

## FACULTY OF INFORMATICS

B.E. 4/4 (IT) I-Semester (New)(Main) Examination, December 2013

Subject : Digital Image Processing  
(Electives - III)

Time : 3 Hours

Max. Marks: 75

**Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. List out the fundamental steps of DIP. (3)
2. Define image sampling and quantization. (3)
3. What is unsharp masking? (2)
4. What is Aliasing? (2)
5. Illustrate model of Degradation restoration process. (3)
6. What is uniform noise? What are the causes of noise? (2)
7. What is Fourier transform? What is power spectrum? (3)
8. What is pattern and pattern class? (3)
9. What is Intensity slicing? (2)
10. What is coding Redundancy ? What are the different types of redundancy? (2)

**PART – B (50 Marks)**

- 11.(a) Explain the element of visual perception. (5)  
(b) Explain histogram matching with derivation. (5)
- 12.(a) What is morphological image processing? (2)  
(b) Explain erosion, dialation, opening and closing. (8)
13. Discuss smoothing spatial filters and sharpening spatial filters. (5+5)
- 14.(a) Explain briefly about noise models. (5)  
(b) Explain Wiener filtering. (5)
- 15.(a) What is pseudocolor image processing? (2)  
(b) Explain clearly about color models. (8)
16. Write short notes on the following;  
(a) Region growing (3)  
(b) Region splitting and merging (7)
- 17.(a) Explain about image compression model. (3)  
(b) What is fidelity criteria? Explain about irrelevant information? (2)  
(c) Explain LZW coding. (5)

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**PART – B (50 Marks)**

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**FACULTY OF INFORMATICS**

B.E. 4/4 (IT) I-Semester (Old) Examination, December 2013

**Subject : Digital Image Processing  
(Electives - I)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. List the fundamental steps in digital image processing. (2)
2. Explain image sampling. (3)
3. What is a mask? Differentiate spatial filtering and frequency domain filtering. (3)
4. Why are smoothing filters used? Write the expression for general implementation for filtering  $M \times N$  image with a weighted average filter of size  $m \times n$ , and explain the terms in the expression. (3)
5. Present a model of the image Degradation and Restoration process. Explain degradation and restoration briefly. (3)
6. Minimum mean square error filtering method is based on consideration that the image and noise are random processes. With an expressions for error measure as mathematical expectation and write the conditions / assumptions for evaluation of measure. (3)
7. State how segmentation is performed in detection of a straight edge in a given image. (2)
8. Define shape-number of order  $n$ . Illustrate the steps in the generation of a shape number citing suitable example. (3)
9. Differentiate full colour and pseudo colour processing and define Brightness, Hue and saturation. (2)
10. Define objective fidelity criteria. Give an expression for estimation of the same. (2)

**PART – B (50 Marks)**

- 11.(a) Explain how the sum of all components of a normalized histogram is equal to unity. (6)
- (b) State the procedure for histogram matching and explain. (4)
12. Show the development of the method based on Laplacian, using second derivatives for image sharpening. (10)
- 13.(a) Present a brief survey of noise models. (5)
- (b) Explain how arithmetic mean filter computes the values of the restored image. (5)
14. Illustrate segmentation by basic global thresholding using a suitable example. (10)
15. Explain intensity slicing technique used in pseudocolour image processing. (10)
16. Distinguish between data and information and explain data compression in terms of relative data redundancy and compression ratio. Explain coding redundancy interpixel redundancy and psychovisual redundancy. (10)
17. Write short notes on the following:
  - (a) Smoothing linear filters (4)
  - (b) Colour models (3)
  - (c) LZW coding (3)

**FACULTY OF INFORMATICS**

B.E. 4/4 (IT) I-Semester (Old) Examination, December 2013

**Subject : Digital Image Processing  
(Electives - I)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

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**FACULTY OF ENGINEERING**

**B.E. 4/4 (IT) I – Semester (Old) Examination, December 2013**

**Subject: Information Security (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Write about the information characteristics authenticity and possession (3).
2. Define an attack. List different types of attack. (2)
3. Justify, "Differences in culture cause problems in determining what is ethical and what is not". (2)
4. Mention the three types of Access Controls with respect to Information Security. (3)
5. Define a Policy. (2)
6. How is a Firewall evaluated? (3)
7. Differentiate AES and DES. (3)
8. What is the working principle of IDEA? (2)
9. How do you compute a Message Digest? (3)
10. List the services offered by SSL record protocol to SSL connections. (2)

**PART – B (50 Marks)**

11. What is a Threat? Discuss different threat groups.
12. Write in detail the process of Risk Identification.
13. What is an IDS? Explain any three types of IDS.
14. Discuss the working of RSA with its algorithm.
- 15.(a) How does SET ensure protection to transactions on Internet.  
(b) Discuss the implementation of Digital Signature.
16. Explain different Firewall Architectures.
17. Write about the following:
  - (a) Security Systems Development Life Cycle.
  - (b) Roles and responsibilities of professional security organizations with examples.

