

(DMCS21)

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M.Sc. DEGREE EXAMINATION, DECEMBER – 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 the characteristics and principles of web user interface design.
- Q2)** Illustrate in detail about the taxonomy of software design in design of user interface.
- Q3)** What are the kinds of graphical menus? Explain any five in detail.
- Q4)** a) Write about various cursor hinting techniques in use.
b) Write about some common dialog box variants.
- Q5)** Discuss in detail about mouse operations.

SECTION – B

(5 × 4 = 20)

Answer any five of the following

- Q6)** Write the advantages of having a good user interface?
- Q7)** What are the rules to be followed for screen design with suitable example?
- Q8)** Differentiate graphical and web user interface.
- Q9)** Write in brief status of windows.
- Q10)** Discuss about drag and drop problems and their solutions.

Q11) Write about undo and redo functions.

Q12) Explain about various components of web navigation system.

Q13) Describe the different categories of messages?

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What is cascading window?

Q15) What is list box? Give example.

Q16) What is Gizmo?

Q17) State the categories of users.

Q18) What are the advantages of using Icons?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Computer Graphics

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any three questions

- Q1)** Explain about videos display devices and color display monitors with neat sketches.
- Q2)** Calculate the pixel location approximating the first octant of a circle having center at (4, 5) and radius 4 units using Bresenham's algorithm.
- Q3)** Illustrate Cohen – Hodgeman polygon clipping algorithm with suitable example.
- Q4)** Explain about 3D display methods and visible line and surface identification.
- Q5)** Classify the visible surface detection algorithms. Explain Z buffer algorithm for hidden surface removal.

SECTION – B

(5 × 4 = 20)

Answer any five questions

- Q6)** Differentiate raster scan display and random scan display.
- Q7)** What is aliasing? How to compensate the aliasing?
- Q8)** Write short note on Boundary fill (4-connected) algorithm.
- Q9)** Derive transformation matrix for 2D rotation.
- Q10)** Write about windowing and viewing pipeline.

Q11) Briefly explain about parallel projections.

Q12) Write about area subdivision method.

Q13) Explain reflection with respect to any plane in 3D transformations.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What is inside test?

Q15) Define aspect ratio.

Q16) What is shear transformation?

Q17) Define line clipping.

Q18) Give any two input modes.



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Object Oriented Analysis and Design

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions from the following

- Q1)** Discuss about the components of Object – Oriented Analysis and Design.
- Q2)** Differentiate the following diagram :
- i) Interaction diagram and activity diagram.
 - ii) Collaboration and sequence diagrams.
- Q3)** How a System is divided into Subsystems? Discuss the concept of Coupling and Cohesion in Subsystems.
- Q4)** With suitable example how to design a class. Give all possible representation in a class (name, attribute, visibility, methods, responsibilities)
- Q5)** a) Define use case. What are the uses of use cases?
- b) Describe the use case/validate user in modeling an ATM system.

SECTION – B

(5 × 4 = 20)

Answer any five questions from the following

- Q6)** What is the UML? What are the three ways and perspectives to Apply UML?

- Q7)** How the recursion is represented in a sequence diagram? Explain with suitable example.
- Q8)** Explain about events, states and transitions in State chart diagrams.
- Q9)** Define static and dynamic model of a system.
- Q10)** How to represent classes and object in UML? Give example.
- Q11)** What is component? Distinguish three kinds of components.
- Q12)** Explain in detail how methods can be created from interaction diagrams?
- Q13)** Explain Generalization – Specialization hierarchy with an example.

SECTION – C

(5 × 1 = 5)

Answer all questions

- Q14)** What is significance of deployment diagram?
- Q15)** What is use of isa and has relationships?
- Q16)** Define modular design.
- Q17)** Define cohesion.
- Q18)** Define 100% rule.



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Advanced Computer Architecture

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer three questions

- Q1)** Explain about the parallelism in Uniprocessor system.
- Q2)** Explain about the architecture of Star - 100.
- Q3)** Explain about the architecture of AP - 120B
- Q4)** Explain about the classification of multiprocessor operating systems.
- Q5)** Explain about the C.mmp multiprocessor system architecture.

SECTION – B

(5 × 4 = 20)

Answer any five questions

- Q6)** Explain about array computer.
- Q7)** Explain about arithmetic pipeline design.
- Q8)** Explain about the pipeline chaining in Cray - I.
- Q9)** Explain about the SIMD array processor.
- Q10)** Explain about crossbar switch.

Q11) Explain about system deadlock problems.

Q12) Explain about operating system for IBM multiprocessors.

Q13) Explain about static dataflow computers.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What is dataflow computer.

Q15) Explain about dynamic networks.

Q16) What is instruction prefetch.

Q17) What is parallel memory allocation.

Q18) What is control flow?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 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 architectures in detail.
- Q2)** Explain about Data transfer and arithmetic instructions of 8086 with an example.
- Q3)** Explain about programmed I/O and interrupted I/O.
- Q4)** Explain about Semaphore operations with an example.
- Q5)** Explain about Memory Management.

