

**SUBJECT CODE NO:- K-05**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E. (CSE/ IT) Examination Oct/Nov 2016**  
**Advanced JAVA**  
**(Revised)**

**[Time: Three Hours]**

**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i) Q.No.1 and Q.No.6 are compulsory.
  - ii) Attempt any two questions from the remaining each section.

**Section A**

- |     |  |                             |
|-----|--|-----------------------------|
| Q.1 | Solve any five.  | 10                          |
|     | <ul style="list-style-type: none"><li>1) Enlist any four methods of HTTP.</li><li>2) What are cookies?</li><li>3) What are action tags in JSP?</li><li>4) What is XML?</li><li>5) What is servletConfig?</li><li>6) What is web server? List any two web servers.</li><li>7) What is purpose of servlet?</li></ul> |                             |
| Q.2 | <ul style="list-style-type: none"><li>a) Explain steps to create RMI application.</li><li>b) Explain n-tier architecture.</li></ul>  | <div>08</div> <div>07</div> |
| Q.3 | <ul style="list-style-type: none"><li>a) Explain with example servlet collaboration through inheritance.</li><li>b) Explain session tracking in detail.</li></ul>  | <div>08</div> <div>07</div> |
| Q.4 | <ul style="list-style-type: none"><li>a) What are JSP action tags? Explain with example.</li><li>b) Explain JSP life cycle in detail.</li></ul>  | <div>08</div> <div>07</div> |
| Q.5 | Short notes on (any three) <ul style="list-style-type: none"><li>i) JSP scripting elements</li><li>ii) JSP page directive</li><li>iii) Request delegation in servlet</li><li>iv) Deployment descriptor</li><li>v) J2EE containers</li></ul>  | 15                          |

## Section B

Q.6	Solve any five	10
	<ol style="list-style-type: none"> <li>1) What are advantages of hibernate?</li> <li>2) Enlist the components of struts.</li> <li>3) What is the importance of WSDL?</li> <li>4) Enlist any two differences between struts 1 and struts 2.</li> <li>5) What are features of JSF?</li> <li>6) Enlist types of beans.</li> </ol>	
Q.7	a) Explain the following elements of HQL with example.	08
	1) Clauses, 2) Aggregate function and 3) Sub queries	
	b) Explain the components of struts based application.	07
Q.8	a) What is web service? Explain role of SOAP in SOA.	08
	b) Explain architecture of Java Mail.	07
Q.9	a) Explain architecture of JSF.	08
	b) Explain stateless and stateful session beans.	07
Q.10	a) Write short notes (any three)	15
	<ol style="list-style-type: none"> <li>1. Hibernate cache architecture</li> <li>2. MVC architecture</li> <li>3. UDDI and XML</li> <li>4. Sending mail through Java Mail API</li> <li>5. Request processing life cycle of JSF.</li> </ol>	

**SUBJECT CODE NO:- K-26**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Design & Analysis of Algorithms**  
**(Revised)**

**[Time:Three Hours]**

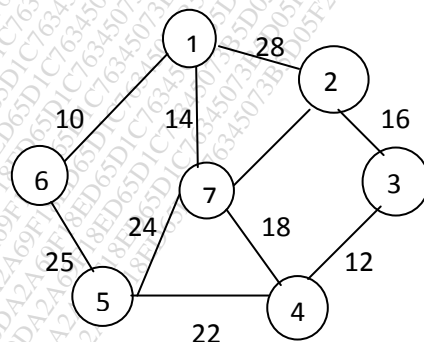
**[Max.Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i) Q1 & Q6 are compulsory.
  - ii) Attempt any two questions from the remaining questions from each section.

