ARKA JAIN University, Jharkhand

2ND Semester Medical Examination – 2019-20

Subject: IT Awareness

Time: 2 Hours

Course: BCA
Full Marks: 35
Pass Marks: 14

- Candidates are required to give their answers in their own words as far as practicable.
- Question Paper is divided into **Three Parts –A, B & C**
- **Part-A** is compulsory.
- **Part- B** contains **SIX** questions out of which **FOUR** questions are to be answered.
- **Part- C** contains **TWO** questions out of which **ONE** to be answered.

PART A

Q.1) **All questions are compulsory**

Multiple Choice Questions: (10x1=10)

A) Employees First Slogan belongs to

i) Paytm ii) HCL iii)Yahoo iv) Facebook

B) Tata Sky controlled revenue likage with

i) HOBS Integrated Revenue   ii) Azure   iii)Paypal   iv)None

C) Jile application is supported by

i) TCS ii) IBM iii) Microsoft iv) Google

D) AIforAll program was launch by

i) USA   ii) India   iii) China   iv) South Africa

E) TCS SIAM Frame work is used in

i) Oil and Gas Firm ii) Manufacturing iii) Procurement iv)Telecommunication

F) V.G. sidhartha is founder member of

i) Mintree ii) Microsoft iii) oracle iv) Infosis

G) Optumera is a digital merchandising application developed by

i)Opera   ii)Infosis   iii) IBM   iv) TCS

H) Shiv Nadar is Founder Member of of

i)HCL ii) MindTree iii) Rolta iv)NONE

I) Hotel Tonight online app provide service in

i)   America ii) Europe iii) Australia iv) All above

J) Uber is using payment system of

i) Paytm ii) Googlepay iii) BrainTree iv)BHIM

PART B

Q2.)   **Answer any Four:**   (4x5=20)

    i)   Discuss the role IT in banking sector.

    ii) Discuss the significance of cloud computing applications.

    iii) Explain the History, working area and opportunity in Infosys.

    iv) What was the role of TCS in the development of Indian IT industry?

    v) What are the threats of Indian IT Industry?

    vi) What are the significance of Block chain concept?

PART C

(1x5 =5)

Q3.) Discuss the role of AI Technology in Smart Cities and infrastructure.

Discuss the Role of AI Technology Adaptation in Medical in India.

ARKA JAIN University, Jharkhand
2nd Semester Medical Examination – 2019-20

Subject: Data Structure through C

Time: 3 Hours

Course: BCA/BSCIT
Full Marks: 70
Pass Marks: 28

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- Question Paper is divided into **Three Parts –A, B & C**
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- **Part- C** contains **SIX** questions out of which **THREE** questions are to be answered.

PART A

Q.1) all questions are compulsory

A] Multiple Choice Questions: (10x1=10)

a) Which of the following is non-liner data structure?
   i) Stacks   ii) List   iii) Strings   iv) Trees

b) State true or false.
   A) The degree of root node is always zero.
   B) Nodes that are not root and not leaf are called as internal nodes.
   i) True, True
   ii) True, False
   iii) False, True
   iv) False, False

c) The use of pointers to refer elements of a data structure in which elements are logically adjacent is ….
   i)pointers
   ii) linked allocation
   iii) stack
   iv) queue

d) Which of the following is false about a doubly linked list?
   i) We can navigate in both the directions
   ii) It requires more space than a singly linked list
   iii) The insertion and deletion of a node take a bit longer
   iv) None of the mentioned

e) Which of the following is false about a circular linked list?
   i) Every node has a successor
   ii) Time complexity of inserting a new node at the head of the list is O(1)
   iii) Time complexity for deleting the last node is O(n)
   iv) None of the mentioned

