [8]
b) Discuss on Agile Manufacturing in supply chain management. [7]
- 6 a) Discuss about hypertext documents and structured documents. [8]
b) Write about e-advertising and marketing. [7]
- 7 a) What are interactive product catalogs? Explain with example. [8]
b) Discuss about Electronic White Pages. [7]
- 8 a) Explain with applications, how Internet can be used for video conferencing. [7]
b) Explain in detail about multimedia data compression. [8]



Code No: **R4205G**

R10

Set No. 2

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

E – COMMERCE

(Common to Computer Science & Engineering and Information Technology)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Explain about e-commerce framework in detail. [8]
b) Explain about brokerage and data management in e-commerce. [7]
- 2 a) How home shopping is categorized in e-commerce? Discuss about it. [7]
b) Explain how purchase consumption is implemented in electronic commerce. [8]
- 3 a) What is electronic cash? Present the properties of it. [7]
b) Write about credit card based electronic payment systems. [8]
- 4 a) With a neat sketch explain information flow with and without EDI. [9]
b) List out various applications of EDI. [6]
- 5 a) Discuss about workflow automation in detail. [7]
b) Write notes on pull based and push based supply chain management. [8]
- 6 a) Explain various document oriented processes. [8]
b) What are various functions and features of data warehouse? [7]
- 7 a) Write about Wide Area Information Service Engine. [8]
b) Explain the typical features of information filtering processes. [7]
- 8 a) Discuss about multimedia servers in detail. [8]
b) Explain about desktop video application software. [7]



Code No: R4205G

R10

Set No. 3

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

E – COMMERCE

(Common to Computer Science & Engineering and Information Technology)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Detail about the anatomy of electronic commerce. [7]
- b) Write about middleware services and interface layer services. [8]
- 2 a) Differentiate between intermediate services and advanced services. [8]
- b) Describe the order management cycle in e-commerce. [7]
- 3 a) Explain about electronic check system. [7]
- b) What is EFT? How work on EFT can be segmented? [8]
- 4 a) Describe the layered architecture of EDI. [9]
- b) Write about various EDI standards. [6]
- 5 a) Discuss about workflow coordination in detail. [7]
- b) Write about Efficient Customer Response in supply chain management. [8]
- 6 a) Illustrate the types of digital documents, with an example and brief explanation for each type. [8]
- b) Explain the process to build an end to end data warehouse. [7]
- 7 a) Explain about indexing package categories. [8]
- b) Discuss about consumer data interfaces in detail. [7]
- 8 a) Detail on the types of desktop video conferencing. [7]
- b) Illustrate the characteristics of digital video. [8]



Code No: **R4205G**

R10

Set No. 4

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

E – COMMERCE

(Common to Computer Science & Engineering and Information Technology)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Explain about application services in e-commerce. [8]
b) Discuss about the limitations of electronic commerce. [7]
- 2 a) Explain in detail about consumer oriented services. [8]
b) Explain the mercantile model from consumer's perspective. [7]
- 3 a) Explain about digital token based electronic payment system. [8]
b) Discuss about the risks in electronic payment systems. [7]
- 4 a) What is EDI? Briefly discuss about EDI. [6]
b) Discuss about EDI software implementation. [9]
- 5 a) Present various characteristics of supply chain management. [7]
b) Explain the role of marketing and distribution in supply chain management. [8]
- 6 a) Detail about corporate digital library with a neat sketch. [8]
b) Illustrate the process of online marketing with suitable example. [7]
- 7 a) Define Search Engine. Write about three major search methods. [8]
b) Explain about Electronic Yellow Pages. [7]
- 8 a) Discuss about the factors that have made up desktop video conferencing. [7]
b) Explain in detail about multimedia storage technology. [8]



Code No: R42124

R10

Set No. 1

IV B.Tech II Semester Regular/Supplementary Examinations, April/May - 2016

CLOUD COMPUTING

(Information Technology)

Time: 3 hours

Max. Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

- 1 a) Explain various benefits of virtualization. [8]
- b) Explain virtualization in cluster context virtual network. [7]
- 2 a) Discuss “*pay for what you use*” model of cloud computing. [8]
- b) Explain about “*scaling a cloud infrastructure*” in detail. [7]
- 3 a) Explain different service levels for cloud applications. [8]
- b) Describe the different cloud licensing models in detail. [7]
- 4 a) Explain the concept of privacy design in clouds. [7]
- b) Explain different critical cloud security issues in detail. [8]
- 5 a) Explain why the most popular APIS, an *information_as_a_service* offerings are free. [7]
- b) With neat diagram discuss how *process_as_a_service* allows you to build on premise resources together to form business solutions. [8]
- 6 a) Explain testing as a service and *infrastructure_as_a_service* in detail. [8]
- b) List and discuss few major components of *platform_as_a_service*. [7]
- 7 a) Explain in detail planning for disaster recovery in clouds. [7]
- b) Explain various backup requirements of web application in clouds. [8]
- 8 a) Compare and contrast Nimbus and Eucalyptus. [7]
- b) Discuss in brief Elastic block store, Amazon EC2. [8]

