

(DMCS21)

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M.Sc. DEGREE EXAMINATION, MAY - 2017

Second Year

COMPUTER SCIENCE

User Interface Design

Time : 3 Hours

Maximum Marks : 70

Section – A

Answer any three questions

[3 × 15 = 45]

- Q1)** Explain the characteristics and principles of user interface design.
- Q2)** Name the models of user interface design. Illustrate each one of them in detail with suitable example.
- Q3)** Discuss the structures and contents of menus.
- Q4)** Discuss in detail about the rules to be followed for the screen design with suitable example.
- Q5)** Explain about dialog boxes and its types in detail.

Section – B

Answer any five questions

[5 × 4 = 20]

- Q6)** What are the advantages of having a good user interface?
- Q7)** What are the different categories of users? What category of users requires guidance and assistance?
- Q8)** List some software tools useful for user interface design.
- Q9)** State the importance of undo.

Q10) Describe the icon characteristics.

Q11) Write short notes on message boxes.

Q12) Describe the components of web navigation system.

Q13) What are the different categories of messages?

Section – C

Answer all questions

[5 × 1 = 5]

Q14) Define Orchestration.

Q15) What is list box? Give example.

Q16) What is need for alerts?

Q17) What are the meta keys?

Q18) What is significance of “drag and drop” operation?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

Computer Science

COMPUTER GRAPHICS

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any three questions.

- Q1)** Discuss about various input and hard copy devices with neat sketch.
- Q2)** Derive Bresenham's line drawing algorithm. Plot a line by using Bresenham's line generation algorithm from (1, 1) to (5, 3)
- Q3)** State and explain about Cohen Sutherland line clipping algorithm with example.
- Q4)** What is meant by parallel and perspective projections? Derive matrix for perspective projections.
- Q5)** Discuss various classifications of visible surface detection methods.

SECTION – B

(5 × 4 = 20)

Answer any Five questions

- Q6)** Differentiate raster scan display and random scan display.
- Q7)** Write about inside and outside tests.
- Q8)** Prove that 2 successive 2 – D rotation are additive
i.e., $R(\theta_1). R(\theta_2) = R(\theta_1 + \theta_2)$
- Q9)** Briefly explain about polygon clipping.
- Q10)** Describe different input modes.
- Q11)** Write about visible line and surface identification.

Q12) Explain about 2 – D scaling and translation.

Q13) Describe the 3 – display methods.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) Define aspect ratio.

Q15) Define composite transformation

Q16) What is meant by viewing pipe line?

Q17) Define shearing.

Q18) Define orthogonal projection.



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

COMPUTER SCIENCE

Object Oriented Analysis and Design

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any three questions.

- Q1)** What is meant by unified process in OOAD? Explain the phase with suitable example.
- Q2)** Differentiate the following :
- a) Collaboration and sequence diagrams with suitable example.
 - b) Class notation and object notation in UML.
- Q3)** Draw the behavioral diagrams for unified hospital management application. Explain in detail.
- Q4)** Discuss in detail about Common properties and common uses of use case diagram and also use case/validate user in modeling an ATM system.
- Q5)** Explain with suitable example, which diagrams give a static and which diagrams give dynamic view of a system.

SECTION – B

(5 × 4 = 20)

Answer any Five from the following

- Q6)** Enumerate the steps to model architectural views.
- Q7)** Write about is – a relationship with has – a relationship with example.
- Q8)** Describe the characteristics of well – structured packages?

Q9) What is component? Distinguish three kinds of components.

Q10) Write note on events, states and transitions in State chart diagrams?

Q11) Describe the object oriented design axioms.

Q12) What is meant by low coupling and high cohesion?

Q13) How the recursion will be represented in a sequence diagram? Explain with suitable example.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What are Actors?

Q15) Define aggregation.

Q16) What are Activity Diagrams?

Q17) Define patterns

Q18) Define Modular Design.