Section A

- |     |  |          |
|-----|--|----------|
| Q.1 | Attempt any five:  | 10       |
|     | <ul style="list-style-type: none"> <li>a) What is asymptotic time complexity</li> <li>b) Analyze time complexity:<br/> for (i=1 to n)<br/>   for (j=1to m)<br/>     sum =sum+ A(i,j)</li> <li>c) Explain divide &amp; conquer method-</li> <li>d) What are constraints of knapsack problem?</li> <li>e) Explain Huffman coding.</li> <li>f) What is optimal &amp; feasible solution?</li> <li>g) State single source shortest path problem.</li> </ul> |          |
| Q.2 | <ul style="list-style-type: none"> <li>a) Explain time complexity for successful &amp; unsuccessful searches for binary search.</li> <li>b) Write merge sort algorithm using DnC</li> </ul>  | 08<br>07 |
| Q.3 | <ul style="list-style-type: none"> <li>a) Find the smallest &amp; largest element using DnC. Draw recursive calls tree.</li> <li>b) Solve the knapsack problem using greedy method N=4 , M=5, profits = (12,10,20,15) , weights ={2,3,1,4}</li> </ul>  | 07<br>08 |
| Q.4 | <ul style="list-style-type: none"> <li>a) Define optimal storage on tapes problem &amp; solve for n=3,(L1,L2,L3) = (7,12,5)</li> <li>b) Explain Matrix multiplication Using Dnc.</li> </ul>  | 08<br>07 |
| Q.5 | <ul style="list-style-type: none"> <li>a) What is minimum cost spanning tree .write any algorithm to find MCST.</li> <li>b) Find MCST for given graph.</li> </ul>  | 07<br>08 |

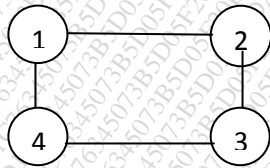


## Section-B

- Q.6 Attempt any five:- 10
- Define dynamic programming
  - Define principle of optimality.
  - Define state shape tree & answer states.
  - Explain line and dead nodes.
  - What are the searching methods that are commonly used in branch & bound method
  - State 8-queen's problem.
  - What is traveling salesperson problem.
- Q.7 09
- What is Hamiltonian cycle –solve the given problem using DP.

0	10	15	20
5	0	9	10
6	13	0	12
8	8	9	0

- Write an algorithm for all pairs shortest path problem. 06
- Q.8 08
- Explain graph coloring problem using backtracking. Color the given graph using 3 colors.



- Explain sum of subsets by taking suitable example using backtracking. 07
- Q.9 10
- Determine optimal binary search tree for n=4 (a<sub>1</sub>, a<sub>2</sub>, a<sub>3</sub>, a<sub>4</sub>) = ( do, if, int, while)  
p(1:4) = (3,3,1,1) q(0:4) = (2,3,1,1,1)
  - Explain connected & disconnected components. 05
- Q.10 08
- Solve 4-Queens problem using FIFO branch & bound. 08
  - Explain 15 –puzzle problem by taking suitable example. 07

**SUBJECT CODE NO:- K-56**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Computer Networks - II**  
**(Revised)**

**[Time:Three Hours]**

**[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 and Q.No.6 are compulsory.
- ii) Attempt any two questions from the remaining questions in each section.

**Section A**

- |     |  |    |
|-----|--|----|
| Q.1 | Attempt any five question  | 10 |
|     | <ul style="list-style-type: none"><li>a) Which are unicast routing protocol?</li><li>b) What is flooding</li><li>c) What is FECN?</li><li>d) What are the different congestion prevention policies?</li><li>e) What is priority queuing?</li><li>f) What is LAN emulation?</li><li>g) Difference between PVC and SVC</li></ul> |    |
| Q.2 | a) Explain OSPF algorithm in detail  | 07 |
|     | b) What is traffic shaping ,discuss in detail ?  | 08 |
| Q.3 | a) Draw a neat labeled diagram of AAL 3 and explain in detail  | 07 |
|     | b) Explain closed loop congestion control mechanism  | 08 |
| Q.4 | a) Explain RIP in detail   | 07 |
|     | b) Explain ATM in detail with its operation and uses   | 08 |
| Q.5 | Write short notes on any three   | 15 |
|     | <ul style="list-style-type: none"><li>a) Multicasting</li><li>b) QOS</li><li>c) Scheduling</li><li>d) LAN emulation</li><li>e) BGP</li></ul>   |    |

