END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA301	Subject: Operating System

Time: 3 Hours   **Maximum Marks: 75**

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

Q1. Answer the following (Do **any ten** parts):   **(2.5x10=25)**
   a) Explain context switching. How can context switching time be reduced?
   b) What is Throughput, Turnaround time, waiting time and Response time?
   c) What are the tradeoffs in handheld systems?
   d) Explain multithreading models.
   e) Why do we say that the operating is a resource manager?
   f) What is an address space? Differentiate between memory address space and I/O address space.
   g) What is a lightweight process, and why is it called so?
   h) What is the difference between *starvation* and *deadlock*? Does one necessarily imply the other?
   i) Differentiate between SCAN and C-SCAN disk scheduling algorithm.
   j) What is the need of virtual memory?
   k) What is the principle of page replacement policy?
   l) Explain general model of file system.
   m) What are the contents of Process Control Block?

UNIT–I

Q2 i) Define the properties of the following operating systems.   **(8)**
      a) Batch
      b) Time sharing
      c) Real time systems
      d) Parallel systems

   ii) What is the difference between paging and Segmentation?   **(4.5)**

Q3 Consider the following reference string: **(12.5)**
   1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6
   How many page faults will occur for a. FIFO b. LRU and c. OPT page replacement algorithms?
   Assuming four and five frames. (All frames are initially empty).

UNIT-II

Q4 Consider the following set of processes, with their CPU-burst time and arrival time given in milliseconds: **(12.5)**

Process	Arrival Time	Burst Time	Priority
P1	0	4	4
P2	3	6	2
P3	5	5	1
P4	8	6	3

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a) Draw four Gantt charts illustrating the execution of these processes using FCFS, SRTN, RR (Time Slice=2) and preemptive priority scheduling.
b) What is the turnaround and waiting time of each process for each of the scheduling algorithms in part (a)?
c) Which of the schedules in part (a) results in the minimal average waiting time?

Q5 a) Explain producer consumer problem with the help of algorithm. **(6.5)**
b) Give a monitor based solution for dining philospher's problem. **(6)**

UNIT–III

Q6 i) Distinguish between: **(6)**
   a) Multiplexing and buffering
   b) Channels and Control Units
   c) Dedicated and Shared Devices

ii) What is the way to recover from deadlock? **(6.5)**

Q7 Consider the following current resource allocation state: **(12.5)**

Process	Allocation			Max			Available		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	2	2	3	3	6	8	7	7	10
P2	2	0	3	4	3	3			
P3	1	2	4	3	4	4			

i) Is the current allocation state safe?
ii) Would the following requests be granted in the current state?
   • Process P1 requests (1, 1, 0)

UNIT–IV

Q8 a) Explain directory structures in detail. **(6)**
b) Differentiate between contiguous and linked allocation methods of a file. **(6.5)**

Q9 a) What is the use of Access matrix in protection? **(4)**
b) Explain different threats on systems in detail. **(8.5)**

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END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA-303	Subject: Computer Graphics
Time: 3 Hours	Maximum Marks: 75

Note: Attempt five questions in all including Q. No.1 which is compulsory. Select one question from each unit.

Q1 **Answer the following questions:-**   **(2.5x10=25)**
(a) Differentiate Quadtrees and Octrees.
(b) Differentiate U and U* operators.
(c) Consider a Raster scan system with the resolution of 1280 by 1024. What size of frame buffer is needed (in Kilo Bytes) if 12 bits per pixel are to be stored?
(d) What do you mean by scan conversion? Give examples of algorithms used for scan conversion of a circle.
(e) What is antialiasing? What are various techniques for antialiasing?
(f) What is the need of Hidden surface removal algorithms?
(g) What are various anomalies associated with Perspective projection?
(h) Differentiate interpolation and approximation methods for spline representation.
(i) What are various desirable properties for a solid representation?
(j) What do you mean by the statement" Translation and Rotation are rigid body transformations"?

UNIT-I

Q2 (a) Discuss Bresenham's approach for scan converting a line. **(6)**
(b) Compute the intermediate points from (0,0) to (5,10) on a line using Bresenham's approach. **(6.5)**

Q3 (a) Discuss Midpoint subdivision line clipping algorithm with example. **(6)**
(b) Discuss Conceptual Framework for interactive graphics. **(6.5)**

UNIT-II

Q4 (a) Discuss various basic 2D transformations in detail with their matrices. **(6)**
(b) What is the need of representing transformations as Homogeneous coordinates? List various basic transformation matrices after conversion to Homogeneous coordinates? **(6.5)**

Q5 (a) Discuss Window to Viewport transformation in detail. **(6)**
(b) Reflect the triangular polygon whose vertices are A(-1,0), B(0,-2) and C(1,0) about the line Y = X + 2. **(6.5)**

UNIT-III

Q6 (a) What are various methods for Polygon Mesh representation? **(6)**
(b) What do you mean by Blending function? Prove that the blending function of open uniform B Spline is equal to that of Bezier curve for d = n+1 (where n is number of control points and d is degree). **(6.5)**

P.T.O.

