Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: Operating System   **Date: 2080/12/09**

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.

Tick (✔) the correct answer: [10x1=10]

1. Which of the following best describes a characteristic of software?

A) Tangibility - Software can be touched and felt physically.
B) Permanence - Once developed, software remains unchanged indefinitely.
C) Complexity - Software is typically simple and straightforward.
D) Flexibility - Software can be easily modified and adapted to new requirements

2. What is an essential aspect of professional practice in software development?
A) Adherence to coding standards and guidelines.
B) Ignoring user feedback to maintain original design integrity.
C) Avoiding collaboration with other team members to maintain individual control.
D) Using outdated technologies to save costs.

3. Which software development process model is characterized by sequential stages, with each stage dependent on the deliverables of the previous one?
A) Agile   B) Waterfall
C) Spiral   D) RAD (Rapid Application Development)

4. Which software development process model emphasizes iterative and incremental development, with frequent feedback and adaptation?
A) Waterfall   B) V-Model
C) Agile   D) Incremental Model

5. Which of the following describes a functional requirement in software development?
A) It specifies how the system should behave.
B) It outlines the system's performance under various conditions.
C) It details the system's interfaces with external components.
D) It defines the system's security and reliability attributes.

6. Which phase of requirement engineering involves analyzing gathered requirements to ensure they are complete, consistent, and feasible?
A) Elicitation   B) Documentation
C) Validation   D) Verification

7. Which software design principle emphasizes breaking down a system into smaller, manageable parts that are easier to understand and maintain?
A) Abstraction   B) Encapsulation
C) Modularity   D) Cohesion

8. Which concept in software design refers to the degree of interdependence between modules or components?
A) Encapsulation   B) Abstraction
C) Cohesion   D) Coupling

9. Which type of testing primarily focuses on the functionality of the software, without considering its internal structure?
A) Black-box testing
B) White-box testing
C) Gray-box testing
D) Boundary testing

10. Which of the following best describes the ISO 9000 series of standards?
A) Focuses solely on product quality control.
B) Provides guidelines for environmental management.
C) Outlines requirements for quality management systems.

D) Specifies safety standards for industrial machinery.

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Level: BCA **(1st Semester)**   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: Operating System   **Date: 2080/12/09**

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group B
Attempt any six questions.:   **[6 x 3 = 30]**

1. What are the key ethical considerations that software engineers should take into account when developing and deploying software applications?

2. What is software process model? List the types of software process model. Explain agile methods and software prototyping.

3. What is CASE? Explain the importance of CASE tools in software development life cycle.

4. What are the key steps involved in the requirement engineering process, and how do they contribute to ensuring successful software development projects?

5. What is architectural design? Explain layered model of software architecture with example.

6. Define software design concept and modularization? Differentiate cohesion and coupling.

7. What do you mean by verification and validation? Differentiate between Unit Testing and Integration Testing.

Group C
Attempt any two question: **(2*10=20)**

1. What do you mean by software requirement? Differentiate between functional requirement and non-functional requirement. List the functional requirement of E-Attendance system and represent it in context diagram, Level-1 DFD and use case diagram.

2. What are the techniques that are used to elicit and analysis of requirements during software requirement analysis and specification? Explain all.

3. What is Capability Maturity Model? Explain its level along with key process area. Differentiate between alpha and beta testing.

ALL THE BEST

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: **Society and Technology (SET: A)**
Date: 2080/12/09

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A
Choose the correct option: **(10 x 1 =10)**

1. Who is known as father of sociology?
   a) Karl max
   b)Emile Durkheim
   c) August comet
   d) Herbert Sper

2. Which of the following event is more responsible for the emergence of sociology?
   a) Colonialism
   b) Industrial revaluation and French revolution
   c) Renaissance
   d) Economic crisis

3. Culture is of two types, they are
   a) Urban and rural
   b) Hunting and gathering
   c) Agricultural and industrial
   d) Material and Non-material

4. Sociology is the scientific study of
   a) Culture
   b) community
   c) World
   d) Society

5. Which one of the following can be placed under the category of achieved status?
   a) Brahmin
   b) Caste
   c) Doctor
   d) Race

6. Norms are standards of.
     ..behavior.
   a) Individual
   b) Family
   c) Group
   d) All of the above

7. Which of the following is true?
   a) change in technology induces in social structure.
   b) Technology change has nothing to do with social structure.
   c) Social structure remains unchanged.
   d) All of the above

8. The term 'cultural relativism' refers to
   a) A set of values, view or reality, and codes of behavior held in common by people who distinctive way of life
   b) A pattern of assertion of values and facts.
   c) The belief that culture can be understood only in terms of its own values and in its
   d) An extreme sect that calls for radical change in the individual, or society, or both.