**Section –B**

- |     |   |    |
|-----|---|----|
| Q.6 | Attempt any five question   | 10 |
|     | <ul style="list-style-type: none"><li>a) What is process to process delivery?</li><li>b) Write the primitives of transport services</li><li>c) What is remote logging?</li><li>d) What is MIB?</li><li>e) What is E-mail?</li><li>f) What is min-max fairness in TCP?</li></ul> |    |

- g) What is maximum size of TCP header?
- h) What is SIP?
- Q.7 a) Explain the connection establishment process in TCP? 07
- b) What are the function of network management system ? 08
- Q.8 a) Draw with a neat labeled diagram of SCTP packet? 07
- b) Are both UDP and IP unreliable to the same degree? Why or why not? 08
- Q.9 a) Explain in detail SIP? 07
- b) What is MIME? Explain in detail 08
- Q.10 Write short notes on any three 15
- RTP
  - PQDN
  - DDNS
  - Error control in TCP
  - Connection oriented services

**SUBJECT CODE NO:- K-86**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Theory of Computation**  
**(Revised)**

[Time: Three Hours]

[Max. Marks:80]

N.B Please check whether you have got the right question paper.

- i) Q.No.1 and Q. No. 6 are compulsory.  
 ii) Attempt any two questions from Q.No.2 to Q. No. 5 and from Q. No. 7 to Q. No. 10 of each section.  
 iii) Figures to right Indicates full marks.

Q.1 Attempt any five from the following

10

- 1) Define deterministic finite automata with an example  
 2) For the following transition table, find out the string 101101 is accepted or not.

States	Input	
	0	1
$\rightarrow q_0$	$q_2$	$q_1$
$q_1$	$q_3$	$q_0$
$q_2$	$q_0$	$q_3$
$q_3$	$q_1$	$q_2$

- 3) Define ambiguity in CFG with an example.  
 4) Distinguish between NFA with epsilon transitions and NFA without epsilon transitions  
 5) Define Mealy & Moore machine models with an example.  
 6) Define alphabet and string in the concept of finite automata.  
 7) Define CFG and CFL with an example.  
 8) What is pumping lemma?

Q.2 a) Construct a DFA equivalent to the NFA whose transition table is given by following table.

08

States/ $\epsilon$	a	b
$\rightarrow q_0$	$q_0 q_1$	$q_0$
$q_1$	$q_2$	$q_1$
$q_2$	$q_3$	$q_3$
$q_3$	-	$q_2$

b) Construct a mealy machine which is equivalent to the Moore machine given by following table.

07

Present state	Next state		output
	$a = 0$	$a = 1$	
$\rightarrow q_0$	$q_3$	$q_1$	0
$q_1$	$q_1$	$q_2$	1
$q_2$	$q_2$	$q_3$	0
$q_3$	$q_3$	$q_0$	0

Q.3 a) Construct DFA for the given regular expression

08

$10+(0+11)^*1$

b) Show that the set

07



- Q.4 L = {a<sup>p</sup>/P is prime} is not regular
- a) Construct a minimum state automaton equivalent to a DFA whose transition table is defined by following table 08

States	a	b
→q <sub>0</sub>	q <sub>4</sub>	q <sub>2</sub>
q <sub>1</sub>	q <sub>4</sub>	q <sub>3</sub>
q <sub>2</sub>	q <sub>4</sub>	q <sub>3</sub>
q <sub>3</sub>	q <sub>5</sub>	q <sub>6</sub>
q <sub>4</sub>	q <sub>7</sub>	q <sub>6</sub>
q <sub>5</sub>	q <sub>3</sub>	q <sub>6</sub>
q <sub>6</sub>	q <sub>6</sub>	q <sub>6</sub>
q <sub>7</sub>	q <sub>4</sub>	q <sub>6</sub>

- b) Find out the ambiguity for the given grammar G.G is given as S → S+S | S\*a | b. 07

- Q.5 Write short notes on 15
- 1) Algebraic laws for RE
  - 2) Parser
  - 3) Applications of FA

#### Section B

- Q.6 Attempt any five from the following 10
- 1) Compare NPDA and DPDA.
  - 2) Define PDA and acceptance by PDA.
  - 3) Define CNF and GNF.
  - 4) What are the application of TM?
  - 5) Define unit production and null production in CFG.
  - 6) Define universal TM
  - 7) Halting problem of TM.
  - 8) How is LBA different from TM?