3 - c - x

f) Which of the following properties is associated with a queue?
   i) First In Last Out
   ii) First In First Out
   iii) Last In First Out
   iv) None of the mentioned

g) A pivot element to partition unsorted list in

   i) Quick sort   ii) Merge Sort   iii) Insertion sort   iv) Selection Sort

h) The data structure require to evaluate a postfix expression

   i) Queue   ii) Stack   iii) Linked List   iv)None

i) Which of these operators is used to allocate memory?
   a) malloc
   b) alloc
   c) new
   d) give

j) What is the need for a circular queue?
   a) effective usage of memory
   b) easier computations
   c) all of the mentioned
   d) none of the mentioned

B] Very Short question
   i) What do you mean by Abstract Data Type?   (5x2=10)
   ii) What is stack?
   iii) What is single linked list?
   iv) What is the function of malloac() ?
   v) What do you mean by Union?

PART B

Q2.   **Answer any four:**
                                                                          (4x5=20)

   i) What do you mean by data Structure? What are the operations performed in data structure?
   ii) What is a Queue, how it is different from stack and how is it implemented?
   iii) Explain the representation of Polynomials Using Linked List.
   iv) What is Tree? Explain Different types of Tree traversal.
   v) What do you mean Circular Linked List? Explain with example.
   vi) What are the difference between Static and dynamic memory allocation

PART C

Q.3) Write an Algorithm to insert a node at the end of circular Linked List.

Q.4).what do you mean by PUSH and POP operation in a STACK? Write separate function to implement PUSH and POP operation

Q.5) Convert the following expression from infix to Postfix using stack
A+(B*C-(D/E^F)*G)*H

Q.6 What are the advantages of Double Linked List as compared to Single Linked List? Write an algorithm to delete a first node from Double Linked List.

Q.7) Write the steps to sort the following list of unsorted element Using Quick Sort.

60   26   85   31   4   13   87   76   73   20

Q.8) What is difference between linear Search and Binary Search? Explain with example

Subject :Numerical and statistical methods

Time : 3 Hours

Course: BCA/Bsc(IT)
Full Marks : 70
Pass Marks: 28

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PART A

Q.1) **All questions are compulsory**

a) Round off value of number 3.26425 correct up to four significant figures is
  i) 3.264
  ii) 3.26400
  iii) 3264
  iv) 326400

b) Truncating error occurs due to
  i) Error occurs due to error in statement
  ii) Errors due to rounding off the numbers
  iii) Errors due to replacing infinite series by finite one.
  iv) None of these

c) The relative error in taking $\pi = 3.141593 \ as \ \frac{22}{7}$?
  i) 0.1234
  ii) 0.0004
  iii) 0.0024
  iv) None of these

d) Relation between E and ∇ is given by
  i) $\nabla = 1 + E$
  ii) $\nabla = 1 - E^{-1}$
  iii) $\nabla = 1 + E^{-1}$
  iv) None of these

e) If c is any constant then $\Delta c =$?
  i) O
  ii) 1
  iii) Not defined
  iv) None of these

f) A fair coin is tossed 6 times .what is the probability of getting at least 3 heads
  i) 11/16
  ii) 21/32
  iii) 3/4
  iv) 5/6

g) If E be shift operator then E(2)=?
  i) 1
  ii) 2
  iii) 0
  iv) None of these

h) $\nabla f(x)$=?
   i)   f(x)-f(x-h)
   ii)   f(x)=f(x-h)
   iii)   f(x)+f(x-h)
   iv)   of these4

i) the regression line y on x is defined as
   i) $y-\bar{y}=b_{yx}(x-\bar{x})$
   ii) $x-\bar{x}=b_{xy}(y-\bar{y})$
   iii) $y=b_{yx}x$
   iv)   none of these

j) $\nabla^2 y_2$= ?
   i) $y_2-2y1+y0$
   ii) y_3-y_2
   iii) y_3+y_2
   iv) none of these

B] **Very Short question**   (5x2=10)
   a) Evaluate $\left(\frac{\Delta^2}{E}\right)x^3$
   b) Define absolute error?
   c) write down the formula of Newton's backward difference formula?
   d) A coin is tossed three times what is the probability to get two heads?
   e) find the value of $\sqrt[3]{28}$ by differential method

