PURBANCHAL UNIVERSITY

2022

Bachelor in Information Technology (B.I.T.)/Seventh Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BIT474C0/BIT411CS: Network Programming *(New/Old)*

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Draw the TCP Client/Server functional diagram and describe each unit. Define TCP connection establishment. Why TCP TIME_WAIT state is necessary? 8+2+2

2. What is daemon? Why daemon inetd is known as super server? Write the steps of demonization.

3. Write a UDP Client/Server Program where a client sends a string "Hello" to server and server after receiving it concatenates with another string "World' and sends 'Hello World' back to client.

Group B

Answer SEVEN questions. **7×8=56**

4. What is DNS? Why it is necessary? Write a program to display the hostname of computer. 2+2+4

5. Write the effect of fork and exec on IPC objects. How informations are shared in Unix system? 4+4

6. Explain Byte ordering function in brief.

7. What is socket address structure? Explain IPV4 and IPV6 socket address structure.

8. Why socket options are necessary? Describe five TCP and IPv4 socket options.

9. Under which conditions I/O multiplexing are used? Differentiate between select() and poll() functions. 2+6

10. Describe unicast, broadcast and multicast with respect to LAN.

11. Describe packet filtering using BSD Packet Filter (BPF).

Contd. ...

CamScanner

12. Wite short notes on any TWO: 4+4

(a) Wrapper functions

(b) Socket timeout

(c) Socket pair function.

PURBANCHAL UNIVERSITY

2021

Bachelor in Information Technology (B.I.T.)/Seventh Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BIT474C0: Network Programming *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. What is network programming? Draw the TCP Client/Server functional diagram and describe each unit briefly. 2+10
2. What is UDP? Write a client/server program using UDP. 2+10
3. Explain the byte ordering and byte manipulation functions. 6+6

Group B

Answer SEVEN questions. **7×8=56**

4. What is system call? Explain fork ( ), Pipe ( ), Fifo ( ) and wait ( ) system calls. 2+6
5. Briefly explain various types of I/O Model.
6. Explain generic, IPV4, IPV6 and TCP socket options.
7. What is DNS? Explain how DNS Works with the help of example. Write a program to display operating system name, release, version with the help of uname( ). 1+3+4
8. What is daemon? Why inetd daemon is called 'super server'. Explain the steps of daemonization. 1+2+5
9. Differentiate among unicast, broadcast, multicast and anycast with proper diagram.
10. What is Raw Socket? Explain input and output Raw Socket. 2+3+3
11. Write Short Notes on any TWO: 2×4=8
    (a) UNIX Standard: POSIX
    (b) Iterative Server and Concurrent Server
    (c) SCTP

PURBANCHAL UNIVERSITY
2017

4 Years Bachelor of Computer Application (BCA)/Sixth Semester/*Final*

Time: 03:00 hrs. Full Marks: 60 /Pass Marks: 24

BCA380CO: Network Programming *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Group A

Answer TWO questions. **2×12=24**

1. Draw the TCP Client/Server functional diagram and describe each unit.
2. Write a chat program by using Unix Domain Stream.
3. Describe four IPV4, four IPV6, and four generic socket options.

Group B

Answer SIX questions. **6×6=36**

4. List out the limitations of pipe. Explain the exec( ) family of functions.
5. Write the Socket Address Structure of IPv4, IPv6 and Generic Socket.
6. Explain signal driven input/output.
7. Differentiate Multicasting Vs Broadcasting on a LAN. Explain unicast address.
8. What is Domain Name System (DNS)? Write a program to display operating system name, release, version with the help of uname ().
9. What is daemon? Why daemon inetd is known as super server? Write the steps of daemonization.
10. What is Raw Socket? Describe the need of Raw Socket. What are the inputs and outputs to socket?
11. Explain elementary TCP-UDP Socket.