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M.Sc. DEGREE EXAMINATION, MAY – 2017

**Second Year
COMPUTER SCIENCE**

Advanced Computer Architecture

Time : 3 Hours

Maximum Marks : 70

Section - A

(3 x 15 = 45)

Answer any three questions

- Q1)* Describe about the parallelism in Uniprocessor system.
- Q2)* Explain about the addressing scheme for main memory.
- Q3)* Explain about the architecture of Cyber 205.
- Q4)* Describe about the language feature that exploit parallelism.
- Q5)* Explain about operating system for IBM multiprocessor.

Section - B

(5 x 4 = 20)

Answer any five questions

- Q6)* Explain about various existing expert computer systems for knowledge processing.
- Q7)* Explain about Virtual to real page address translation.
- Q8)* Explain about the architecture of STAR100.
- Q9)* Explain about SIMD matrix multiplication.
- Q10)* Explain about time-shared bus organization.

Q11) Explain about the classification of multiprocessor operating systems.

Q12) Explain about the IBM369 MP architecture.

Q13) Explain about Systolic Architecture.

Section - C

(5 x 1 = 5)

Answer all questions

Q14) What is Cycle stealing?

Q15) What is TLB?

Q16) What is parallel memory allocation.

Q17) What is deadlock?

Q18) What is data flow graph?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

COMPUTER SCIENCE

Microprocessor & Applications

Time : 3 Hours

Maximum Marks : 70

SECTION – A

Answer any three Questions

(3 × 15 = 45)

- Q1)** Explain about addressing modes.
- Q2)** Explain about branch and loop instructions with examples.
- Q3)** Explain about different types of I/O transfer with suitable example.
- Q4)** Explain about Semaphore operations used in interprocess communication.
- Q5)** Explain about Memory management in detail.

SECTION – B

Answer Any Five questions
20)

(5×4 =

- Q6)** Explain about CPU architecture.
- Q7)** Explain timing diagrams with example.
- Q8)** Explain about Logical Instructions.

Q9) Explain about rotate instructions and their functionalities.

Q10) Explain about Stacks.

Q11) Explain about Linking and relocation?

Q12) Explain about iRMX architecture.

Q13) Explain about demand paging?

SECTION – C

Answer All Questions

(5 × 1 = 5)

Q14) What is an instruction code?

Q15) What is NOP instruction?

Q16) What is an ISR?

Q17) What an interrupted I/O?

Q18) Difference between multiprogramming and multitasking.



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

Computer Science

CRYPTOGRAPHY AND NETWORK SECURITY

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer three questions from the following

- Q1)** State and describe classical encryption techniques.
- Q2)** Describe Encryption and decryption functions of Triple DES. Compare its strength with DES.
- Q3)** Describe the steps in message digest generation in Secure Hash Algorithm in detail.
- Q4)** With a neat sketch explain the IPSec scenario and IPSec Services.
- Q5)** State and explain about firewall design principles.

SECTION – B

(5 × 4 = 20)

Answer any Five questions

- Q6)** State the model for Network security.
- Q7)** Differentiate the cipher properties of confusion and diffusion.
- Q8)** Describe primitive operations of CAST - 128 Encryption.
- Q9)** Write short notes on key distribution scenario.
- Q10)** State describe Euclid's algorithm.
- Q11)** Describe the various modes of arbitrated digital signatures.
- Q12)** What are the similarities and differences between S? MIME and PGP?

Q13) Write about trusted systems.

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) Define passive attack.

Q15) What is the difference between mono alphabetic cipher and poly alphabetic cipher?

Q16) What is SSL?

Q17) Define worm.

Q18) Define symmetric key.



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M.Sc. DEGREE EXAMINATION, MAY – 2017
Second Year
COMPUTER SCIENCE
TCP / IP

Time : 3 Hours

Maximum Marks : 70

SECTION – A

Answer any three Questions

(3 × 15 = 45)

- Q1)** Explain about The Layers in the TCP/IP Protocol Suite.
- Q2)** Explain about RARP.
- Q3)** Explain about IGMP Operation and Encapsulation.
- Q4)** Discuss how the Routing Information Protocol operates.
- Q5)** Explain about DNS.