BCA-303
P1/2

Q7 (a) Draw a Beizer curve with respect to control points p(1,3),q(2,4),r(5,5),s(7,3) and draw it's Covex hull. **(6)**
(b) Discuss and differentiate various parametric and geometric continuity conditions in detail. **(6.5)**

UNIT-IV
Q8 (a) Discuss and differentiate Object space and Image space methods for hidden surface removal with examples. **(6)**
(b) Discuss various types of Orthographic projections. **(6.5)**

Q9 (a) Explain Depth Sorting method of Hidden surface removal in detail. **(6)**
(b) Discuss three dimensional Cohen Sutherland Clipping in detail. **(6.5)**

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END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA305	**Subject: E-Commerce**

Time: 3 Hours   **Maximum Marks: 75**

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

Q1   Attempt **any five**:   **(5x5=25)**
  i)   SSL Protocol
  ii)   Steps in setting up business on Internet
  iii)   Extranet
  iv)   Types of Security attacks
  v)   Call Centre operations
  vi)   EDI enabled procurement process.

UNIT-I

Q2   a)   What do you understand by the term Trade Cycle? Explain its various types with the help of an example.   **(7.5)**

      b)   How is traditional commerce different from e-commerce? Also explain the operational and strategic benefits of E-commerce.   **(5)**

OR

Q3   a)   Define EDI. Give its layered architecture.   **(7.5)**

      b)   Explain how web traffic analysis can be helpful for a website owner in increasing the number of visitors.   **(5)**

UNIT-II

Q4   a)   Explain the various types of Electronic Payment systems with the help of examples.   **(7.5)**

      b)   Explain digital signatures and its usage.   **(5)**

OR

Q5   a)   Distinguish between Public and Private Key cryptography taking help of suitable examples.   **(7.5)**

      b)   What is the significance of having VPN? Also, state its architecture.   **(5)**

UNIT-III

Q6   a)   What do we understand by the term Business Process Reengineering? State the various steps involved in Business Process Reengineering in detail.   **(7.5)**

      b)   Explain Business Process Management.   **(5)**

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OR

Q7 a) Explain the significance of supply chain management with the help of suitable examples. State the various types of supply chain. **(7.5)**

b) Explain Porter's value chain model in detail. **(5)**

UNIT-IV

Q8 Discuss the major provisions contained in the IT Act 2000. How are they important in the current era? **(12.5)**

OR

Q9 How E-commerce can contribute in enhancing user satisfaction? Explain by taking the example of Airline Reservation. **(12.5)**

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END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA307	Subject: Software Testing
Time: 3 Hours	Maximum Marks: 75

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

Q1 Attempt **any five** of the following: **(5x5=25)**

a) What is Scaffolding? Why do we use stubs and drivers during unit testing?

b) Explain the difference between Alpha and Beta Testing.

c) Differentiate between Black Box Testing and White Box Testing.

d) Discuss the following terms: Object, Class, Message, Inheritance and Polymorphism.

e) What is Slice based testing? How can it improve testing? Explain the concept with the help of an example.

f) Define Error, Fault, Failure, Incident and Test Suite.

g) Explain Extreme Testing in brief.

UNIT-I

Q2 a) What are the principles of testing? Why is the psychology of the testing person important? What are the limitations of Software Testing?   **(6.5)**

b) Give an overview of Graph Theory. How is it useful in Testing?   **(6)**

OR

Q3 a) What is Software Testing? Is it possible to do complete testing? Why software testing is hard?   **(6.5)**

b) Explain in brief Code Inspection, Group Walk throughs and Peer Reviews.   **(6)**

UNIT-II

Q4 a) Let us consider an example of grading the students in an academic institute. Grading is done according to the following rules

Marks Obtained	Grade
80-100	O
60-79	A
50-59	B
40-49	C
0-39	F

Generate test cases using Decision Table Based Testing and Cause Effect Graphing Technique.   **(6.5)**

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b) What is Path Testing? Explain with suitable example. **(6)**

OR

Q5 a) Consider the following points for an Employee Appraisal and Development System of a company:

Points Earned by the Employee	
1 – 6	Work hard to improve
6 – 8	Satisfactory
8 – 10	Good
10 – 12	Very Good
12 – 15	Outstanding

Generate test cases using Decision Table Based Testing and Equivalence Class Testing Technique. **(6.5)**

b) How is Data Flow Testing performed? Explain define/use testing with the help of suitable example. **(6)**

UNIT-III

Q6 Define Regression testing. Is it necessary to perform? Explain regression testing with suitable example. Compare regression testing with development testing. **(12.5)**

OR

Q7 a) What are the various levels of testing? Explain the objectives of every level. Who should do testing at every level and why? **(6.5)**

b) What is debugging? Explain the debugging cycle and its role in testing process. **(6)**

UNIT-IV

Q8 What is object-oriented testing? How is it different from simple testing and GUI testing? Explain various issues involved in it with examples. **(12.5)**

OR

Q9 Explain in detail the various challenges and strategies involved in testing internet applications. **(12.5)**

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END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA313	**Subject: Web Based Programming**
Time: 3 Hours	**Maximum Marks: 75**

Note: Attempt five questions in all including Q.No.1 which is compulsory. Select one question from each unit.