- Q.7 a) Consider the grammar below S → AA | a, A → SS | b 08  
Convert into GNF

- b) Construct a PDA accepting the set of all strings over {a,b} with equal number of a's and b's 07

- Q.8 a) Design a Turing machine to recognize all strings of even number of 1's. 08  
b) With a neat diagram explain multitape TM. 07

- Q.9 a) Show that L = {a<sup>n</sup>b<sup>n</sup>c<sup>n</sup> | n ≥ 1} is not CFL. 08  
b) Explain the Turing machine model in brief. Explain its representation by instantaneous description. 07

- Q.10 Write short notes on 15
- 1) Deterministic PDA
  - 2) The model of linear bounded automata
  - 3) Decision problems in CFL



**SUBJECT CODE NO:- K-153**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Software Testing and Quality Assurance**  
**(Revised)**

**[Time: Three Hours]**

**[Max. Marks:80]**

Please check whether you have got the right question paper.

- N.B
- 1) Question 1 from section A is compulsory. Solve any two from remaining questions.
  - 2) Question 6 from section B is compulsory solve any two from remaining questions.

**Section A**

- Q.1 Answer the following (any five) 10
- a) What is SQA planning?
  - b) Differentiate between web & GUI testing
  - c) What is object oriented testing?
  - d) Differentiate between quality assurance & quality control
  - e) What is mean by functional & non-functional testing?
  - f) What is path testing
  - g) What is black box & white box testing? Enlist the testing methods of each?
  - h) Differentiate between load & stress testing.
- Q.2 a) What is quality? Explain MC calls factor model. 07
- b) Explain graph based & decision table testing with an example? 08
- Q.3 a) Explain any technique to perform usability testing 07
- b) Explain different techniques of white box testing 08
- Q.4 a) Explain statistical quality assurance 07
- b) Explain difference between verification & validation. 08
- Q.5 Write short notes on (any three) 15
- a) FTR & code Inspection
  - b) Benefits of automation testing
  - c) Error guessing testing
  - d) Installation & configuration testing

**Section B**

- Q.6 Answer the following (any five) 10
- a) What are the categories of Risk?
  - b) What skills are required for tester to perform testing of software
  - c) What are the advantages of testing tool?
  - d) What is the role of team leader in test team?
  - e) What is traceability matrix
  - f) What is bug, defect, error & failure give an example of each
  - g) What are the benefits of test documentation?
  - h) Define deferred & rejected status in defect life cycle

Q.7	a) Explain context sensitive & analog mode of win runner.	07
	b) What are the responsibilities of project manager for developing quality plan of project?	08
Q.8	a) Explain bug tracking, bug fixing & bug verification	07
	b) Explain operational test management	08
Q.9	a) Prepare defect report template with an example	07
	b) Explain user required features of testing tool & state its advantages	08
Q.10	Write short notes on ( <u>any three</u> )	15
	a) Role of tester for automation testing	
	b) Defect management process	
	c) Verify, update & debug mode of win runner	
	d) Strategic test management	

**SUBJECT CODE NO:- K-175**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Software Engineering**  
**(Revised)**

**[Time:Three Hours]**

**[Max. Marks:80]**

- N.B Please check whether you have got the right question paper.
- i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
  - ii) Attempt any two questions from the remaining in each section.
  - iii) Assume suitable data if necessary.