PART B

Q2.   Answer any four: (4x5=20)

   i)   find the cubic polynomial which takes following values
          X: 0   1   2   3
          F(x): 1   2   1   10
          Using Newton's forward difference interpolation formula. find f(2) and f'(2).

   ii) Solve the equation xe^x =cosx. By regula falsi method correct up to 4 decimal places

   iii) Two cards are drawn simultaneously from a well shuffled pack of 52 cards. Find the mean and variance of the no of aces.

   iv) Using taylor's series method, find the value of y(0.1) given $\frac{dy}{dx}$ =x²+y² and y(0)=1
   v)   Solve the following system of linear equation by gauss Jacobi method
          4x+2y+z=14
          x+5y-z=10
          x+y+8z= 20

   vi) Find the binomial distribution for which the mean and variance are 12 and 3 respectively.

PART C

Answer any three: (3x10=30)

Q.3) Use Runge kutta method to find y(0.1) given that $\frac{dy}{dx} = \frac{1}{x+y}$, y(0)=1

Q.4) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using (i) trapezoidal rule (ii) simpson's 1/3 rule (iii) simpson's 3/8 rule

Q.5) using Picard methods to obtained the approximate solution of the ODE $\frac{dy}{dx}$=x^2+y^2 for x=0.4
   Given y(0)=0

Q.6) find the real root of the equation x^3-x-4=0 using bisection method correct up to 3 decimal
   Places

Q.7) The values of x and y are given as below:

X:	5	6	9	11
Y:	12	13	14	16

Find the value of Y when x=10. Using Lagrange's interpolation formula.

Q.8) solve the following system of equation by factorization method?

$x + y + z = 6$
$3x + 3y + 4z = 20$
$2x + y + 3z = 13$

Subject : Operating system

Time : 3 Hours

Course: BCA/BSCIT
Full Marks : 70
Pass Marks: 28

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PART A

Q.1) **All questions are compulsory**

A] **Multiple Choice Questions :**   (10x1=10)

i) What is operating system?
a) collection of programs that manages hardware resources
b) system service provider to the application programs
c) link to interface the hardware and application programs
d) all of the mentioned.

ii) Which of the following is a Real Time Operating System.
a) Industrial Control System
b) Novell netware
c) Multics
d) None of these.

iii) A memory buffer used to accommodate a speed differential is called
a) stack pointer
b) cache
c) accumulator
d) disk buffer

iv) Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?
a) first-come, first-served scheduling
b) shortest job scheduling
c) priority scheduling
d) none of the mentioned

v) CPU fetches the instruction from memory according to the value of
a) program counter
b) status register
c) instruction register
d) program status word

vi) If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called
a) mutual exclusion
b) critical exclusion
c) synchronous exclusion
d) asynchronous exclusion

vii) Which of the following condition is required for deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from a process holding it
d) all of the mentioned

viii) The circular wait condition can be prevented by
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned

ix) Which one of the following is a synchronization tool?
a) thread
b) pipe
c) semaphore
d) socket

x) Process synchronization can be done on
a) hardware level
b) software level
c) both hardware and software level
d) none of the mentioned

B] Very Short question   (5x2=10)
a) What do you mean by Real time operating system?
b) Write down the functions of operating system.
c) List down the different types of operating system.
d) Write down the history of operating system.
e) Discuss the necessary conditions that cause deadlock situation to occur.

PART B

Q2. Answer any four: (4x5=20)

i)   Write down the differences between Multiprocessor and Multicomputer.
ii)   Compare preemptive and non preemptive scheduling.
iii)   Explain the advantages of threads over processes.
iv)   Write down the definition of semaphore and explain its different types.
v)   Explain VMM and different types of VMM.
vi)   Explain the process scheduling with neat diagram in operating system?