**FACULTY OF ENGINEERING**

**B.E. 4/4 (IT) I – Semester (Old) Examination, December 2013**

**Subject: Information Security (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Write about the information characteristics authenticity and possession (3).
2. Define an attack. List different types of attack. (2)
3. Justify, "Differences in culture cause problems in determining what is ethical and what is not". (2)
4. Mention the three types of Access Controls with respect to Information Security. (3)
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**PART – B (50 Marks)**

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

**Subject: Software Reuse Techniques (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Compare domain engineering and application systems engineering. (3)
2. Discuss the importance of component reuse. (2)
3. What are the consequences of abstract factory patterns? (3)
4. Define prototype manager class. (2)
5. What are the participants in bridge patterns? (3)
6. Write about the implementation issues in composite pattern. (2)
7. List the different behavioral patterns. (2)
8. Write the liabilities of the blackboard pattern. (3)
9. Write a short note on testing the component system. (3)
10. How business engineering can be applied when installing a reuse business? (2)

**PART – B (50 Marks)**

- 11.(a) Why software reuse requires changes in process. (3)  
(b) Explain different concurrent process involved in software reuse. (7)
- 12.(a) Explain about factory method pattern with its implementation. (7)  
(b) When to use a factory method pattern? (3)
- 13.(a) Describe about two-way adapter in detail. (7)  
(b) Write a simple java program how to move the data between lists. (3)
14. Explain in detail about the motivation and implementation of interpretor pattern. (10)
15. Describe in detail about observer pattern. (10)
16. Explain about the structure and consequences of pipes and filter pattern. (10)
17. Explain how to design the component system. Discuss in brief with an example. (10)

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

**Subject: Software Reuse Techniques (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Compare domain engineering and application systems engineering. (3)
2. Discuss the importance of component reuse. (2)
3. What are the consequences of abstract factory patterns? (3)
4. Define prototype manager class. (2)
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**PART – B (50 Marks)**

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**FACULTY OF INFORMATICS****B.E. 4/4 (IT) I-Semester (Old) Examination, December 2013****Subject : Software Reuse Techniques  
(Electives - III)****Time : 3 Hours****Max. Marks: 75****Note: Answer all questions of Part - A and answer any five questions from Part-B.****PART – A (25 Marks)**

1. What is Reuse driven software Engineering, Business, mention its four interlocking dimensions. (3)
2. What is the intent of abstract factory pattern? State its applicability. (3)
3. Define component and facade. (2)
4. How to select and use a design pattern? (3)
5. Write three situations where proxy pattern is applicable. (3)
6. Write atleast two participants of interpreter pattern. (2)
7. Give an example for pipes and filters. (2)
8. What are Architectural patterns? List them. (2)
9. Draw the structure and state the known uses of state pattern. (3)
10. What is black-board architecture? Give an example. (2)

**PART – B (50 Marks)**

- 11.(a) Explain how design model defines the implementation. (5)
- (b) Explain the reuse of variable components to build application systems, with an example. (5)
- 12.(a) Discuss the intent, motivation, applicability and structure of prototype pattern. (6)
- (b) Draw the structure of chain of responsibility pattern and mention its participants. (4)
13. Discuss in detail about abstract factory pattern. (10)
14. Explain in detail about Bridge pattern. (10)
15. Discuss the intent, consequences and applicability of :
  - (a) Memento pattern (3)
  - (b) Pipes and filters (4)
  - (c) State pattern (4)
16. Explain in detail about view-handler pattern. (10)
17. Write short notes on the following:
  - (a) Software reuse and its advantages (3)
  - (b) Master-slave pattern with an example (4)
  - (c) Reflection pattern (3)

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**FACULTY OF INFORMATICS****B.E. 4/4 (IT) I-Semester (Old) Examination, December 2013****Subject : Software Reuse Techniques  
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FACULTY OF INFORMATICS

B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013

Subject: Grid Computing (Elective – III)