**Section A**

- |     |  |          |
|-----|--|----------|
| Q.1 | Solve any five   | 10       |
|     | <ul style="list-style-type: none"><li>a) Describe cmm in brief.</li><li>b) List out different s/w process models.</li><li>c) Enlist phase of s/w Engineering.</li><li>d) What is DFD? Explain DFD symbols.</li><li>e) What is process framework?</li><li>f) Justify the statement "s/w doesn't wear out".</li><li>g) List out various applications of s/w.</li><li>h) Explain data and function modelling.</li></ul> |          |
| Q.2 | <ul style="list-style-type: none"><li>a) Explain E.R diagram in detail.</li><li>b) What are the golden rules of UI design?</li></ul>   | 08<br>07 |
| Q.3 | <ul style="list-style-type: none"><li>a) Explain classical life cycle of software.</li><li>b) List software management myths and explain in detail.</li></ul>  | 08<br>07 |
| Q.4 | <ul style="list-style-type: none"><li>a) What is modularity? Explain it by giving example.</li><li>b) Describe Architectural and interface design.</li></ul>   | 08<br>07 |
| Q.5 | Write short note on (any three) <ul style="list-style-type: none"><li>a) Spiral model</li><li>b) Information hiding</li><li>c) Scm (software configuration management)</li><li>d) Programming styles</li></ul>   | 15       |

## Section B

Q.6	Solve any five	10
	<ul style="list-style-type: none"> <li>a) Explain the term project scheduling.</li> <li>b) What is risk management?</li> <li>c) What are types testing?</li> <li>d) Enlist players involved in Software Project development team.</li> <li>e) Define unit and integration testing.</li> <li>f) Describe the notations used in state diagram.</li> <li>g) State the objectives of testing.</li> <li>h) Give the notations for E.R diagram.</li> </ul>	
Q.7	a) Explain software testing life cycle with neat diagram.	07
	b) Draw the class diagram for Library management system.	08
Q.8	a) What are the attributes of web based system? Explain.	08
	b) Explain use case diagram with suitable example.	07
Q.9	a) Explain object oriented design process.	07
	b) What is scenario based testing? Explain in detail	08
Q.10	Write short note on (any three)	15
	<ul style="list-style-type: none"> <li>a) Sequence diagram</li> <li>b) Verification and Validation</li> <li>c) Web application</li> <li>d) Test cases</li> </ul>	

**SUBJECT CODE NO:- K-200**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Database Management System**  
**(Revised)**

**[Time:Three Hours]**

**[Max. Marks:80]**

Please check whether you have got the right question paper.

- N.B
- i. Question No. 1 from section A & Q .No. 6 from section B are compulsory.
  - ii. Solve any TWO questions from the remaining from each section A & B

**Section A**

- |     |   |    |
|-----|---|----|
| Q.1 | Attempt any five questions  | 10 |
|     | <ol style="list-style-type: none"> <li>i) Define and compare the difference between stored and derived attributes.</li> <li>ii) What is relation? Explain various types of relationships based on cardinaling ratio.</li> <li>iii) Define foreign key. What is this concept used for?</li> <li>iv) List out advantages of DBMS approach.</li> <li>v) What are different types of end users of database?</li> <li>vi) Explain the distinctions among the terms primary key, candidate key &amp; super key.</li> <li>vii) Differentiate between strong &amp; weak entity with example.</li> </ol> |    |
| Q.2 | a) Describe three schema architecture .why do we need mapping between schema levels?  | 08 |
|     | b) Define, explain and differentiate between physical and logical data independence.  | 07 |
| Q.3 | a) Explain the concept of aggregation. Give examples where this concept is useful.  | 07 |
|     | b) Design a generalization specialization hierarchy for a motor – vehicle sales company. The company sales motorcycles, passenger cars, vans & buses. Justify your placement of attributes at each level of the hierarchy. Explain why they should not be placed at a higher or lower level.  | 08 |
| Q.4 | a) What is transaction? How does it differ from an update operation?  | 08 |
|     | b) What are the characteristics of relations that make it different from ordinary tables and files?   | 07 |
| Q.5 | a) Explain the entity integrity and referential integrity constraints. Why each is considered important?  | 08 |
|     | b) What is database model? Explain types of data model with an example  | 07 |

**Section B**

- |     |   |    |
|-----|---|----|
| Q.6 | Attempt any five.   | 10 |
|     | <ol style="list-style-type: none"> <li>i) What is normalisation?</li> <li>ii) Define conflict serializability.</li> <li>iii) Explain order by clause of SQL.</li> <li>iv) What is atomicity?</li> <li>v) Define Boyce codd normal form.</li> <li>vi) List out all aggregate functions of SQL.</li> <li>vii) What is multivalued dependency?</li> <li>viii) List different types of join.</li> </ol> |    |



**SUBJECT CODE NO:- K-300**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Operating System**  
**(Revised)**

[Time: Three Hours]

[Max. Marks:80]

Please check whether you have got the right question paper.