PART C

Answer any three: (3x10=30)

Q.3) Explain Distributed, Time sharing and multiprogramming operating system and Batch processing operating system.

Q.4) What do you mean by Multiprocessor? Write down the applications of Multiprocessor?

Q.5) Explain Paging Technique with neat diagram and example.

Q.6) Define Critical section problem. Write down the solution to the critical section problem.

Q.7) What do you mean by virtualization in operating system? Explain in brief.

Q.8) Explain First come first serve scheduling policy using following set of processes

Proceses	P1	P2	P3	P4	P5
Admisssion Time	0	2	3	4	8
Service Time	3	3	5	2	3

JGi

Subject : English

Time : 3 Hours

Course: BCA/BSCIT
Full Marks : 70
Pass Marks: 28

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- **Part- C** contains **FIVE** questions out of which **THREE** questions are to be answered.

PART A

Q.1) **All questions are compulsory**   (10x1=10)

A] Do as directed :

i. An important part of my life have been the people who stood by me.(Rewrite the correct sentence)

ii. The two best things about the party was the food and the music.(Rewrite the correct sentence)

iii. King Krishnadeva Raya would perform heavy exercises every morning.(Use - used to)

iv. While walking on the sidewalk, Mary found a sparkly girl's bracelet.

v. I have seen many birds nestling on cell-phone towers.(Identify the tense)

vi. The bouquet of flowers on the table, belongs to Mary. .(Rewrite the correct sentence)

vii. He shut the door, immediately, he heard a knock from behind.
Begin: No sooner.....

viii. We ....(regular)eat roast potatoes

ix. Joy baked the most delicious cake. (change into passive)

x. Jessica went to school. (Rewrite as a question starting: Might …)

xi. The plane wasn't allowed to take ....because of the bad weather.(use preposition)

B] Read the passage and answer following questions   (10x1=10)

Scientists know many things about the Sun. They know how old it is. The Sun is more than 4½ billion years old. They also know the Sun's size. The Sun may seem small, but that is because it is so far away. It is about 93 million miles (150 million kilometers) away from the Earth. The Sun is so large that the diameter of the Sun is 109 times the Earth's diameter. The Sun also weighs as much as 333,000 Earths. The Sun is the center of our Solar System. Besides the Sun, the Solar System is made up of the planets, moons, asteroid belt, comets, meteors, and other objects.

(a) How old is the sun?

(b) Why does the sun seem small?

(c) What is the distance of the sun from the Earth?

(d) What is there at the center of the Solar System?

(e) What is the solar system made up of?

(f) Complete the sentence

The Sun is so large that the diameter of the Sun is _____.

(g) What is the opposite of many- _____

(h) Write one describing words from the passage: _____

(i) Find out a naming word from the passage -_____

(j) Give a title to the passage_____

PART B

Q2. Write short notes on any four with examples (4x5=20)

i. "Let me not to the marriage of true minds…"What do you understand by Sonnet? Which one did you read? Write its summary.

ii. What is an elegy? What is the theme of the poem Break Break Break?

iii. "I have been young and now m not too old" Report on experience is a report on what kind of experience?

iv. Greed for property has taken away the consciousness of caring for the old parents. Do you agree/disagree with the statement? Support your answer with reference to the play, Dear Departed.

v. EV Lucas has the art of story narration. Could you replace a story similar to the one like Face on the Wall.

vi. Scientific point of view is an elaboration on scientific outlook. Explain

PART C

Answer any three: (3x10=30)

Q.3) The Sonnet 116 has rendered an elegant portrait of faith under pressure. Elaborate

Q.4) The Dear Departed shows inhuman attitude of the two daughters towards their father. Explain with reference to the play.

Q.5) If you were the narrator of the story 'Face on the Wall', how would you come up with the climax?

Q.6) What is the difference between a scientific approach and a conventional approach to the various problems of life? Which, in Haldane's opinion, is better?

Q.7) How would you justify the theme of Henry Vaughan's poem "The Retreat"?