SECTION – B

Answer Any Five questions

(5×4 = 20)

- Q6)** Explain about Unicast, Multicast, and Broadcast Physical Addresses.
- Q7)** Explain about Switched WANs.
- Q8)** Explain about IP datagram.
- Q9)** Explain about ICMP error reporting.
- Q10)** Explain about Process-to-Process Communication in UDP.
- Q11)** Discuss the state transition diagram for TCP.
- Q12)** Explain about NVT.

Q13) Explain about MBONE.

SECTION – C

Answer All Questions

(5 ×1 = 5)

Q14) Why do you think both the sender and receiver addresses are needed in the Internet?

Q15) What is Host-Specific Method forwarding?

Q16) List some Well-known Ports used by TCP.

Q17) What is PIM?

Q18) What is FTP?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

COMPUTER SCIENCE

Second Year

Data Ware Housing & Data Mining

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any Three questions

- Q1)** What is datawarehousing? Discuss about the flow of data in datawarehouse Design Architecture?
- Q2)** What is Data mining? What is the importance of it? On what kind of data, data mining is applied? Explain.
- Q3)** Explain parallesim and performance of the physical datawarehouse?
- Q4)** Explain the different types of partitioning data with Oracle 8i?
- Q5)** Discuss in detail about different types of OLAP services?

SECTION – B

(4 × 5 = 20)

Answer any Four questions

- Q6)** How is a datawarehouse different from a database? How are they similar?
- Q7)** Explain about ETL Architecture?
- Q8)** Discuss about star – flake scheme?
- Q9)** Explain the modes & methods of operation in SQL * Loader?
- Q10)** Explain the Data mining techniques?
- Q11)** Explain how neural networks are useful in data mining?

Q12) Explain about bitmap indexes?

Q13) Difference between Range – based partitioning and Hash Partitioning?

SECTION – C (5 × 1 = 5)

Q14) Define Datamart?

Q15) Define Data transformation?

Q16) Define project Management Risk?

Q17) What is Database Repository

Q18) Define B – tree indexes?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

COMPUTER SCIENCE

Embedded Systems

Time : 3 Hours

Maximum Marks :70

SECTION – A

Answer Any 3 Questions

(3 × 15 = 45)

- Q1)** Explain about the typical components used in embedded system design. Discuss about design challenges for an embedded system.
- Q2)** Explain about Function-Queue Scheduling Architecture.
- Q3)** Explain about Real-Time Operating System architecture with suitable example.
- Q4)** Explain about tool Chain for Building Embedded Software.
- Q5)** Using real-time embedded system design principles, design Under Ground Tank monitoring system.

SECTION – B

Answer Any 5 Questions

(5 × 4 = 20)

- Q6)** Draw and explain the timing diagram of static RAM by mentioning the read and write cycles.
- Q7)** Discuss about Power, Decoupling, Open Collector and Tri-Stating Outputs.
- Q8)** Discuss about how disabling interrupts effects the system response.

Q9) Explain about characteristics of the Round-Robin-with-Interrupts Architecture.

Q10) Explain with suitable example how the semaphores as signaling device.

Q11) Explain about Interrupt Routines in an RTOS Environment.

Q12) Explain about Real-Time Operating System architecture with suitable example.

Q13) Differentiate cross compilers and cross assemblers.

SECTION – C

Answer All Questions

(5 × 1 = 5)

Q14) What are the advantages and disadvantages of edge triggered flip-flops?

Q15) How does the microprocessor know where to find the interrupt routine when the interrupt occurs?

Q16) What if two tasks with the same priority are ready?

Q17) Compare various methods for Inter task Communication.

Q18) What is Test Scaffold Code?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

COMPUTER SCIENCE

Second Year

Image Processing

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(3 × 15 = 45)

Answer any Three questions

- Q1)** What is image processing? Explain about various components of digital image processing?
- Q2)** Explain how an image can be represented in digital form?
- Q3)** Explain how logical operations are used to enhance the image with example?
- Q4)** Draw and explain the general compression system model?
- Q5)** Explain the segmentation based on Region Growing?

