

(DMCS21)

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M.Sc. DEGREE EXAMINATION, MAY - 2018

(Second Year)

COMPUTER SCIENCE

User Interface Design

Time : 3 Hours

Maximum Marks : 70

SECTION - A

(3 × 15 = 45)

Answer any three questions

- Q1)** Discuss in detail about models used in user interface design.
- Q2)** What are the types of mouse button? Explain in detail about the types operations that can be done with them.
- Q3)** Explain in detail about dialog boxes and its types.
- Q4)** Explain various states of windows and also describe different window postures.
- Q5)** What are the different kinds of usability testing? Explain any four in detail.

SECTION - B

(5 × 4 = 20)

Answer any five questions of the following

- Q6)** What are the factors involved in choosing platform for design and development of a system.
- Q7)** Give any four comparisons of graphical and web user interface.
- Q8)** Identify the merits and demerits of Drag and Drop operation with illustrations.
- Q9)** Describe techniques for visual indication of selection.
- Q10)** Write about orchestration and flow presentation.

Q11) Briefly explain about Bit maps.

Q12) Describe different kinds of graphical menus.

Q13) Write about how to process messages.

SECTION - C
Answer all questions

(5 × 1 = 5)

Q14) What is goal directed design?

Q15) What is visualization?

Q16) What is mumble screen?

Q17) What is dialog box?

Q18) What are the alerts?



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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Computer Graphics

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three questions.

(3 x 15 = 45)

- Q1)** Explain in detail Raster scan display and random scan display systems with complete architecture diagram.
- Q2)** Digitize a line from (1, 2) to (12, 18) on the raster screen using Bresenham's straight line algorithm and compare it with line generated using DDA.
- Q3)** Explain Cohen Sutherland line clipping algorithm with example.
- Q4)** Write about 3 – D rotation, scaling and transformation matrices.
- Q5)** Explain about interactive picture construction techniques and input modes.

SECTION - B

Answer any five of the following questions.

(5 x 4 = 20)

- Q6)** Describe character generation algorithm with neat diagram.
- Q7)** Briefly explain about inside and outside test.
- Q8)** Retrieve equation for the scaling factor to map the window to view-port in 2D viewing system.
- Q9)** What is shear transformation? Explain X-shear and Y-shear with example.
- Q10)** Write about perspective projections.
- Q11)** Describe logical classification of input devices.
- Q12)** Explain about area subdivision method.
- Q13)** What is 3-D composite transformation? Give example.

SECTION - C

Answer all questions.

(5 x 1 = 5)

Q14) Define aspect ratio.

Q15) What is text clipping?

Q16) Define visible surface.

Q17) Define flood filling.

Q18) What is aliasing?



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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Object Oriented Analysis and Design

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three of the following questions. (3 x 15 = 45)

- Q1)** What do you mean by object oriented analysis and design? Discuss in detail the object-oriented analysis and design process with a suitable example.
- Q2)** State and explain with suitable example common modeling techniques of the UML relationships.
- Q3)** Consider the Hospital Management System application with the following requirements.
- System should handle the in-patient, out-patient information through receptionist.
 - Doctors are allowed to view the patient history and give their prescription.
 - There should be information system to provide the required information.
- Give the state chart, component and deployment diagrams.
- Q4)** What is an activity diagram? Explain how activity diagram focuses on flows driven by internal processing with the help of suitable example.
- Q5)** Explain with suitable example, which diagrams give a static and which diagrams give dynamic view of a system.

SECTION - B

Answer any five of the following questions.

(5 x 4 = 20)

- Q6)** What are the steps in software development life cycle?
- Q7)** What are the different degrees of coupling among the objects?
- Q8)** Write about 4+1 view architecture of UML.
- Q9)** What is need of component diagram? Give an example for component diagram.
- Q10)** What are the actors? List the three kinds of actors.
- Q11)** What are the characteristics of well-structured packages?
- Q12)** What artifacts may start in Inception?
- Q13)** Explain state machine diagram with an example.

SECTION - C

Answer all of the following questions.

(5 x 1 = 5)

- Q14)** Define use case.
- Q15)** What is inception?
- Q16)** Define domain object.
- Q17)** What are the design patterns?
- Q18)** Define low coupling.