SECTION – B

(5 × 4 = 20)

Answer any Five questions

- Q6)** Explain about 8086 instruction formats.
- Q7)** Explain about timing diagram of memory read operation.
- Q8)** Explain about NOP and HLT instructions.
- Q9)** Explain about assembler directives.
- Q10)** Explain about Stack Organization in 8086.

Q11) Explain about Interrupts.

Q12) Explain about process management in iRMX.

Q13) Explain about common procedure sharing.

SECTION – C
Answer all questions

(5 × 1 = 5)

Q14) Explain the data representation in microcomputer system.

Q15) Explain about memory address decoding.

Q16) Explain about rotate instructions.

Q17) Explain about relocation.

Q18) Explain about cache memory.



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

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COMPUTER SCIENCE

Cryptography and Network Security

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions from the following

- Q1)** a) Explain various types of attack on computer system.
- b) Differentiate the cipher properties of confusion and diffusion.
- Q2)** Explain in detail the sub key generation and round function of DES algorithm in detail.
- Q3)** Explain encryption and decryption in RSA algorithm and Also discuss various attacks on RSA.
- Q4)** Discuss the steps in message digest generation in Secure Hash Algorithm in detail.
- Q5)** With neat diagram explain different elements of IP Security architecture.

SECTION – B

(5 × 4 = 20)

Answer any five questions from the following

- Q6)** Write about play fair cipher with suitable example.
- Q7)** Explain cryptanalysis. Discuss any one technique of it.
- Q8)** Write about Diffie – Hillman key exchange algorithm in detail.
- Q9)** What are differences between RC5 and blowfish?

Q10) Elaborate AES encryption with neat sketches.

Q11) Explain the following terms in brief.

- a) Authentication
- b) Data integrity

Q12) Explain about SSL architecture in brief.

Q13) What is a firewall? What is the need for firewalls?

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What is triple DEA?

Q15) What is symmetric key cryptography?

Q16) What is MIME?

Q17) What is a dual signature?

Q18) What is meant by cipher text?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

TCP/IP

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions from the following

- Q1)** Explain about the TCP/IP protocol.
- Q2)** Explain about ICMP.
- Q3)** Explain about IGMP.
- Q4)** Explain about UDP Operation and Uses.
- Q5)** Explain about BGP.

SECTION – B

(5 × 4 = 20)

Answer any Five questions.

- Q6)** Explain about classfull addressing.
- Q7)** Explain about supernetting.
- Q8)** Explain about connection oriented service.
- Q9)** Explain about IP fragmentation.
- Q10)** Explain about TCP congestion control.

Q11) Explain about MBONE.

Q12) Explain about Rlogin.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q13) Explain about WAN.

Q14) Explain about ARP package.

Q15) Explain about TCP state transition diagram.

Q16) Explain about Multicast Routing.

Q17) What is BOOTP?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Data Warehousing and Datamining

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions

- Q1)** Explain the four levels of architecture in the data warehouse environment. What are the problems with the naturally evolving architecture?
- Q2)** Discuss about data warehousing development methodologies.
- Q3)** a) State the characteristics of these two models of OLAP.
- b) Why most data warehouse systems support index structures? Discuss methods to index OLAP data.
- Q4)** Discuss Data extraction, Data transformation and Data loading with respect to Data warehouse.
- Q5)** Explain about various datamining tasks in detail.

SECTION – B

(5 × 4 = 20)

Answer any Five questions.

- Q6)** How is data warehouse different from databases? How are they similar to each other?
- Q7)** What are the advantages of Star Schema? Explain.
- Q8)** Why monitoring of data in Data Warehouse is required?

Q9) Describe how to load oracle warehouse.

Q10) Explain Data granularity in Data Warehouse.

Q11) List down activities of ETL process.

Q12) Explain Redundancy or overlap of data with respect to global data warehouse and its supporting local data warehouses.

Q13) Briefly explain about classification and clustering in data mining.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What is compactions of data?

Q15) Define data cleaning.

Q16) What is meant by snapshot in data warehouse?

Q17) What is meta data repository?

Q18) What is OLTP?



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M.Sc. DEGREE EXAMINATION, DEC. – 2018

Second Year

COMPUTER SCIENCE

Embedded Systems

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions from the following

- Q1)** Discuss about design challenges for an embedded system for Telegraph Development.
- Q2)** Explain about alternative to disabling interrupts to solve shared data problem.
- Q3)** Explain about Function – Queue Scheduling Architecture.
- Q4)** Explain about memory management in RTOS environment.
- Q5)** Explain about PROM programmer, ROM Emulator, ICE and Monitors.

SECTION – B

(5 × 4 = 20)

Answer any Five questions.