PURBANCHAL UNIVERSITY

2024

Bachelor in Information Technology (B.I.T.)/Seventh Semester/Final

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BIT428CO: Digital Commerce (Specialization-I)

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. What are the security requirements for e-commerce? Explain cryptography and its significance in executing electronic transactions.
2. Distinguish between digital marketing and display marketing. Explain the components of digital marketing mix.
3. What is the need of firewall? Discuss different types of firewalls.

Group B

Answer SEVEN questions. **7×8=56**

4. What is mobile commerce and what are its types? Explain with examples.
5. Distinguish between digital commerce and electronic commerce. Mention the key digital commerce trends.
6. Discuss on any two popular social media marketing.
7. Write down the applications of artificial intelligence (AI) in business today.
8. What do you mean by B2B? Write down the advantages and disadvantages of B2B business model.
9. Discuss and differentiate between static and dynamic web page.
10. Write down the key features of GPRS, 3G and 4G.
11. Write short notes on Any TWO: 2×4=8

(a) Search engine

(b) Chatbots

(c) SocialGo

Network Programming

BIT474CO

Year: IV **Semester: VII**

Teaching Schedule Hours/Week			Examination Scheme				
Theory	Tutorial	Practical	Internal Assessment		Final		Total
3	1	2	Theory	Practical	Theory	Practical	150
			20	50	80	-	

Course objective

At the end of this course, students will be able to design and implement network client server applications.

Contents

1. **Introduction to network programming** **[5 Hrs]**

   Introduction to computer network: client/ server model, Protocol Suite (ISO/OSI, TCP/IP), Unix Standards (POSIX, Open Group, IETF), Network Utilities (telnet, route, ipconfig, ifconfig, ping, netstat, And ftp) Introduction to programming: wrapper functions, header files, libraries and ports numbers, IP address. Iterative server, concurrent server, networked servers

2. **Elementary operating system calls** **[6 Hrs]**

   System call, program, thread, process, Kernel, fork(), exec() and its family, waitpid(), wait(), pipe(), Fifo(), signals (SIGCHLD, SIGINT, SIGIO). IPC Names, creating and opening IPC channels, IPC names, creating and opening IPC channels, IPC permissions

3. **TCP/UDP transport layer protocols** **[4 Hrs]**

   TCP (Transmission Control Protocol): features, connection establishment and termination, states in communication (LISTEN, TIME_WAIT, ESTABLISHED, BLOCKED) UDP (user datagram protocol): features, uses, comparison with TCP. TCP and UDP buffer sizes and limitations. SCTP

4. **Elementary socket calls** **[5 Hrs]**

   Socket address structure: for IPV4, IPV6, UNIX domain socket and generic socket address structure, value-result argument. Byte ordering and manipulating function: htonl( ), htons(), ntohl(), ntohs(), inet_addr(), inet_aton(), inet_ntoa(), inet_pton()

5. **Elementary TCP-UDP socket** **[6 Hrs]**

   Socket(), connect(), bind(), listen(), accept(), read(), write(), close(), sendto(), recvfrom(),

6. **I/O multiplexing** **[4 Hrs]**

Introduction, I/O models: blocking I/O, non-blocking I/O, I/O multiplexing, signal driven I/O (SIGIO) and asynchronous I/O model. Select(), poll(), shutdown()

7. **Socket options** **[2 Hrs]**
   Getsockopt() and setsockopt() functions, IPV4, IPV6, TCP socket options

8. **Name and address conversion** **[2 Hrs]**
   Domain name system, gethostbyname(), gethostbyaddr(), uname(), getservbyname() and getservbyport(), gethostname() functions, socket timeouts

9. **Unix domain protocol** **[3 Hrs]**
   Introduction, Unix domain socket address structure, socket pair function, Unix domain stream client-server, UNIX domain datagram client/server

10. **Daemon processes, Inetd super servers** **[2 Hrs]**
    Introduction, Sysloged (syslog function), daemon_init function, inetd daemon

