DATE: 04.03.2022

JHARKHAND RAKSHA SHAKTI UNIVERSITY

SUBJECT: COMPUTER SYSTEM ARCHITECHTURE BCACS-102 F.M. : 50

SEMESTER: BCACS-I TIME: 2 hours P.M. : 23

SECTION A

Q.1 is compulsory. 1 x 10=10 MARKS

1. What is computer architecture?

a) set of categories and methods that specify the functioning, organisation, and implementation of computer systems

b) set of principles and methods that specify the functioning, organisation, and implementation of computer systems

c) set of functions and methods that specify the functioning, organisation, and implementation of computer systems

d) None of the mentioned

2. What is computer organization?

a) structure and behaviour of a computer system as observed by the user

b) structure of a computer system as observed by the developer

c) structure and behaviour of a computer system as observed by the developer

d) All of the mentioned

3. Which of the following is a type of computer architecture?

a) Microarchitecture

b) Harvard Architecture

c) Von-Neumann Architecture

d) All of the mentioned

4. Which of the following is a type of architecture used in the computers nowadays?

a) Microarchitecture

b) Harvard Architecture

c) Von-Neumann Architecture

d) System Design

5. Which of the following is the subcategories of computer architecture?

a) Microarchitecture

b) Instruction set architecture

c) Systems design

d) All of the mentioned

6. Which of the architecture is power efficient?

a) RISC

b) ISA

c) IANA

d) CISC

7. What does CSA stands for?

a) Computer Service Architecture

b) Computer Speed Addition

c) Carry Save Addition

d) None of the mentioned

8. If an exception is raised and the succeeding instructions are executed completely, then the processor is said to have _____

a) Generation word

b) Exception handling

c) Imprecise exceptions

d) None of the mentioned

9. To reduce the memory access time we generally make use of _____

a) SDRAM's

b) Heaps

c) Cache's

d) Higher capacity RAM's

10. The IA-32 system follows which of the following design?

a) CISC

b) SIMD

c) RISC

d) None of the mentioned

II. SHORT ANSWER QUESTIONS. ATTEMPT ANY FOUR 4 x 5=20 MARKS

1. Differentiate between Hardware programme and micro programme control.
2. Explain the process of vector and array processors .
3. Explain virtual memory . Explain the role of logical as well as advantage and disadvantage.
4. Explain in brief memory mapped I/O.
5. Explain in details different types of addressing modes.
6. Define Direct Memory Access in brief .
7. What are the types of pipeline hazards?

III. LONG ANSWER QUESTIONS. ATTEMPT ANY TWO. 10 x 2 = 20 MARKS

1. Why DMA is needed? Give proper reason and also explain stealing and burst mode of DMA transfer.
2. Explain priority interrupt in detail and compare with the daisy chaining interrupt.
3. What is I/O addressing? And how to resolve the issue of I/o addressing.
4. What are differences between RISC and CISC.

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DATE: 11. 03. 2022

JHARKHAND RAKSHA SHAKTI UNIVERSITY

SEMESTER: - BCACS-Sem I

TIME: 2 hours 30 minutes

Subject – BCACS – GE – 1 Mathematics

F.M.= 70 MARKS

P.M.=32 MARKS

(1 X 15 = 15)

Multiple Choice Questions: -

1. $\frac{d}{dx}\left(\frac{a^x}{log_e a}\right)$ *where* $a > 0, a \neq 1$ *is*
   a) a^x
   b) e^x
   c) a^{2x}
   d) None of these

2. According to Euler's Theorem,
   a) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = \dot{n}^2 u$
   b) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = nu$
   c) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = 1$
   d) $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = 0$

3. $\int \tan x \, dx$
   a) - log Isin xI
   b) - log I cos xI
   c) log Isec xI
   d) None of these

4. $\int 3^{x+2} dx =$
   a) $3.\left(\frac{3^x}{\log 3}\right) + C$
   b) $9.\left(\frac{3^x}{\log 3}\right) + C$
   c) $\left(\frac{3^x}{\log 3}\right) + C$
   d) None of these

5. Sum of the series $1^3 + 2^3 + 3^3 + 4^3 + ---- + n^3$ *is*
   a) $\left(\frac{n(n+1)}{2}\right)^2$
   b) $\left(\frac{n(n+1)}{2}\right)^3$
   c) $\frac{n(n+1)(2n-1)}{6}$
   d) $\frac{n(n-1)(2n+1)}{6}$