Time: 3 Hours

Max.Marks: 75

*Note: Answer all questions from Part A. Answer any five questions from Part B.*

**PART – A (25 Marks)**

1. What is meant by single sign-on? (2)
2. What is the difference between Grid computing and cluster computing? (3)
3. What is check pointing? (3)
4. What is the role of request broker? (2)
5. Define SOAP (3)
6. What is grid portal? (2)
7. Define data partitioning. (2)
8. What is parameter sweep? (3)
9. Define about ghte. (3)
10. What is cloud computing? (2)

**PART – B (50 Marks)**

- 11.(a) Discuss about the history of distributed computing. (5)  
(b) Describe the key aspects of grid computing software interface. (5)
- 12.(a) Explain briefly about GSI communication protocols. (5)  
(b) Describe the components of public key infrastructure. (5)
- 13.(a) What is WSDL? Explain. (5)  
(b) Explain the features of workflow editors. (5)
14. How to use multiple grid computers to solve a single problem? (10)
- 15.(a) Explain the internal working of glite. (5)  
(b) How resource management is done using grid way and grid bus? (5)
- 16.(a) what is grid enabling? Explain. (5)  
(b) Explain the concept of digital signatures. (5)
17. Write short notes on the following:  
a) Service – Oriented architectures. (5)  
b) Globus Toolkit 4. (5)

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FACULTY OF INFORMATICS

B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013

Subject: Grid Computing (Elective – III)

Time: 3 Hours

Max.Marks: 75

*Note: Answer all questions from Part A. Answer any five questions from Part B.*

**PART – A (25 Marks)**

1. What is meant by single sign-on? (2)
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7. Define data partitioning. (2)
8. What is parameter sweep? (3)
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**PART – B (50 Marks)**

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

**Subject: Semantic Web (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Define ontology. (2)
2. Draw the tree of poryphyry. (3)
3. Illustrate RDF graph. (3)
4. List XML essentials. (2)
5. How are individuals and property instances declared in OWL Lite? (3)
6. Define SWRL. (2)
7. Mention the purpose of Service Profile. (3)
8. Why is uschold ontology development method criticism? (2)
9. What is Metadata? List the types of metadata. (3)
10. Outline KR ontology. (2)

**PART – B (50 Marks)**

11. Classify the ontology's based on:
  - a) Semantic spectrum
  - b) Generality
  - c) Information representation
12. Identify inference problems and prove the propositions reduction to subsumption and reduction to unsatisfiability.
- 13.(a) Discuss OWL vocabulary for property characteristics.  
(b) How are quantified, universal and cardinality restrictions specified in OWL Lite?
14. Write about the security standards in Web service.
15. What is the role of software agent in semantic web? Discuss different agent forms.
- 16.(a) Explain about the usage scenarios for rule languages.  
(b) Describe ontology development 101 method.
17. Mention the differences between the following:
  - a) Ontologies and Thesaurus
  - b) RDF and RDF Schema.

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

**Subject: Semantic Web (Elective – III)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

1. Define ontology. (2)
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5. How are individuals and property instances declared in OWL Lite? (3)
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**PART – B (50 Marks)**

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

**Subject : Digital Image Processing (Elective – III)**

**Time : 3 hours**

**Max. Marks : 75**

**Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.**

**PART – A (25 Marks)**

1. What are the components of DIP system? (3)
2. Define adjacency. How many types of adjacency? (3)
3. Differentiate between spatial correlation and convolution. (3)
4. Define salt and pepper noise. (2)
5. What is erosion and dilation? (2)
6. What is Gaussian noise? (2)
7. Define edge detection with an example. (3)
8. What is multivariable thresholding? (2)
9. Differentiate between RGB and HIS model. (3)
10. What is predictive coding? (2)

**PART – B (5 x 10 = 50 Marks)**

11. What is histogram processing? Explain briefly about histogram equalization. (10)
- 12.a) Define M-path. (2)  
b) What is thresholding? Explain. (5)  
c) What is contrast stretching? (3)
13. Explain briefly about image smoothing in frequency domain filters. (10)
- 14.a) Explain opening and closing operations. (5)  
b) Explain minimum mean square error filtering. (5)
- 15.a) Define a pattern and pattern class. (2)  
b) Explain how minimum distance classifier is useful for classifying different pattern classes. (8)
16. Define segmentation. Discuss region based segmentation. (10)
17. Write a short notes on the following :  
a) Huffman coding (5)  
b) LZW coding (5)

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**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (New) (Main) Examination, December 2013**

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