OPERATING SYSTEMS

Subject Code : BTCS402-18

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTION TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Why do we require an operating system?

2. Can single process cause deadlock? Justify.

3. Compare External and Internal Fragmentation.

4. Why virtual memory is important?

5. Explain the term PCB in brief.

6. What is the relationship between synchronization and mutual exclusion?

7. Why Semaphore is a non-negative integer variable to solve the critical section problem?

8. What do you mean by term Interrupt?

9. List various attributes of a file.

10. Why Deadlock Prevention is Important?

SECTION-B

11. Demonstrate different roles of operating system. (5)

12. Write importance of the following CPU scheduling algorithms:
    (a) Shortest Job First. (2.5)
    (b) Multilevel Feedback Queue scheduling. (2.5)

13. Why Paging is important? How it is implemented? (5)

14. Differentiate between UNIX and Windows based operating systems. (5)

15. How do you solve a Reader Writer Problem? (5)

SECTION-C

16. (a) What is mean by term ‘Layered Architecture’ in OS? (5)
    (b) What is use of Banker’s algorithm? (5)

17. Which Page Replacement algorithms is best? Explain with an example. (10)

18. What is need of different Algorithms of Disk Scheduling? Justify. (10)

Roll No.Total No. of Pages: 02

Total No. of Questions: 18

B.Tech.(CSE)/(IT)

(Sem.–4)

COMPUTER ORGANIZATION AND ARCHITECTURE

Subject Code: BTES401-18

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.

3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly:

a) Define the term *'microoperation'* with an example.

b) Write the functions of computer register.

c) Classify various types of instruction formats.

d) What are main characteristics of RISC processor architecture?

e) Define hit ratio.

f) What is a priority Interrupt?

g) Perform the operation (–29) + (18) with binary numbers represented in signed 2's compliment form.

h) Why DMA controller has a bidirectional address bus?

i) Give an example of delayed branch with the three-segment pipeline

j) What is a microprogram sequencer?

SECTION-B

2. Explain all addressing modes used in a general computer system with example.

3. What is the difference between programmed I/O, interrupt driven I/O and DMA?
4. Explain all the phases of instruction cycle.
5. Design hardware implementation for the signed 2's complement multiplication (Booth algorithm). Also draw flowchart for multiplication of two numbers represented by 2's compliment.
6. Formulate a six-segment instruction pipeline for a computer. Specify the operations to be performed in each pipeline.

SECTION-C

7. What is Associative memory? Explain hardware organization of associative memory.
8. Write short notes on:

   a) How DMA transfer takes place? Explain.

   b) Arithmetic Pipelining.
9. Explain the difference between hardwired control and micro programmed control. Is it possible to have a hardwired control associated with the control memory?

Roll No. ……. Total No. of Questions: 09

B.Tech.(CSE)- Sem.–4 Exam: 2020

DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code: BTCS-403-18

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.

3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly:

(a) What is asymptotic analysis of complexity?

(b) What is recursion?

(c) Write the advantage of brute force strategies.

(d) Give any one application of backtracking.

(e) Which data structure is used in DFS?

(f) Where network flow algorithm is used?

(g) Define NP hard problem.

(h) Write the role of Cook's theorem.

(i) Give one example of approximation algorithm.

(j) Define algorithm.

SECTION-B

2. Write a note on Master's theorem.

3. What is dynamic programming? How it differs from greedy approach?

4. Explain the significance of transitive closure with an example.

5. Explain reduction technique for NP complete problem.

6. What are randomized algorithms? Is there any relation between randomized algorithms

and permutation?

SECTION-C

7. Explain in detail how Knap sack problem can be solved.

8. What is minimum spanning tree? Write one algorithm to generate minimum spanning tree.

9. What is time –space trade off? Explain the concept with the help of one suitable example.

Roll No. ……. Total No. of Questions:

B.Tech.(CSE)- Sem.–4 Exam: 2020

DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code: BTCS-403-18

Time: 3 Hrs. Max. Marks: 60

INSTRUCTION TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.

3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly:

(a) What is asymptotic analysis of complexity?

(b) What is recursion?

(c) Write the advantage of brute force strategies.

(d) Give any one application of backtracking.

(e) Which data structure is used in DFS?

(f) Where network flow algorithm is used?

(g) Define NP hard problem.

(h) Write the role of Cook's theorem.

(i) Give one example of approximation algorithm.

(j) Define algorithm.

SECTION-B

2. Write a note on Master's theorem.

3. What is dynamic programming? How it differs from greedy approach?

4. Explain the significance of transitive closure with an example.

5. Explain reduction technique for NP complete problem.

6. What are randomized algorithms? Is there any relation between randomized algorithms and permutation?

SECTION-C

7. Explain in detail how Knap sack problem can be solved.

8. What is minimum spanning tree? Write one algorithm to generate minimum spanning tree.

9. What is time –space trade off? Explain the concept with the help of one suitable example.

Universal Human values,

HSMC122-18, Dept. of Humanities

Time: 3 Hrs.] **[Total Marks: 60**

Note: This question paper contains three sections. SECTION-A contains Objective type questions, SECTION-B contains short answer type questions and SECTION-C contains descriptive answer type questions.

Section A 10x1

This section contains OBJECTIVE TYPE questions. Attempt ALL questions.

Q1.a. Fill up the blanks:

i. Human values and production skills are ..... to each other.

ii. The basic aspiration of human being is continuous happiness and .....

iii. The animal order is .....of Self and Body too.

iv. Ethical ..... conduct is the need in every profession.

v. The Body is a material unit while the Self is the ..... unit.

Q1.b. Write True/ False:

i. Understanding of human values leads to happiness.

ii. There is no difference between the Self and the Body.

iii. Prosperity in families is not desirable for any harmonious society.

iv. Harmony in the family is a step to the harmony in the society.

v. Plants and material things do not have the sentient (conscious) entity.

Section B 4x5

There are FIVE questions in this section. Attempt ALL questions.

Q2. Explain any three basic guidelines for a proposition to qualify for Value Education with examples.

Q3. What do you understand by self-exploration? Explain with the help of a diagram.

Q4. 'The need for physical facilities is limited and temporary'- explain the meaning of this statement with any two examples.

Q5. What is the difference between intention and competence in relationship? What is the common mistake that all of us keep doing?

Q6. Explain the recyclability in nature with any two examples.

Section C 6x5

There are FIVE questions in this section. Attempt ALL questions.

Q7. Attempt any one part:

a. What do you mean by natural acceptance? Explain. Take any three examples about you to explain that your natural acceptance is innate and invariant.

b. Explain the different levels of human living. Critically evaluate the current state of human living at different levels.

Q8. Attempt any one part:

a. Distinguish between the activities going on in the Self, going on in the Body, and involving both the Self and the Body. Give two examples of each.

b. Make a list of any ten desires of yours. Explain how each of the desire is related to the Self or the Body.

Q9. Attempt any one part:

a. Briefly explain the five dimensions of human endeavour in society, defining each term.

b. Take the case of a village or a colony in a city. Suggest steps you would take as a health-incharge of the area to ensure proper health of every individual in the area.

Q10. Attempt any one part:

a. What do you mean by interconnectedness and mutual fulfilment in nature? Explain with examples for each order.

b. Explain how production activities can be enriching to all the orders of nature. Give any four examples based on your observation.

Q11. Attempt any one part:

a. Today everybody is talking about corruption, which is an unethical practice. What is the basic reason for corruption? Suggest a few steps that can be taken to remove corruption from the society.

b. List some of the specific criteria for holistic evaluation of technologies. Critically review the present advancement of technologies on the basis of any two criteria.