9. Interview is a tool for: what do you understand by 'Gender' difference?
   a) Racial differences
   b) Sex differences
   c) Physical difference between male and female
   d) Socially and culturally constructed difference between male and female

10. What is the primary agency of socialization? The process by which individuals learn the society is known as
    a) Acculturation
    b) Enculturation
    c) Assimilation
    d) Accommodation

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Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: Society and Technology (**SET: A**)
Date: 2080/12/09

GROUP B
Attempt any SIX questions: (**6 x 5 = 30**)

11. Define sociology and discuss its nature
12. Show the similarities and differences between sociology and anthropology.
13. What are the major functions of family?
14. Discuss the class based social stratification in Nepalese society.
15. What do you understand by social change? Discuss some of the major factors of social change.
16. Explain consequences of technological development in Nepalese Society.
17. How do societal norms and expectations regarding gender roles influence individuals' behaviors and opportunities?

GROUP C
Attempt any TWO questions: (**2 x 10 = 20**)

18. Define socialization and describe its stages and agents.
19. Discuss historical process of nationhood in Nepal.
20. Do you think technology plays an important role in the development of society? Explain.

ALL THE BEST

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Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: Society and Technology (**SET: B**)
Date: 2080/12/09

GROUP B
Attempt any SIX questions: (**6 x 5 = 30**)

11. How sociology is a general science? Discuss with examples.
12. "Family is a primary social institution". Discuss with suitable examples.
13. Define socialization and describe its stages and agents.
14. What is Technological society? Describe its features in third world society.
15. Discuss the benefits and limitations of cultural immersion experiences, such as studying abroad or participating in cultural exchange programs
16. What is kinship? Discuss it's types.
17. What are the factors of social and cultural changes? Discuss only three factors

GROUP C
Attempt any TWO questions: (**2 x 10 = 20**)

18. Analyze the role of gender norms and expectations in Nepalese society, including recent advancements and ongoing challenges in achieving gender equality and women's empowerment.
19. Discuss the accountability of computer professionals towards society with examples.
20. Explore the use of technology in preserving and promoting Nepal's rich cultural heritage, including initiatives for digitizing historical artifacts and cultural sites.

ALL THE BEST

Level: BCA (**1st Semester**) F.M.: 60
Time: 3:00 hrs. P.M. 30
Course Title: Society and Technology (**SET: B**)
Date: 2080/12/09

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Choose the correct option: (10 x 1 =10)

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   a) Karl max
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   c) August comet
   d) Herbert Sper

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   a) Acculturation
   b) Enculturation
   c) Assimilation
   d) Accommodation

Level: BCA (**1st Semester**)　　　　　　　　　　F.M.: 60
Time: 3:00 hrs.　　　　　　　　　　　　　　　P.M. 30
Course Title: Computer Fundamental and Applications
Date: 2080/12/05

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.
Tick (✓) the correct answer:　　　　　　　**[10x1=10]**

1. **Which of the following is a widely used language for writing client-side scripts?**
    i.　　JavaScript　　　　　　ii.ASP
    iii　　PHP　　　　　　　　　iv. Ruby

2. **The main purpose of JavaScript in web browser is to _____**
    i. Creating animations and other visual effects ii. User Interface
    iii. Visual effects　　　　　　　　　iv. User experience

3. **What will be the output of the following JavaScript code snippet?**
    ```
    <script>
    var x = 10;
    function foo() {
      console.log(x);
      var x = 20;
      console.log(x);
    }
    foo();
    </script>
    ```
    i. 10, 20　　　　　ii 20, 10
    iii. undefined, 20　　iv　ReferenceError: x is not defined