11. **Broadcast and multicast** **[3 Hrs]**
    Introduction, Broadcast and multicast addresses, comparison between broadcast, unicast and multicast socket options, Unicast versus Broadcast, multicasat versus broadcast on LAN

12. **IP layers and raw socket** **[3 Hrs]**
    Introduction, raw socket creation, input and output (ping example)

Lab exercise

There shall be lab strictly using c/c++/Java/Linux

- Linux commands
- IPC (Pipe(), Fifo(), Message Queue)
- TCP, UDP and Unix Domain socket client server program
- TCP echo server and client program
- Fork() System call
- Wait() and waitpid() system call
- Uname(), gethostbyaddr(), gethostbyname(), gethostname() system call
- Shell programming

Reference books

- Stevens W. R., "*Unix Network Programming*", Vol-1
- Stevens W. R., "*Unix Network Programming*", Vol-II
- Doglous E. Comer, "*Internetworking with TCP/IP*", Vol-III

PURBANCHAL UNIVERSITY

2019

4 Years Bachelor of Computer Application (BCA)/ Eighth Semester/ *Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BCA451CO: e-Governance

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Differentiate e-Governance and e-Government. How e-government helps to improve economic condition of Nepal? Explain Development stages of c-Government. 2+4+6

2. What is importance of data centers? Explain e-Government architecture and interoperability frameworks with an example in e-Government infrastructure development? 3+9

3. Define key security challenges for government system? Explain an approach to security for e-Government. 6+6

Group B

Answer SEVEN questions. **7×8=56**

4. Explain the way of partnership followed by e-Government. Describe citizen-centric approach to c-Government adoption. 2+6

5. What are the issues in e-Government readiness? Explain different steps to e-Government readiness. 2+6

6. Describe emerging management issues for e-Government system. 8

7. Describe e-Government system life-cycle. Mention design of new e-Government system. 4+4

8. Explain e-Government strategy and managing public data for Government with an example. 2+6

9. What is GIDC? Show comparative analysis of c-Government development in India and China. 2+6

10. Explain different application areas of data warehousing and data mining in brief. 8

PURBANCHAL UNIVERSITY
2018

Bachelor in Information Technology (B.I.T.)/Eighth Semester/*Final*
Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32
BIT480EG: E-Governance (Elective-II) *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. How e-government helps to improve economic condition of Nepal. Explain Development stages of e-Government. 4+8
2. What is Network infrastructure? Why e-Government architecture and interoperability frameworks are needed for e-Government infrastructure development? Explain 3+9
3. Discuss e-government security architecture with the challenges to implement e-government system. 12

Group B

Answer SEVEN questions. **7×8=56**

4. Explain pros and cons of PPP. Describe citizen-centric approach to e-Government adoption.
5. Describe importance of e-Readiness with e-Readiness framework. Explain different steps for e-Readiness framework
6. Discuss management approaches of e-Government system. Describe managing issues for e-Government system
7. Explain the design of new e-government system with its life cycle.
8. Show comparative analysis of e-Government development in India and China.
9. What perspectives, theories, conceptual frameworks, and methods seem particularly useful for the study of the developmental processes and organization of digital government?
10. Define analysis of current reality. Explain the e-Government risk assessment and mitigation.

Contd.

11. Write short notes on any TWO: 2×4=8
    (a) Compare e-Governance and e-Government.
    (b) GIDC
    (c) Cyber laws in Nepal

PURBANCHAL UNIVERSITY

2019

Bachelor in Information Technology (B.I.T.)/Eighth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BIT480EG: E-Governance (Elective-II) *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Differentiate between e-government and e-governance. Describe different stages of e-government. Why public private partnership is required for e-government? 3+4+5