6. $\int \frac{f'(x)}{f(x)} dx =$
   a) $log|f(x)| + C$
   b) $\frac{1}{f(x)} + C$
   c) $e^x + C$
   d) None of these

7. Div (grad f) = $\nabla^2 f$ =
   a) $\frac{\partial^2 f}{\partial x^2} + \frac{\partial^2 f}{\partial y^2} + \frac{\partial^2 f}{\partial z^2}$
   b) 1
   c) 0
   d) 3

8. *The divergence of continuous differentiable vector point function F is defined by*
   a) $div\ F = i.\frac{\partial F}{\partial x} + j.\frac{\partial F}{\partial y} + k.\frac{\partial F}{\partial z}$
   b) $div\ F = i \times \frac{\partial F}{\partial x} + j \times \frac{\partial F}{\partial y} + k \times \frac{\partial F}{\partial z}$
   c) $div\ F = i\frac{\partial F}{\partial x} + j\frac{\partial F}{\partial y} + k\frac{\partial F}{\partial z}$
   d) *None of these*

9. If **R** = xI + yJ + zK, then $\nabla \times R =$
   a) 3
   b) 1
   c) 0
   d) 2

10. The equation of the ellipse with focus (-1, 1), directrix x – y + 3 = 0 and eccentricity ½ is

a) $7x^2 + 2xy + 7y^2 + 10x + 10y + 7 = 0$ b) $7x^2 + 2xy + 7y^2 + 10x - 10y + 7 = 0$

c) $7x^2 + 2xy + 7y^2 + 10x - 10y - 7 = 0$ d) None of these

11. The equation of a line with slope m and making an intercept c on y – axis is given by

a) X = my + c b) Y = cx + m

c) Y = mx + c d) None of these

12. The coordinates of the focus of the parabola $y^2 - x - 2y + 2 = 0$ *are*

a) (5/4, 1) b) (1/4, 0)

c) (1, 1) d) None of these

13. *If* $y = xe^{-x}$ *then second derivative of y is*

a) $-xe^{-x} + e^{-x}$ b) $xe^{-x} - 2e^{-x}$

c) $-xe^{-x} + 3e^{-x}$ d) None of these

14. If $\lim_{n\to\infty}(a_n) = l$ is finite and unique then the sequence is said to be

a) Convergent b) Oscillatory

c) Divergent d) None of these

15. Given sequences : $a_n = \frac{n^2-2n}{3n^2+n}$ is

a) Convergent b) *Oscillatory*

c) Divergent d) None of these

II. Short Answer Type Questions: - **(5 X 5 = 25)**

1. *Expand* e^x *by Maclaurins's Theorem as far as the term involving* x^4.
2. State and prove Euler's Theorem
3. *Prove that* $\int_0^{\frac{\pi}{4}} \log(1 + \tan x)\ dx = \frac{\pi}{8}(\log 2)$
4. An arc is in the form of parabola with its axis vertical. The arc is 10 m high and 5 m wide at the base. How wide is it 2m from the vertex of the parabola.
5. *Find* $div\vec{V}$ *and* $curl\,\vec{V}$ *where* $\vec{V} = (x^3 + y^3 + z^3 - 3xyz)$.
6. Test for convergence the series: $-\frac{1}{4.7.10} + \frac{4}{7.10.13} + \frac{9}{10.13.16} \pm - - - - - - - \infty$
7. *Find* $div(curl\,\vec{F})$ *where* $\vec{F} = x^2y\hat{i} + xz\hat{j} - 2yz\hat{k}$
8. *If* $y = e^{a\sin^{-1}x}$, *prove that*

   i) $(1 - x^2)y_2 - xy_1 - a^2y = 0$ *ii)* $(1 - x^2)y_{n+2} - (2n + 1)xy_{n+1} - (n^2 + a^2)\,y_n = 0$

III. Long Answer Type Questions: - **(2 X 15 = 30)**

1. *Discuss change of rectangular axes by translation and rotation.*
9. *State and prove Sandwich theorem.*
3. Prove that $tan\emptyset = r\frac{d\theta}{dr}$.
4. a) Show that the nth derivative of $\frac{d^n}{dx^n}(e^{ax}\cos bx) = (a^2 + b^2)^{\frac{n}{2}}e^{ax}\sin(bx + n\tan^{-1}\frac{b}{a})$

   b) Evaluate $\int sin^{-1}\sqrt{\frac{x}{a+x}}\ dx$.