4. **Which of the following is used to create a session?**
    i.　session_start() function　　ii $_SESSION() function

    iii. isset() function　　　　　　iv. session_destroy() function

5. **MySQL is**
    i.　A Programming language　　ii. A Programming language

    iii.　A technique for writing reliable programs　iv. RDBMS

6. **What is the name of the first page you encounter after logging into your web page?**
    i.　　Dashboard　　　　　ii.　　Security question page

    iii.　　WP upgrade option　　iv.　　WP Admin

7. **What does PDO stand for?**
    i)　PHP Database Orientation　　ii.) PHP Data Orientation

    iii)　PHP Data Object　　　　　iv) PHP Database Object

8. **AJAX based on _____**
    i.　JavaScript and XMLVBScript and XML

    ii.　JavaScript and JavaJavaScript and HTTP requests

    iii.　JavaScript and Java

    iv.　JavaScript and HTTP requests

9. **Which of the following method is used to hide the selected elements?**
    i.　visible(false)　　　ii hidden()

    ii.　display(none)　　　iv. hide()

10. **Which of the following determines the look of a Wordpress website?**
    i.　Modules　　　　Database

    ii.　Template　　　　Components

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Level: BCA (**1st Semester**) F.M.: 60
Time: 3:00 hrs. P.M. 30
Course Title: **Computer Fundamental and Applications**
Date: 2080/12/05

Group B

Attempt any six questions: [6*5=30]

11. What is client side scripting? Briefly describe different javscript operators.
12. Explain two HTTP functions to accept the user values from interface with suitable PHP program.
13. What is object orieneted programming? Explain php oop contructor and destructor.
14. Explain Mysql Aggregate functions (sum,avg ,count) with example.
15. What is jQuery? Write jQuery script for hide ( ) and show() html images.
16. What is SQL? Write sql script to create table 'students' having field name id, subject, date and description.
17. Why Ajax is required in web development? Write an sample program to synchronize data between JavaScript and PHP.
18. What is Content Management System? Describe features of Wordpress CMS.

Group C

Attempt ANY two questions [2*10=20]

19. Why to use javascript? Create a form validation using JavaScript Regular expression. Design a form with various fields (e.g., name, email, password,zip and ensure that the user's input meets certain criteria before submitting the form
20. What is PHP session and Cookies?How can we create,access and destroy php session Explain.
21. What is mysql? Write php script for selecting data from mysql table having field name ,rollno, class and address.

ALL THE BEST

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Level: BCA (**1st Semester**) F.M.: 60
Time: 3:00 hrs. P.M. 30
Course Title: Operating System (SET A)
Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.
1. **Tick (✔) the correct answer:** **[10x1=10]**

i) What is the primary function of an operating system?
a) Managing hardware resources b) Running applications
c) Both a and b d) None of the above

ii) Which of the following is not a type of operating system?
a) Batch b) Real-time
c) Standalone d) Interactive

iii) What is the main function of a shell/bash in an operating system?
a) Memory management b) Process management
c) User interface d) File management

iv) What is a process in an operating system?
a) A program in execution b) A file stored on disk
c) An input/output device d) A network connection

v) Which of the following is not a state of a process?
a) Running b) Blocked
c) Ready d) Sleeping

vi) Which algorithm is used for deadlock avoidance?
a) Banker's algorithm b) OSTRICH algorithm
c) Peterson's algorithm d) TSL instruction

vii) What is the role of memory management in an operating system?
a) To allocate memory to processes
b) To free memory when processes terminate
c) To prevent fragmentation d) All of the above

viii) Which disk scheduling algorithm minimizes the seek time?
a) FCFS b) SSTF
c) SCAN d) C-SCAN

ix) What is the advantage of a distributed operating system over a centralized system?
a) Improved reliability b) Improved performance
c) Increased scalability d) All of the above

x) What is the primary difference between DOS and Unix operating systems?
a) User interface b) File system
c) Memory management d) None of the above

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Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: **Operating System (SET A)**
Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group B
Attempt any six questions.:   **[6 x 3 = 30]**

2. What are the different layers in Layered Architecture? What are its advantages and disadvantages?

3. Describe a Dining Philosophers Problem and an option to avoid or solve it.

4. What is race condition? Explain with suitable examples. What are the basic rules in avoiding race conditions?

5. Discuss about different types of memory hierarchy design and its different levels with suitable diagrams and its characteristics.

6. Suppose the order of the requests to be addressed are 82,170,43,140,24,16,190 and head position is at 10, and it is also given that the disk arm should move "towards the larger value" and there are 200 cylinders numbered from 0 - 199. Find the total overhead moment using FCFS, SCAN, C-SCAN and LOOK. Also find out which algorithm is best for the above case.