N.B

- i) Q.No.1 from section A & Q.No.6 from section B are compulsory.  
 ii) Solve any two questions from each section from the remaining questions.

**Section A**

- Q.1 Solve any five. 10
- What are the advantages and disadvantages of multi-processor system?
  - Differentiate between macro kernel and micro kernel?
  - Define the following terms: waiting time and turnaround time.
  - What is message passing?
  - What is a dining philosopher's problem?
  - Differentiate between field and record?
  - What is an i-node?
- Q.2 08
- Explain in detail:
    - Real time system and
    - Distributed system
  - Explain the following scheduling algorithms. 07
    - Shortest job first
    - Round –Robin
- Q.3 07
- Define operating system and list the basic services provided by operating system.
  - Consider the following processer with length of CPU burst time in millisecond: 08
- | Process        | Burst-time | Priority |
|----------------|------------|----------|
| P <sub>1</sub> | 12         | 4        |
| P <sub>2</sub> | 5          | 2        |
| P <sub>3</sub> | 3          | 1        |
| P <sub>4</sub> | 8          | 3        |
| P <sub>5</sub> | 4          | 3        |
- All processes arrived in order P<sub>1</sub>, P<sub>2</sub>, P<sub>3</sub>, P<sub>4</sub>, P<sub>5</sub> all at time zero.
- Draw Gant charts illustrating execution of these processes for SJF and non-preemptive priority scheduling.
  - Calculate waiting time of each process for both the scheduling algorithm of i)
- Q.4 08
- Explain the following techniques to improve file system performance:
    - block read ahead
    - reducing disk arm motion
  - Explain file system implementation using linked list with index and i-node in detail. 07
- Q.5 08
- What is critical section? Why mutual exclusion is required? Explain any 2 methods of achieving mutual exclusion. 07
  - Explain semaphores in detail.



## Section B

- Q.6 Solve any five. 10
- i. Explain first fit and best fit memory allocation methods.
  - ii. What is relocation problem for multi programming with fixed partition?
  - iii. What is a device controller?
  - iv. Explain goals of I/O software.
  - v. What is resource allocation graph?
  - vi. What are necessary conditions for deadlock?
  - vii. Explain fragmentation.
  - viii. Explain data structures used in Banker's algorithm.
- Q.7 08
- a) Explain memory management with
    - i) bit map
    - ii) Linked list
    - iii) Buddy system
  - b) What is virtual memory? How it is implemented? 07
- Q.8 07
- a) Discuss RAID in detail. 08
  - b) Discuss following disk scheduling algorithm: i) SSTF and ii) SCAN
- Q.9 07
- a) Explain various methods for recovery from deadlock. 08
  - b) Consider the following snapshot of a system with 5 processes and 3 types of resources:

	A	B	C
P <sub>0</sub>	0	1	0
P <sub>1</sub>	2	0	0
P <sub>2</sub>	3	0	2
P <sub>3</sub>	2	1	1
P <sub>4</sub>	0	0	2

	A	B	C
P <sub>0</sub>	7	5	3
P <sub>1</sub>	3	2	2
P <sub>2</sub>	9	0	2
P <sub>3</sub>	2	2	2
P <sub>4</sub>	4	3	3

Available		
A	B	C
3	3	2

Answer the following questions using Banker's algorithm.