SECTION – B

(5 × 4 = 20)

Answer any Five questions

- Q6)** Discuss about elements of visual perception?
- Q7)** Write an algorithm for histogram equalization?
- Q8)** Write about Basic gray level transformation?
- Q9)** Explain the characteristics of the median smoothing filters?
- Q10)** Differentiate lossy compression and lossless compression?
- Q11)** Explain the methods of measuring the quality of image?

Q12) Explain in detail how the Gradient operators are used in image segmentation applications?

Q13) Explain the region split and merge algorithm for segmentation?

SECTION – C

(5 × 1 = 5)

Answer all questions

Q14) What do you understand by range images?

Q15) What is image sampling?

Q16) What is the purpose of sharpening in digital image processing?

Q17) What are the advantages of image compression?

Q18) What is thresholding in image segmentation?



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M.Sc. DEGREE EXAMINATION, MAY – 2017

Second Year

COMPUTER SCIENCE

Artificial Intelligence

Time : 3 Hours

Maximum Marks :70

SECTION – A

Answer Any three questions.

(3 × 15 = 45)

- Q1)** State Tic-Tac-Toe problem? Construct state space tree for this problem and also count the number of feasible states in the state space of this game.
- Q2)** What is heuristic function of A* algorithm? Explain about A* algorithm with suitable example.
- Q3)** What is matching? Describe different matching techniques with example.
- Q4)** Describe the components of script and also write a script for restaurant problem.
- Q5)** What is an expert system? Discuss components of an expert system with neat diagram.

SECTION – B

Answer Any Five questions.

(5 × 4 = 20)

- Q6)** List down different application areas of AI.
- Q7)** Describe the production system characteristics.
- Q8)** Briefly explain resolution theorem in propositional logic.

Q9) Write about augmented problem solver.

Q10) What is semantic net? Give an example.

Q11) Write note on case grammars.

Q12) Explain about forward and backward reasoning problems.

Q13) Briefly write about common sense ontologies.

SECTION – C

Answer all questions.

(5 × 1 = 5)

Q14) Define state space.

Q15) Give the limitations of hill climbing.

Q16) Define clause form.

Q17) What is purpose of expert system shell?

Q18) What is frame?



(DMCS 28B)

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M.Sc. DEGREE EXAMINATION, MAY – 2017

**Second Year
COMPUTER SCIENCE
Compiler Design**

Time : 3 Hours

Maximum Marks :70

SECTION – A

Answer Any three questions.

(3 × 15 = 45)

Q1) How does lexical analyzer help in the process of compilation? Consider the following Conditional statement:

if ($x > 3$) then $y = 5$ else $y = 10$;

Generate various lexemes of above expression.

Q2) Design SLR parser for the following grammar:

$S \rightarrow CC$

$C \rightarrow cC \mid d$

Q3) State and discuss about different storage allocation strategies.

Q4) Discuss various forms of intermediate code generation.

Q5) Explain peephole optimization methods with suitable example.

SECTION – B

Answer Any Five questions.

(5 × 4 = 20)

Q6) Describe different compiler construction tools.

Q7) Construct finite state machine for the regular expression: $a(a + b)^*abb$.

Q8) What is left factoring? How to eliminate left factoring? Eliminate left factoring from the following grammar:

$S \rightarrow iEtS \mid iEtSeS \mid a$

$E \rightarrow b$

Q9) Explain shift reduce parsing technique with suitable example.

Q10) Write note on syntax directed translation.

Q11) Generate machine code for the following instruction:

$X = a / - (b * c) - d$

Q12) Write a procedure to identify basic blocks in loop optimization.

Q13) Describe code generation algorithm.

SECTION – C

Answer all questions.

(5 × 1 = 5)

Q14) What is regular expression?

Q15) Define operator precedence grammar.

Q16) What is DAG?

Q17) What is input buffering?

Q18) Define dead code elimination.