7. Differentiate between sequential and direct access methods in file systems.

8. Explain two common types of user authentication methods.

9. What are the advantages and disadvantages of Distributed Operating Systems?

GROUP C

Attempt any two questions: **[10 x 2 = 20]**

10. Discuss about SJF with its steps involved in execution. Consider the following set of processes, with the length of CPU burst given in milliseconds. The Process is assumed to arrive in the order of P_1, P_2, P_3, P_4, P_5. Find the following:

- Average Waiting Time and Average Turnaround Time using
  - FCFS algorithm
  - SJF algorithm
  - RR algorithm with quantum $= 2$

- Which algorithm is best among FCFS, SJG and RR? Please explain.

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	5
P_4	1	4
P_5	5	2

11. Describe how deadlock can be avoided with banker's algorithm. Solve the following using banker's algorithm for multiple resources:
A system has four processes P1, P2, P3, and P4 and three resources R1, R2, and R3 with existing resources E = (15, 9, 5). After allocating resources to all the processes available resources become A = (3, 2, 0). State whether the process is safe or not using the banker's algorithm. If safe, write the safe sequence.

Process	Allocation			Maximum			Need		
	R1	R2	R3	R1	R2	R3	R1	R2	R3
P1	3	0	1	3	2	2	0	2	1
P2	5	4	1	6	8	2	1	4	1
P3	2	2	0	3	2	4	1	0	4
P4	2	1	3	4	2	3	2	1	0

12. What is a page replacement algorithm? Find the hit and miss ratio using LRU, FIFO & OPR algorithm where page reference string are 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 and frame size is 3.

ALL THE BEST

Level: BCA (**1st Semester**)　　　　　　　　　F.M.: 60
Time: 3:00 hrs.　　　　　　　　　　　　　　　P.M. 30
Course Title: Operating System (SET B)
Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.

1. **Tick (✔) the correct answer:**　　　　　　[10x1=10]

i) Which of the following is a function of an operating system?

a) Process management　　　　　b) Memory management

c) File management　　　　　　　d) All of the above

ii) What is the purpose of a kernel in an operating system?

a) It is responsible for managing hardware resources.

b) It provides a user interface for applications.

c) It executes user programs.

d) It stores user data.

iii) What is the purpose of system calls in process management?

a) To manage files　　　　　　b) To manage processes

c) To manage memory　　　　　d) All of the above

iv) Which threading model allows multiple threads to run on multiple processors?

a) Many-to-one model　　　　　b) One-to-one model

c) Many-to-many model　　　　　d) None of the above

v) What is the purpose of deadlock detection in an operating system?

a) To prevent deadlocks from occurring

b) To avoid deadlocks by preempting resources

c) To recover from deadlocks　　　　d) All of the above

vi) Which algorithm is used for deadlock avoidance?

a) Banker's algorithm　　　　　b) OSTRICH algorithm

c) Peterson's algorithm　　　　　d) TSL instruction

vii) Which of the following is a page replacement algorithm?

a) FIFO　　　　　　　　　　　b) FCFS

c) LRU　　　　　　　　　　　　d) SJF

vii) Which disk scheduling algorithm minimizes the seek time?

a) FCFS　　　　　　　　　　　b) SSTF

c) SCAN　　　　　　　　　　　d) C-SCAN

ix) What is a Trojan horse in terms of security threats?

a) A program that appears harmless but performs malicious actions

b) A program that monitors system activity

c) A program that replicates itself and spreads to other systems

d) None of the above

x) What is the purpose of clock synchronization in distributed systems?

a) To ensure all system clocks are accurate

b) To prevent deadlocks

c) To improve network performance　　　d) None of the above

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: Operating System (SET B)
Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group B

Attempt any six questions.:   **[6 x 3 = 30]**

2. What is an Operating System and how does it act as an Extended Machine and Resource Manager?

3. Explain various process states and their working mechanism. Discuss the importance of context switching.

4. How does Strict Alteration (Peterson's Solution) Algorithm work? Explain how is helps to achieve mutual exclusion

5. State whether the given processes are in deadlock or not using banker's algorithm. Given that resource instance is 10. If not deadlock, what is the safe sequence?