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M.Sc. DEGREE EXAMINATION, MAY - 2018

(Second Year)

COMPUTER SCIENCE

Advanced Computer Architecture

Time : 3 Hours

Maximum Marks : 70

SECTION - A

(3 × 15 = 45)

Answer any Three questions

- Q1)** Explain about the design of Pipelined instruction processing.
- Q2)** Explain about the architecture of Cyber – 205.
- Q3)** Explain about mesh connected illiac networks.
- Q4)** Explain about the language features of exploit parallelism.
- Q5)** Explain about the Systolic Array architecture.

SECTION - B

(5 × 4 = 20)

Answer any Five questions

- Q6)** Explain about multiprocessor systems.
- Q7)** Explain about prefetch and branch handling schemes.
- Q8)** Explain about vector loops in Cray-I.
- Q9)** Explain about SIMD matrix multiplication algorithm.
- Q10)** List and describe the applications of illiac – IV.
- Q11)** Explain about the classification of parallel algorithms.

Q12) Explain about the difference between control flow and dataflow computers.

Q13) Explain about Cray X-mp system architecture.

SECTION - C
Answer all questions

(5 × 1 = 5)

Q14) Explain about Virtual Memory.

Q15) Explain about SIMD networks.

Q16) Explain about crossbar switch.

Q17) What is static data flow computer?

Q18) What is Cache memory?



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M.Sc. DEGREE EXAMINATION, MAY - 2018

(Second Year)

COMPUTER SCIENCE

Microprocessor & Applications

Time : 3 Hours

Maximum Marks : 70

SECTION - A

(3 × 15 = 45)

Answer any Three questions

- Q1)** Explain about 8086 addressing modes.
- Q2)** Explain about Logic and Shift instructions of 8086.
- Q3)** Explain about DMA transfer with neat diagram.
- Q4)** Explain about iRMX86.
- Q5)** Explain about Virtual Memory.

SECTION - B

(5 × 4 = 20)

Answer any Five questions

- Q6)** Explain about 8086 register organization.
- Q7)** Explain about the application of microprocessors in digital system design.
- Q8)** Explain about 8086 assembly directives and operators.
- Q9)** Explain about Flag manipulation instructions.
- Q10)** Explain about procedures in 8086.
- Q11)** Explain about interrupt routine.

Q12) Explain about multiprogramming.

Q13) Explain about semaphores.

SECTION - C
Answer all questions

(5 × 1 = 5)

Q14) Explain about the microprocessor and microcomputer.

Q15) Explain about 8086 internal operations.

Q16) Explain about HLT instruction.

Q17) What are different types of I/O transfer?

Q18) What is a process?



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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Cryptography and Network Security

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three of the following questions. (3 x 15 = 45)

- Q1)** Discuss about different Classical Encryption Techniques.
- Q2)** Explain about Chinese Remainder theorem and Euler's theorem with example.
- Q3)** Describe Encryption and decryption functions of Triple DES. Compare its strength with DES.
- Q4)** Differentiate between hashing and encryption. What are the practical applications of hashing? Compare MD5 and SHA1 hashing algorithms.
- Q5)** With a neat sketch explain the IPsec scenario and IPsec Services.

SECTION - B

Answer any five of the following questions. (5 x 4 = 20)

- Q6)** What are the two approaches to attacking a cipher? What is the difference between a block cipher and a stream cipher?
- Q7)** Write differences between substitution techniques and transposition techniques.
- Q8)** How are keys generated in Cast-128 algorithm?
- Q9)** Explain RSA Algorithm with example.
- Q10)** What are the similarities and differences between S? MIME and PGP?
- Q11)** State and explain Fermat's.
- Q12)** What is digital signature? Explain its use with the help of example.
- Q13)** What is a firewall? What is the need for firewalls?

SECTION - C

Answer all questions.

(5 x 1 = 5)

Q14) Define public key.

Q15) Define steganography.

Q16) What is AES?

Q17) Define Diffi Hellman key exchange.

Q18) What is Kerberos?