DATE: 09.03.2022

JHARKHAND RAKSHA SHAKTI UNIVERSITY

SUBJECT:EVS AECC-102 F.M. : 70

SEMESTER: BCACS-I TIME: 2 hours 30 minutes P.M. : 32

SECTION A

Q.I is compulsory. 1 x 15=15

1) The final stable community in ecological succession is:
i) Climax ii) Pioneer
iii)Sere iv) Carnivores

2) World environment day is observed on:
i) 5th June ii)10 August
iii)16 September iv) 2 January

3) National park located in Jharkhand is:
i) Hazaribagh National Park
ii) Lohardaga NationalPark
iii) Dachigam National Park
iv) Rajaji NationalPark

4) Which of the following is not a greenhouse gas?
i)Carbon monoxide ii) Methane
iii)Nitrous oxide iv) Carbon dioxide

5) The importance of ecosystem lies in:
i)Flow of energy ii) Cycling of minerals
iii)Both iv) None of above

6) The pyramid of energy is:
i) Upright ii) Inverted
iii) Both iv) None of above

7) How many biogeographic zones does India have?
i)5 ii) 10
iii)28 iv) 32

8) Cutting of trees on large scale is called:
i) Afforestation ii) Reforestation
iii) Deforestation iv) None of the above

9) Soil erosion can be prevented by:
i)Afforestation ii) Increasing bird population
iii)Overgrazing iv) Removal of vegetation

10) An example of renewable energy source:
i)Coal ii)Petroleum
iii)Natural gas iv) Biomass

11) An example of ex- situ conservation is:
i) Seed bank ii) Sacred grooves
iii) National park iv)Wildlife sanctuary

12) The term "Ecosystem" was given by:
i) Warning ii)Odum
iii)Tansley iv)Hackel

13) The Earth Summit was heldin Rio de Janeiro in:
i)1987 ii)1992
iii)1985 iv)1997

14)Poaching means:
i)Illegal hunting ii)Trafficking
iii)Overgrazing iv)Reforestation

15) Xerarch succession takes place in:
i)Desert area ii)Water filled area
iii)Marshy region iv)None of these

II. Short Answer Questions. Attempt any FIVE **5 *5=25 MARKS**

1. Briefly discuss about ecosystem, its structure and function.
2. Write short notes on ecological succession.
3. Briefly discuss about endemic species of India.
4. Describe various food resources. What are the problems associated with overgrazing?
5. Briefly discuss about role of an individual in conservation of natural resources.
6. Explain water resources. Discuss benefits and problems associated with dams.
7. Write short notes on biogeographical classification of India.
8. What do you mean by Food chain and food web?

III. Long Answer Questions. Attempt any TWO **15 *2=30 MARKS**

1. Discuss about various types of ecosystem and its characteristic features.
2. What do you mean by renewable and non renewable energy resources?
3. Explain threats to biodiversity.How habitat loss and poaching is harmful for biodiversity?
4. What do you mean by natural resources? Also discuss about its types and their characteristic features.

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DATE: 02.03.2022

JHARKHAND RAKSHA SHAKTI UNIVERSITY

SUBJECT: **Programming using C &Data Structure using C** (BCACS-101) F.M. : 50

SEMESTER: BCACS-I TIME: 2 hrs P.M. : 23

Section A

Q. 1 is compulsory 1X10=10

1. Which of the following is the correct way of declaring an array?
   i. intjrsu[10];
   ii. intjrsu;
   iii. jrsu{20};
   iv. array jrsu[10];

2. How can we initialize an array in C language?
   i. intarr[2]=(10, 20)
   ii. intarr(2)={10, 20}
   iii. intarr[2] = {10, 20}
   iv. intarr(2) = (10, 20)

3. Which of the following is the advantage of the array data structure?
   i. Elements of mixed data types can be stored.
   ii. Easier to access the elements in an array
   iii. Index of the first element starts from 1.
   iv. Elements of an array cannot be sorted

4. Which of the following highly uses the concept of an array?
   i. Binary Search tree
   ii. Caching
   iii. Spatial locality
   iv. Scheduling of Processes

5. Which of the following is the disadvantage of an array?
   i. Stack and Queue data structures can be implemented through an array.
   ii. Index of the first element in an array can be negative
   iii. Wastage of memory if the elements inserted in an array are lesser than the allocated size
   iv. Elements can be accessed sequentially.