Process	Allocated	Maximum
A	3	9
B	2	4
C	2	7

6. How does the C-Scan and Look Scheduling algorithms work? Discuss their pros and cons.

7. Explain Access Control Matrix and Access Control List with suitable examples.

8. Define viruses and worms. Briefly describe the concept of a Trojan horse program threat.

9. What are the major similarities and differences between Linux Operating System and Windows Operating System?

GROUP C

Attempt any two questions: **[10 x 2 = 20]**

10. Discuss about SJF with its steps involved in execution. Consider the following set of processes, with the length of CPU burst given in milliseconds. The Process is assumed to arrive in the order of P_1, P_2, P_3, P_4, P_5. Find the following:

   - Average Waiting Time and Average Turnaround Time using
     - FCFS algorithm
     - SJF algorithm
     - RR algorithm with quantum = 1

- Which algorithm is best among FCFS, SJG and RR? Please explain.

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	5
P_4	1	4
P_5	5	2

11. Define Seek Time, Rotational Delay and Transfer Time. Suppose the order of the requests to be addressed are 82,170,43,140,24,16,190 and head position is at 50, and it is also given that the disk arm should move "towards the larger value" and there are 200 cylinders numbered from 0 - 199. Find the total overhead moment using FCFS, SCAN, C-SCAN and LOOK. Also find out which algorithm is best for the above case.

12. What is a page replacement algorithm? Find the hit and miss ratio using LRU, FIFO & OPR algorithm where page reference string are 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 and frame size is 4.

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Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: English (SET: A)   **Date: 2080/12/05**

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Choose the correct option: **(10 x 1 =10)**

1. 'Binary' is the prefix of ....
    a. size   b. location   c. numbers   d. time and order
2. Which is the antonym of 'disparate'?
    a. localized   b. reduce   c. vast   d. enable
3. 'a is not equal to b' is written as …………..
    a. a = b   b. a = b !   c. a ! = b   d. a ! x b
4. 'Shakey' mobile robot at Stanford Research Institute was made in …………..
    a. 1967   b. 1965   c. 1966   d. 1960
5. Which word is the odd one?
    a. virtual   b. internal   c. external   d. conceptual
6. What is 'the user's permitted view of data in a database' called?
    a. machine code   b. internal schema
    c. external schema   d. conceptual schema
7. Identify the synonym for 'course'.
    a. comprehensive   b. path   c. subject   d. curriculum
8. 'The amount of desk space taken by computer' is known as ………….
    a. footprint   b. floor space   c. desk space
    d. computer space
9. Robert T. Morris infected the computer with ……………
    a. Virus   b. Worm   c. Trojan   d. Lehigh
10. ………. Corporation funded the initial research on personal computers.
    a. IBM   b. Apple   c. Xerox   d. Microsoft

GROUP B

Attempt any SIX questions: **(6 x 5 = 30)**

11. Discuss the contribution of multimedia in our life.
12. What is an Operating system and what is its purpose?
13. Databases are used within a medical context for many purposes.' Discuss.
14. What is NCET? What are the four priorities that NCET pursue through IT in school programs?
15. What do you mean by robots? What kinds of jobs can they do? Explain five of them.
16. Write a short note on Eileen Carleton and her experience with aphasia.
17. Explain the hierarchy of Information System with the diagram.

GROUP C

Attempt any TWO questions: **(2 x 10 = 20)**

18. Write a Job application cover letter for the post of a Computer Operator, which was advertised in The Himalayan Times. Also, write a CV of yours as a supporting document for the application.
19. Write a letter of Complaint to Rainbow Computer Pvt. Ltd. about the damaged condition of the computer that you had bought from them.

OR

Your department needs some new piece of equipment to perform work in the office. Write a *memo* requesting for these equipment with a justification for their need. Follow the criteria of Memo-writing.