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M.Sc. DEGREE EXAMINATION, MAY - 2018

**Second Year
Computer Science
TCP/IP**

Time : 3 Hours

Maximum Marks : 70

SECTION - A

Answer three questions

(3 × 15 = 45)

- Q1)** Explain about LAN, WANS and Switched WANS.
- Q2)** Explain about Internet Protocol
- Q3)** Explain about TCP protocol.
- Q4)** Explain about RIP.
- Q5)** Explain about DHCP.

SECTION - B

Answer any five questions

(5 × 4 = 20)

- Q6)** Explain about different TCP/IP versions.
- Q7)** Explain about supernetting.
- Q8)** Explain about the difference between static and dynamic routing.
- Q9)** Explain about ICMP checksum.
- Q10)** Explain about UDP package.
- Q11)** Explain about IGMP encapsulation,
- Q12)** Explain about Client-Server Model.
- Q13)** Explain about DNS messages.

SECTION – C
Answer all questions

(5 × 1 = 5)

Q14) What is classless addressing.

Q15) What is direct and indirect delivery?

Q16) Explain about TCP checksum.

Q17) What is multicast routing?

Q18) What is NVT?



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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Data Warehousing and Data Mining

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three of the following questions. (3 x 15 = 45)

- Q1)** Discuss three data warehouse models - the enterprise warehouse, the data mart and the virtual warehouse.
- Q2)** Discuss about different activities of ETL process.
- Q3)** Explain briefly star and snowflake schema. Also point out the major difference between the two. Which is popular in the data warehouse design?
- Q4)** Explain about oracle data warehouse builder and it works.
- Q5)** Discuss typical OLAP operations in brief.

SECTION - B

Answer any five of the following questions. (5 x 4 = 20)

- Q6)** What are the various Star Schema Keys? Explain with the help of an example.
- Q7)** Differentiate between Data Warehouse and Data Mart.
- Q8)** Write about Data loading with respect to Data warehouse.
- Q9)** Explain Data granularity in Data Warehouse.
- Q10)** Describe briefly the basic components of a data warehouse snapshot.

Q11) What are the technological challenges in bringing the system-of-record data into the data warehouse?

Q12) Describe basic algorithm for inducing a Decision tree from training samples.

Q13) What are the methods to index OLAP data?

SECTION - C

Answer all of the following questions.

(5 x 1 = 5)

Q14) What is ROLAP?

Q15) Define multidimensional data model.

Q16) Define association rule mining.

Q17) Give any two data mining tasks.

Q18) What is drill – down analysis?



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M.Sc. DEGREE EXAMINATION, JUNE - 2018

**Second Year
Computer Science
Embedded Systems**

Time : 3 Hours

Maximum Marks : 70

SECTION - A

Answer any three questions

(3 × 15 = 45)

- Q1)** Explain about the design issues of cordless barcode scanner.
- Q2)** Compare Characteristics of Various Software Architectures
- Q3)** Explain with suitable example how the semaphores as signaling device.
- Q4)** Explain about linker/locators for embedded software
- Q5)** What are the main goals of software development for embedded systems? Explain how an Host system meets these goals.

SECTION – B

Answer any five questions

(5 × 4 = 20)

- Q6)** Explain about ASIC.
- Q7)** If two interrupts happen at the same time, which interrupt routine does the microprocessor do first?
- Q8)** Draw and explain the timing diagram for a static RAM.
- Q9)** Explain about RTOS task states.
- Q10)** Explain about the interrupt latency with examples.
- Q11)** Discuss about Hard Real-Time Scheduling Considerations.
- Q12)** Explain about testing embedded software.
- Q13)** Explain about Encapsulating a Message Queue.

SECTION – C
Answer all questions

(5 × 1 = 5)

Q14) Explain about Processor Hogs

Q15) What are the advantages and disadvantages of edge triggered flip-flops?

Q16) Explain about RTOS task states.

Q17) What is the advantage using multiple semaphores?

Q18) Explain about the uses of Volt Meters and Ohm Meters.



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M.Sc. DEGREE EXAMINATION, MAY - 2018

Second Year

COMPUTER SCIENCE

Image Processing

Time : 3 Hours

Maximum Marks : 70

SECTION - A

Answer any three questions

(3 × 15 = 45)

- Q1)** a) What are the various fundamental steps in digital image processing? Explain
b) Obtain the Haar transformation matrix for $N=8$.
- Q2)** Explain the use of histogram statistics for image enhancement.
- Q3)** Draw the functional block diagram of general image compression system and explain it.
- Q4)** Explain about image restoration using inverse filtering and give the draw backs of this method.
- Q5)** What are the different applications of image segmentation? Explain different image segmentation techniques.