- i) What are contents of need matrix?
  - ii) Is the system in safe state?
- Q.10 08
- a) Explain following page replacement algorithm in detail.
    - i) LRU
    - ii) Optimal page replacement
  - b) Explain architecture of windows 7. 07

**SUBJECT CODE NO:- K-364**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE) Examination Oct/Nov 2016**  
**Digital Image Processing**  
**(Revised)**

**[Time: Three Hours]**

**[Max. Marks:80]**

- N.B Please check whether you have got the right question paper.
- i) Q.No.1 from section A is compulsory. Solve any two from the remaining.
  - ii) Q.No.6 from section B is compulsory. Solve any two from the remaining.
  - iii) Assume suitable data, if necessary.

**Section A**

- Q.1 Answer the following (any five) 10
- a) Specify the components of DIP system.
  - b) Find the number of bits required to store a  $256 \times 256$  Image with 32 gray levels.
  - c) Define Fourier transform pair.
  - d) Give the formula for transform function of a Butterworth low pass filter.
  - e) Name the different types of derivative filters.
  - f) What are two main types of data compression?
  - g) Define compression ratio.
  - h) What is entropy of an image?
- Q.2 a) With neat diagram, explain fundamental steps involved in digital image processing. 08
- b) Elaborate histogram equalization procedure. How histogram can be used for image enhancement purpose. 07
- Q.3 a) What are different image sharpening filters? How derivatives are useful for deriving different sharpening filter masks. 08
- b) Explain the basic steps involved in frequency domain filtering. 07
- Q.4 a) Use LZW coding algorithm to encode the 7-bit ASCII string 'aaaaaaaa'. 08
- b) Explain about Image compression model. 07
- Q.5 Write short notes on: (any three) 15
- a) Data redundancy
  - b) Image Sensing & Acquisition
  - c) Distance measures
  - d) Order statistic filters

## Section B

- Q.6 Answer the following (any five) 10
- What is meant by object point & background point?
  - How a point can be detected?
  - Define Hue & Saturation.
  - List the applications of color model.
  - Define region & boundary.
  - What is signature?
  - What are boundary descriptors?
  - What is watershed line?
- Q.7 08
- Design compass gradient operator of the size  $3 \times 3$  to measure gradients of edges oriented in eight directions: E, NE, N, NW, W, SW, S and SE. Give the form of these eight operators using coefficient value 0, 1 or -1. Specify the gradient direction of each mask. 08
  - Define thresholding and explain the various methods of thresholding with suitable example. 07
- Q.8 08
- What do you understand by dilation, erosion, image opening & closing operation in morphological image processing? Explain with examples. 08
  - Explain different color transformation. 07
- Q.9 08
- What is representation? What is the role of chain code & polygonal approximation in representation process? 08
  - Explain different regional descriptors. 07
- Q.10 write short notes on: (any three) 15
- Types of discontinuities
  - Hit –or–miss transformation.
  - Applications of gray-scale morphology
  - Skeletonization

**SUBJECT CODE NO:- K-233**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(IT) Examination Oct/Nov 2016**  
**Multimedia Computing**  
**(Revised)**

**[Time: Three Hours]**

**[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B

- i) Figures to the right indicate full marks.
- ii) Assume suitable data if required and state it clearly.
- ii) Question number 1 & 6 are compulsory, then attempt any two questions from each section from remaining.

Section A

- Q.1 Solve any Five questions. 10
- a) What do you mean by primary and secondary colors in color model?
  - b) What is the advantage of hypertext?
  - c) Define the term interlacing.
  - d) What are the types of sounds. Define any two types.
  - e) Write the main objective of Image Restoration.
  - f) What is meant by continuous tone, halt tone & bitone images.
  - g) What is MIDI?
- Q.2 a) What are the steps to create Multimedia presentation. Explain in brief. 08
- b) Explain how an image is displayed on a monitor screen using beam of electrons. 07
- Q.3 a) What are the basic components of audio system? Describe their functions. 07
- b) What is text? How can text be inserted within an application? 08
- Q.4 a) How does the CMYK color model represent color information? Why is it called as subtractive model? 07
- b) Distinguish between two main types of synthesizers. 08
- Q.5 a) List the advantages and disadvantages of using LCD displays over CRT displays. 08
- b) How to measure the quality and performance of video ? Explain the factors responsible for that. 07