20. Write an essay on 'Virtual Reality and its impact in the life of the youth' .   **OR**

"Computers in Medicine:

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Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 30
Course Title: English (SET: B)   **Date: 2080/12/05**

Candidates are required to give the answer in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Choose the correct option: **(10 x 1 =10)**

1. 'a is equal to and less than b' is written as ………………..
    a. $a \leq b$ b. $a = \leq b$ c. $a \leq = b$ d. $a \geq = b$
2. The synonym for 'figure out' is ……………
    a. creative   b. choose   c. deduce   d. remove
3. She tried to escape ………… by disguising herself.
    a. detect   b. detection   c. detecting   d. detectable
4. The probe is ……….to heat and light.
    a. sense   b. sensor   c. sensation   d. sensitive
5. Which word is different from others?
    a. sentry   b. cyborg   c. automaton   d. android
6. A strange thing or event is ……………..…….
    a. reformation   b. adaptation
    c. phenomenon   d. fact
7. Our university does not have a Pascal …………….
    a. compilation   b. compiler
    c. compiles   d. compiled
8. Odetics Inc. developed a six-legged robot in ……………..
    a. 1982   b. 1983   c. 1984   d. 1985
9. A device for sending radio message is……………….
    a. transformer   b. transmission
    c. transfusion   d. transmitter
10. What is the antonym of 'records'?
    a. copies   b. erases   c. replicates   d. installs

GROUP B

Attempt any SIX questions: **(6 x 5 = 30)**

11. Explain the hierarchy of Information System with a diagram.
12. What are the advantages and disadvantages of using robots in work?
13. What are the five types of robots? Explain.
14. Explain the Network Configuration 'Star' with a diagram.
15. Discuss the contribution of multimedia in our life.
16. What are the limitations of personal computers? Do you think students should be allowed to use computers in class?
17. Write a newspaper report on an incident related to computer hacking.

GROUP C

Attempt any TWO questions: **(2 x 10 = 20)**

18. Write a Job application cover letter for a Computer Programmer, giving relevant qualifications, experiences, etc. along with a C.V.
19. Write a letter of Complaint related to a computer product/program, giving necessary details.

OR

Your department needs some new piece of equipment for the office. Write a memo requesting for these equipment with a justification for their need. Follow the criteria of Memo-writing.

20. Write an essay on 'Virtual Reality and its impact in the life of the youth'

OR

"Computers in Education"

ALL THE BEST

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 24
Course Title: Digital Logic (SET: A)   Date: 2080/12/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.

Tick (✔) the correct answer: **[10x1=10]**

1. What is a digital-to-analog converter?
   A. It stores digital data on the computer.
   B. It converts alternating current (AC) into direct current (DC).
   C. It converts electrical power into mechanical power.
   D. It takes the digital data from an audio CD and converts it to a useful form.

2. The following hexadecimal number $(1E.43)_{16}$ is equivalent to
   A. $(36.506)_8$
   B. $(36.206)_8$
   C. $(35.506)_8$
   D. $(35.206)_8$

3. How many entries will be in the truth table of a 4-input NAND gate?
   A. 8   B. 16
   C. 32   D. 6

4. Which of the following is an example of an odd parity generator?
   A. 0000   B. 0010
   C. 1001   D. 1001

5. Divide the binary number: $111001 \div 1101$ and find the reminder
   A. 1010   B. 0110

   c. 0101   D. 0011

6. In the SET mode, a NOR RS latch is:
   A. R 0 S1   B. R 0 S 0
   C. R 1 S 1   D. R1 S 0

7. A digital circuit that can store only one bit is a
   A. Register
   B. NOR gate
   C. Flip-flop
   D. XOR gate

8. The Excess 3 code for decimal 485 is:
   A. 011110111000
   B. 011110111001
   C. 011010111001
   D. 011000111000

9. The device that takes multiple inputs and process into single output is:
   A. Encoder   B. Decoder
   C. MUX   D. DeMuX

10. How many selection lines are there a Decoder
    A. 2 Selection lines 1 Enable
    B. 4 Selection lines 1 Enable
    C. 1 selection line   1 Enable
    D. 0 selection line   1 Enable

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 24
Course Title: **Digital Logic (SET: A)**   **Date: 2080/11/08**

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group B

Attempt any six questions: [6*5=30]

11. Subtract: 675.6 – 456.4 using both 10's and 9's complement. and Subtract 1101101 - 1110101 using both 2's and 1's complement.