SECTION - B

Answer any five questions from the following

(5 × 4 = 20)

- Q6)** What is meant by spatial resolution and explain its significance.
- Q7)** Illustrate first and second derivatives of a 1 -D digital function representing a section of horizontal intensity profile from an image.
- Q8)** What is log transformation? How it is useful in image processing?
- Q9)** Write the difference between wavelet transform and Fourier transform.
- Q10)** Explain the effect of noise on edge detection.
- Q11)** Compare 'Homomorphic' and 'Inverse' Filtering. How do noise affect color channels?
- Q12)** Explain Huffman coding with example.
- Q13)** Briefly explain about region based segmentation.

SECTION – C
Answer all questions

(5 × 1 = 5)

Q14) What is lossless compression?

Q15) Define Hough transform.

Q16) What is the concept of histogram equalization?

Q17) Define erosion and dilation operations.

Q18) Define image degradation.



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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Artificial Intelligence

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three questions.

(3 x 15 = 45)

- Q1)** a) State 8 – puzzle problem? Construct state space tree for this problem.
b) Discuss various application areas of AI.
- Q2)** What is heuristic function of A* algorithm? Explain about A* algorithm with suitable example.
- Q3)** Implement Justification Truth Maintenance system with ABC murder story.
- Q4)** What are the components of script? Develop a script for restaurant problem.
- Q5)** Explain about augmented transition network and case grammars.

SECTION - B

Answer any five questions.

(5 x 4 = 20)

- Q6)** Explain about Turing test.
- Q7)** What is control strategy? How is it related to control knowledge?
- Q8)** Differentiate DFS and BFS algorithms.
- Q9)** Describe resolution theorem in propositional logic.
- Q10)** Write about procedural knowledge and declarative knowledge.
- Q11)** Explain partitioned semantic network with example.
- Q12)** Represents the sentence “Vishwant gives Vidhushi a Book” into CD form.
- Q13)** Write about expert system shell.

SECTION - C

Answer all questions.

(5 x 1 = 5)

Q14) Define state space search.

Q15) Define abduction.

Q16) What is augmented problem solver?

Q17) Define expert system.

Q18) What is frame?



(DMCS28B)

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M.Sc. DEGREE EXAMINATION, MAY – 2018

Second Year

COMPUTER SCIENCE

Compiler Design

Time : 3 Hours

Maximum Marks :70

SECTION - A

Answer any three questions.

(3 x 15 = 45)

- Q1)** a) State and describe various phases of compilers.
b) Explain about boot strapping in compilers.
- Q2)** Consider the grammar given below:
S → A
A → aB | Ad
B → bBC | f
C → g
a) Find the FIRST and FOLLOW set.
b) Construct Predictive Parsing table.
c) Trace whether the string “abffgg” is accepted or not.
- Q3)** Explain about syntax directed definition and syntax directed translation with example.
- Q4)** Discuss different storage allocations strategies.
- Q5)** Illustrate loop optimization with suitable example.

SECTION - B

Answer any five questions.

(5 x 4 = 20)

- Q6)** Construct DFA for the regular expressions: $(a+b)^* a(a+b)$.
- Q7)** Describe the functions of lexical analyzer.
- Q8)** What is left factoring? Explain it with suitable example.
- Q9)** Apply shift reduce parser for parsing following string using unambiguous grammar.
id – id * id – id

Q10) Translate the expression: $a = b * - c + b * - c$ into quadruples and triples.

Q11) What is a symbol table? Discuss the most suitable data structure for it.

Q12) Describe various addressing modes and their costs.

Q13) Explain about common sub – expression elimination and copy propagation with example.

SECTION - C

Answer all questions.

(5 x 1 = 5)

Q14) What is interpreter?

Q15) Define input buffering.

Q16) Define operator precedence grammar.

Q17) Define basic block.

Q18) What is meant by abstract syntax tree?