- Q6)** Explain about Testability & Debugability features in Embedded System.
- Q7)** Explain about Nonmaskable interrupt.
- Q8)** How does the microprocessor know where to find the interrupt routine when the interrupt occurs?
- Q9)** Draw the timing diagram for 3 – input NAND and NOR gates.
- Q10)** What is preemptive and non – preemptive RTOS?

Q11) Explain about tool Chain for Building Embedded Software.

Q12) Compare various Methods for Inter – task Communication.

Q13) Explain about Software – Only Monitors.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) Explain about Bus handshake.

Q15) What is Cycle stealing?

Q16) What is heartbeat timer?

Q17) What is JTAG?

Q18) List advantages of logic analyzers over emulator.



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Image Processing

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions

- Q1)** Explain the following mathematical operations on digital images.
- a) Array versus Matrix Operations
 - b) Linear versus Nonlinear Operations
- Q2)** What is Haar Transform? Write the procedure to determine the Haar transformation matrix.
- Q3)** How do spatial filters help in enhancement of digital images? List and explain various types of spatial filters with examples.
- Q4)** a) Draw and explain the general image compression system model.
- b) Write short notes on Image Pyramids and Sub band coding.
- Q5)** Explain the significance of thresholding in image segmentation and explain about region based segmentation.

SECTION – B

(5 × 4 = 20)

Answer any Five questions.

- Q6)** Explain about image acquisition using a circular sensor strip.

- Q7)** Briefly explain about image sampling and Quantization.
- Q8)** Explain about color segmentation process.
- Q9)** Write the concept of Unsharp masking and Highboost filtering.
- Q10)** Explain about image restoration using minimum mean square error filtering.
- Q11)** Define image gradient and explain its use in edge detection.
- Q12)** Explain about the duality of erosion and dilation operations.
- Q13)** How can you control Over segmentation problem?

SECTION – C
Answer all questions

(5 × 1 = 5)

- Q14)** Define image restoration.
- Q15)** What is homomorphic filtering?
- Q16)** What is need of image compression?
- Q17)** Mention the difference between monochrome and grayscale image.
- Q18)** What is histogram of image?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

ARTIFICIAL INTELLIGENCE

Time : 3 Hours

Maximum Marks : 70

SECTION – A

Answer any THREE questions

(3 × 15 = 45)

- Q1)** Discuss various problem characteristics with suitable example.
- Q2)** Explain about Best – First search algorithm with suitable example.
- Q3)** Discuss resolution theorem in predicate logic.
- Q4)** What is conceptual dependency? Discuss various symbols used in conceptual dependency.
- Q5)** What is an expert system? Briefly describe five major components of an expert system. Using a suitable query, explain the working of an inference engine in a rule – based expert system.

SECTION – B

Answer any Five questions.

(5 × 4 = 20)

- Q6)** State different classifications of AI tasks.
- Q7)** Write about simulated annealing.
- Q8)** Explain the Means – ends analysis with robot navigation problem.
- Q9)** Describe various knowledge representation issues.
- Q10)** Differentiate forward versus backward reasoning.

Q11) Write about semantic nets with example.

Q12) Describe augmented transition network.

Q13) Write note on common sense ontologies.

SECTION – C

Answer all questions

(5 × 1 = 5)

Q14) What is significance of heuristic function?

Q15) Give the limitations of hill climbing.

Q16) Define matching.

Q17) What is script?

Q18) What is case grammar?



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M.Sc. DEGREE EXAMINATION, DECEMBER – 2018

Second Year

COMPUTER SCIENCE

Compiler Design

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any THREE questions

- Q1)** Discuss compiler construction tools and phases of compiler.
- Q2)** Find the LR(1) set of items for the following grammar. Describe the state diagram and construct parse table of that.
- $S \rightarrow CC, C \rightarrow cC|d$
- Q3)** Explain about inherited and synthesized attributes with suitable example.
- Q4)** Translate the expression : $x = -(a + b) * (c + d) + (a + b + c)$ into
- Quadruple
 - Triple
 - Indirect triple
- Q5)** Explain about peephole optimization with suitable example.

SECTION – B

(5 × 4 = 20)

Answer any Five questions.

- Q6)** What is input buffering? Write about different input buffering schemes.
- Q7)** Explain about NFA and DFA.
- Q8)** What is operator precedence parsing? Discuss about the advantages and disadvantages of operator precedence parsing.

Q9) Compute FIRST and FOLLOW for the following grammar :

$$E \rightarrow E + T | T \quad T \rightarrow T * F | F \quad F \rightarrow (E) | a$$

Q10) Briefly explain about type checking.

Q11) Explain about heap and stack storage allocation strategies.

Q12) Construct DAG for the following basic block :

$$d := b * c$$

$$e := a + b$$

$$b := b * c$$

$$a := e - d$$

Q13) Write about code generation algorithm.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) Define activation record.

Q15) Define left recursion.

Q16) Define constant folding.

Q17) What is flow graph?

Q18) What is lexical analyzer?