12. Simplify (using K- map) the given Boolean function F in both SOP and POS using don't care conditions D: B'CD' + A'BC'D
F=B'C'D' + BCD' + ABCD'

13. Draw block diagram, truth table and circuit diagram of 2 to 4 decoder.

14. Draw a truth table, and circuit diagram for BCD to excess-3 code conversion.

15. What is an error detection code? Explain with the circuit diagram of the parity detector.

16. Design 1 to 8 demux circuit using two 1 to 4 demux and 1 1 to 2 demux circuits.

17. Add the following BCD numbers:
    a.   0010+0001 b. 01100100+00110011 c. 0111+0010
    d. 576 + 897   e. 888+222

18.   Design a circuit with a truth table that takes octal number as input and converts into binary equivalent number.

Group C

Attempt two questions [2*10=20]

19. What is a synchronous and asynchronous circuit? Realize a gated NAND and NOR latches with truth table and circuit diageam.`

20. Simplify the following Boolean expression using four variable k-maps:
    a.   w'z + xz' + xy' + wxz'
    b.   AB'C' + B'CD' + B'CD + A'CD' + A'B'C + ABC'D
    c.   wxy + yz + xy'z + x'y

    And draw appropriable circuit diagram for each

ALL THE BEST

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 24
Course Title: **Digital Logic (SET: B)**   **Date: 2080/11/08**

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group A

Attempt all the questions.

Tick (✓) the correct answer: [10x1=10]

1. Which of these sets of logic gates are known as universal gates?

A. XOR, NAND, OR

B. OR, NOT, XOR

C. NOR, NAND, XNOR

D. NOR, NAND

2. Which of the following is an example of an even parity generator?
A. 0000   B. 0010
          C. 0111   D. 1011

3. In the SET mode, a NAND RS latch is:
A. R 0 S1   B. R 0 S 0
          C. R 1 S 1   D. R1   S 0

4. A digital circuit that can store only one bit is a

A. Register

B. NOR gate

C. Flip-flop

D. XOR gate

5. The excess-3 code for 584 is given by

A. 100010110111

B. 100001110111

C. 100010010110

D. 100001010110

6. The device that takes lesser inputs and process into multiple output is:
          E. Encoder   B. Decoder
          C. MUX   D. DeMuX

7. How many selection lines are there in a Encoder circuit
          F.   2 Selection lines 1 Enable
          G. 4 Selection lines 1 Enable
          H. 1 selection line   1 Enable
          I.   0 selection line   1 Enable

8.   A digital circuit whose output cannot be determined when both set and reset are applied logic 1 is:

          J.   Register

          K. NAND latch

          L. Flip-flop

          M. NOR latch

9. What is a multiplexer?

A.   It is a type of decoder which decodes several inputs and gives one output

B. A multiplexer is a device which converts many signals into one

C. It takes one input and results into many output

D. It is a type of encoder which decodes several inputs and gives one output

10. The enable input is also known as _____.
A. Select input   B Decoded input
          C Strobe   D .   Sink

United College
Kumaripati, Lalitpur
PRE - UNIVERSITY EXAM – 2080

Level: BCA (**1st Semester**)   F.M.: 60
Time: 3:00 hrs.   P.M. 24
Course Title: Digital Logic (SET: B)   Date: 2080/11/08

Candidates are required to give the answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group B

Attempt any six questions: [6*5=30]

11. Subtract: 989.65– 654.4 using both 10's and 9's complement. and Subtract 001101 - 110101 using both 2's and 1's complement.

12. Simplify (using K- map) the given Boolean function F in both SOP and POS using don't care conditions D: B'CD' + A'BC'D
    F=B'C'D' + BCD' + ABCD'

13. Draw block diagram, truth table and circuit diagram of 4 to 2 encoder.

14. Draw a truth table, and circuit diagram for BCD to excess-3 code conversion.

15. What is an error detection code? Explain with a circuit diagram of an odd parity generator.

16. Design a full subtractor circuit using two different half subtractors circuits.

17. Add the following BCD numbers:
    b. 0010+0001 b. 01100100+00110011 c. 0111+0010
        d. 576 + 897   e. 888+222

18. Design a circuit with a truth table that takes octal number as input and converts into binary equivalent number.

Group C

Attempt two questions: [2*10=20]

19. What is a sequential and combinational circuit? Realize NAND and NOR latches with their truth table and circuit diagram. `

20. Simplify the following Boolean expression using four variable k-maps:
    d.   wz' + x'z' + x'y + wx'z
    e.   AB'C' + BC'D + BCD + A'CD' + A'B'C + A'BC'D
    f.   wx'y + yz + xy'z' + xy'

And draw an appropriate circuit diagram for each.

ALL THE BEST