Q1   Attempt **any ten** of the following   **(2.5x10=25)**
- a) What is a web server?
- b) Difference between static and dynamic web page.
- c) Explain split() in PHP
- d) Difference between GET(), POST() and REQUEST()
- e) How can you send a mail in PHP? Explain with example.
- f) Site suitable differences between WAMP, MAMP and LAMP
- g) What is Juggling in PHP
- h) Explain with example- Isarray(), Shuffle, End, explode()
- i) Differentiate between PHP and Javascript.
- j) What is the difference $Test and $$Test?
- k) Difference between Strongly typed and Loosely typed language.
- l) What is an open source software? Give atleast 3 examples.

UNIT-I

Q2   a)   Write down the steps for installation of Apache, IIS and PWS in windows operating system.   **(6.5)**

     b)   Differentiate between   **(6)**
       i.   Echo and print
       ii.   = = and = = = in PHP

OR

Q3   a)   What is a web application? What is the difference between traditional web application and AJAX application?   **(6.5)**

     b)   Differentiate between local and remote server.   **(6)**

UNIT-II

Q4   a)   What are the different control statements in PHP? Explain with the help of suitable examples. Differentiate between while and do while statement.   **(7.5)**

     b)   Write a program using function to input 100 numbers from users and display the prime numbers.   **(5)**

OR

Q5   a)   What are the different types of arrays? Create an associative array using countries as keys, states as values, and transform it into 2-D array. Display the data as a table.   **(7.5)**

     b)   Explain call by value and call by reference with suitable examples.   **(5)**

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UNIT–III

Q6 a) What are cookies? How do you create and delete a cookie? Create a cookie BCA_313 and set the time to 12:00pm of any date. Delete the cookie passing the using date time parameter. **(6.5)**

   b) Create a bank registration form with the following fields-Name, Date of Birth, Address, mobile No and email. The bank portal and session should expire if the system is idle for more than 2 mins. **(6)**

OR

Q7 a) Define constants in PHP. Explain implicit and explicit casting with the help of example. What are the different types of error in PHP? **(6)**

   b) What is file handling in PHP? Write a PHP script to open, close, read and write in a file. **(6.5)**

UNIT-IV

Q8 a) Write a PHP database Employee and create the table emp_details with the following fields-emp_name, emp_desig, emp_sal, emp_dob and perform the following
   i)   Add atleast 5 records
   ii) Display the records
   iii) Modify the second record with salary Rs 20,000/- **(8)**

   b) Write the connectivity and selecting database statement which is used to connect PHP and MySQL. **(4.5)**

OR

Q9 a) What is MySQL? Explain different data types in MySQL with the help of suitable example. **(6.5)**

   b) What is the difference between mysql_fetch_object and mysql_fetch_array **(6)**

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END TERM EXAMINATION

FIFTH SEMESTER [BCA] JANUARY-FEBRUARY 2023

Paper Code: BCA315	**Subject: Business Economics**
Time: 3 Hours	**Maximum Marks: 75**

Note: Attempt five questions in all including Q.No.1 which is compulsory.
Select one question from each unit.

Q1   Write short note on **any five** of the following: (5x5=25)
     a)   Scope of Economics
     b)   Price Mechanism and its functions
     c)   Outsourcing - A Boon for Indian Economy
     d)   Concept of Dumping
     e)   Stagflation
     f)   Profit Maximization

UNIT-I

Q2   Explain the concept of Elasticity, its types and degrees in detail?   [12.5]

OR

Q3   What is production function? Explain the law of Returns to Scale with Isoquant and Isocost.   [12.5]

UNIT-II

Q4   Explain in detail the Kinked Demand Curve model of Oligopoly? Depict graphically too.   [12.5]

OR

Q5   Monopoly and Perfect Competition market structure are unique in their own right. Explain in detail that how these structures differ from each other.   [12.5]

UNIT-III

Q6   "A smooth flow of Income is vital for any economy to grow". In the light of this statement, explain in detail the Circular Flow of Income in four sectors economy.   [12.5]

OR

Q7   What do you understand by National Income? What are the various methods to calculate National Income? Also, explain the Limitations of these methods?   [12.5]

UNIT-IV

Q8   What do you understand by Foreign Capital and what are its components? In context of India, how does it benefit from Foreign Capital?   [12.5]

OR

Q9   Write short note on:
     a) MNC   [6.5]
     b) Globalization   [6]

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