## Section B

- Q.6 Attempt any Five questions. 10
- How is MP4 different from MP3?
  - What is meant by CODEC?
  - What is image compression? List the lossless image compression techniques.
  - What are the applications of H.261?
  - What is meant by run-length encoding? Mention its uses.
  - What was the design objective of the CD-I?
  - Define streaming media.
- Q.7 a) Explain in brief the various steps in JPEG compression standard. 08  
b) How is super audio-CD different from a standard audio CD. 07
- Q.8 a) Use shannon-feno algorithm to calculate reduced number of bits and generate the code words for each character in word 'HELLO'. 08  
b) How can data be written on CD-R? What are its limitations. 07
- Q.9 a) Explain in detail Media-on-Demand technique. 07  
b) Explain the main aspects of the MIDI specifications. 08
- Q.10 a) Explain in detail Multimedia Network communication. 08  
b) Comparison between MPEG-4 and MPEG-7. 07

**SUBJECT CODE NO:- K-265**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**T.E.(CSE/IT) Examination Oct/Nov 2016**  
**Programming in Java**  
**(Revised)**

**[Time: Three Hours]**

**[Max. Marks:80]**

N.B Please check whether you have got the right question paper.

1. Question.No.1 and Q.6 is compulsory.
2. Attempt any two questions from each section from remaining.
3. Assume suitable data if necessary.
4. Figures to the right indicate full marks.

**Section A**

- |     |   |          |
|-----|---|----------|
| Q.1 | A. Attempt any five.<br>I. Define a class whose object can't be instantiated.<br>II. What is java virtual machine?<br>III. Define an interface.<br>IV. List any four methods of vector class.<br>V. Differentiate between single threaded and multithreaded application.<br>VI. Write a sample code in java to handle exception.<br>VII. Differentiate between various access s specifiers. | 10       |
| Q.2 | a) A shape class contains instance variables length, height and area as a function. Rectangle class calculates area of rectangle. Also triangle class calculates area of triangle. Write a program for above to override area function. Take input from user and print area of Rectangle.<br>b) Write a program to sort numbers stored in an array?   | 08<br>07 |
| Q.3 | a) Define Demo class with instance variable $x_1$ and $y_1$ . Write a java code for following- while creating instance of Demo.<br>i) By default initialize of $x_1$ and $y_1$ to Zero.<br>ii) Provide facility to initialize it to user specified value.<br>b) What are the default access specifiers & modifiers of variables and methods in interface? Why to use it? How?               | 08<br>07 |
| Q.4 | a) Can the catch block be overloaded? If yes, How? Write a java code to handle any three inbuilt exceptions.<br>b) How to create package? How to add class in a package? How to hide class in a package?  | 08<br>07 |
| Q.5 | Write short notes on any three.<br>a) Life cycle of thread.<br>b) This and final keyword.<br>c) Synchronization in multithreading.<br>d) Vectors.   | 15       |

## Section B

- Q.6 Attempt any five of the following. 10
- i) Write advantages of Type 3 JDBC drivers.
  - ii) Write any four methods of event listener.
  - iii) Differentiate swing and AWT.
  - iv) Write a sample code to add any component in frame.
  - v) Write a sample code to handle keydown event in applet.
  - vi) Why do we need prepared statement?
  - vii) Why do we need socket?
- Q.7 a) Design a screen using AWT or swing components to display multiple choice questions. User will select the answer and display result on screen. Write code for it. 08
- b) Write a program to copy the contents of a file to another file. 07
- Q.8 a) Write a code and explain it to demonstrate the concept of 'passing parameters' to applet. 07
- b) Write a code to implement simple chat application. 08
- Q.9 a) Employee database contains id, name, designation and address. Write a code to update designation of employee for given id. Take input from user. 08
- b) Define stream? Differentiate between byte oriented and character oriented stream. 07
- Q.10 a) Write a sample code to create and access list component. 05
- b) Write any two classes and interfaces and its methods used in networking. 05
- c) Write applet life cycle. 05