6. What will be the output of the following code?

```
#include <stdio.h>
int main()
{
  int arr[5]={10,20,30,40,50};
  printf("%d", arr[5]);
    return 0;
}
```

   i. Garbage value
   ii. 10
   iii. 50
   iv. None of the above

7. Which one of the following is the size of intarr[9] assuming that int is of 4 bytes?
   i. 9
   ii. 36
   iii. 35
   iv. None of the above
8. Which one of the following is the process of inserting an element in the stack?
   i. Insert
   ii. Add
   iii. Push
   iv. None of the above

9. Which of the following is a linear data structure?
   i. Array
   ii. AVL trees
   iii. Binary trees
   iv. Graphs

10. Which of the following is not the type of queue?
   i. Priority queue
   ii. Single ended queue
   iii. Circular queue
   iv. Ordinary queue

II. Short Answer Questions. Attempt any FOUR. **5 MARKS**

1. Why does last element of a linked list hold null in its address part?
2. Write a program in C to create an array.
3. Classify ADT queue.
4. Define node in tree.Differentiate between general node and header node of data structure.
5. What is tree traversal? Describe with its types.
6. What is meant by Binary Search Tree? Explain with suitable example.
7. Define graph data structure.

III. Long Answer Questions. Attempt any TWO. **10 MARKS**

1. Discuss linked list with its types.
2. Prepare a queue data structure by demonstrating example and explain with its types.
3. Write a program in C to illustrate bubble sort.
4. Differentiate between merge sort and selection sort with suitable example.

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DATE : 07.03.2022

JHARKHAND RAKSHA SHAKTI UNIVERSITY

SUBJECT: ENGLISH COMMUNICATION BFS-AECC-101 F.M. : 70

SEMESTER: BCACS-I **TIME: 2 hours 30 minutes** P.M. : 32

SECTION A. Select the most appropriate option. 1x15 = 15 MARKS

Q. 1. In the process of communication, "Encoding" is the function of

a. sender
b. receiver
c. observer
d. none of these

Q. 2. Which is the intermediary stage of communication ?

a. Ideation
b. Transmission
c. Response
d. None of these

Q. 3. . Transmission channel in the process of communication can be

a. wired
b. non-wired
c. both "a" and "b"
d. none of these

Q. 4. "Noise" can qualify as a barrier to communication.

a. True
b. False
c. cannot be determined
d. None of these

Q. 5. Barriers to communication can be

a. sender oriented
b. receiver oriented
c. can be both
d. None of these

Q. 6. Method of communication that uses concrete/written words will qualify as

a. verbal communication
b. non-verbal communication
c. both "a" and "b"
d. None of these

Q. 7. Maintaining appropriate distance from the receiver/s while communicating is a part of

a. proxemics
b. haptics
c. kinesics
d. None of these

Q. 8. Movements of hands while communication is referred as

a. gestures
b. posture
c. proxemics
d. None of these

Q. 9. Face to Face communication will come under

a. inter-personal communication
b. non-verbal communication
c. grapevine communication
d. None of these

Q. 10. Communication is

a. a stage
b. a process
c. both "a" and "b"
d. None of these

Q. 11. Locating something in the text while reading is

a. scanning
b. skimming
c. both "a" and "b"
d. none of these

Q. 12. A variety of communication that facilitates business is

a. business communication
b. general communication
c. casual communication
d. none of these

Q. 13. Summary of a given write-up will always be

a. comprehensive
b. short
b. elaborate
d. both "a" and "b"

Q. 14 Communication between/among employees of same designation or rank will be referred as

a. horizontal communication
b. vertical communication
c. external communication
d. none of these

Q. 15. Different channels of communication in any organization give rise to

a. group communication
b. formal communication
c. casual communication
d. None of these

SECTION B. Attempt any Five questions. 5x5 = 25 MARKS

Q. 1. What do you understand by verbal communication ?
Q. 2. Discuss briefly any two types of verbal communication.
Q. 3. What is non-verbal communication ?
Q. 4. Why non-verbal communication is regarded as an important variety of communication ?
Q. 5. What do you understand by barriers to communication ?
Q. 6. How can "noise" create barrier in the process of communication ?
Q. 7. What is diagonal communication ?
Q. 8. Why "skimming" is identified as an important strategy of reading ?

SECTION C. Attempt any Two questions. 2x15 = 30 MARKS

Q. 1. Discuss the process of communication with its different stages in detail.
Q. 2. Discuss any three barriers to communication with suitable examples.
Q. 3. Discuss the importance of any four varieties of non-verbal communication.
Q. 4. Expand the given idea : " A stitch on time saves nine".
Q. 5. Apply for the post of Data Analyst at Logitech Pvt. Ltd. Jamshedpur with respect to an advertisement released on its official website on March 1, 2022. Draft a covering letter and a resume for this purpose.