2. What are the challenges in implementing e-government? Describe e-government system life cycle. 4+8

3. Why do we need to formulate e-government strategy? Describe how public data can be managed. 5+7

Group B

Answer SEVEN questions. **7×8=56**

4. Discuss roles of network infrastructure and data center for implementation of e-governance. 8

5. Describe citizen-centric approach to e-government. 8

6. Discuss security standards for e-government. 8

7. Describe e-readiness framework. 8

8. Explain how e-government risk assessment can be achieved. 8

9. Discuss emerging management issues for e-government. 8

10. Define e-procurement. Why government integrated data center is required? 3+5

11. Write short notes on any TWO: 2×4=8

    (a) Cyber laws

    (b) e-suvida

    (c) Security management model

PURBANCHAL UNIVERSITY
2017

Bachelor in Information Technology (B.I.T.)/Eighth Semester/Final
Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32
BIT480EG: E-Governance (Elective-II) *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Compare e-Government with e-Commerce. Explain development stages of e-government and barriers of e-Government implementation. 3+5+4
2. What is Network infrastructure? Why e-Government architecture and interoperability frameworks are needed for e-Government infrastructure development? Explain with an example. 4+5
3. Discuss security challenges to implement e-government system. Explain security standards for e-government. 4+8

Group B

Answer SEVEN questions. **7×8=56**

4. What is PPP? Describe citizen-centric approach to e-Government adoption.
5. Describe importance of e-Readiness with e-Readiness framework. Explain issues in e-government readiness.
6. Discuss management approaches of e-Government system. Describe emerging management issues for e-Government system.
7. What are the major task involved in implementing e-Government? Explain.
8. Explain the e-Government risk assessment and mitigation.
9. Show comparative analysis of e-Government development in South Korea and China.

Contd. ...

10. What perspectives, theories, conceptual frameworks, and methods seem particularly useful for the study of the developmental processes and organization of digital government? Explain.
11. Write short notes on any TWO: **2×4=8**
    ((a) e-Government master plan
    (b) Managing public data in e-Government.
    (c) Security management model.

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PURBANCHAL UNIVERSITY

2019

4 Years Bachelor of Computer Application (BCA)/ Eighth Semester/ *Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BCA451CO: e-Governance

Candidates are required to give their answers in their own words as far as practicable.

Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Differentiate e-Governance and e-Government. How e-government helps to improve economic condition of Nepal? Explain Development stages of c-Government. 2+4+6

2. What is importance of data centers? Explain e-Government architecture and interoperability frameworks with an example in e-Government infrastructure development? 3+9

3. Define key security challenges for government system? Explain an approach to security for e-Government. 6+6

Group B

Answer SEVEN questions. **7×8=56**

4. Explain the way of partnership followed by e-Government. Describe citizen-centric approach to c-Government adoption. 2+6

5. What are the issues in e-Government readiness? Explain different steps to e-Government readiness. 2+6

6. Describe emerging management issues for e-Government system. 8

7. Describe e-Government system life-cycle. Mention design of new e-Government system. 4+4

8. Explain e-Government strategy and managing public data for Government with an example. 2+6

9. What is GIDC? Show comparative analysis of c-Government development in India and China. 2+6

10. Explain different application areas of data warehousing and data mining in brief. 8

PURBANCHAL UNIVERSITY
2018

Bachelor in Information Technology (B.I.T.)/Eighth Semester/*Final*
Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32
BIT480EG: E-Governance (Elective-II) *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. How e-government helps to improve economic condition of Nepal. Explain Development stages of e-Government. 4+8
2. What is Network infrastructure? Why e-Government architecture and interoperability frameworks are needed for e-Government infrastructure development? Explain 3+9
3. Discuss e-government security architecture with the challenges to implement e-government system. 12

Group B

Answer SEVEN questions. **7×8=56**

4. Explain pros and cons of PPP. Describe citizen-centric approach to e-Government adoption.
5. Describe importance of e-Readiness with e-Readiness framework. Explain different steps for e-Readiness framework
6. Discuss management approaches of e-Government system. Describe managing issues for e-Government system
7. Explain the design of new e-government system with its life cycle.
8. Show comparative analysis of e-Government development in India and China.
9. What perspectives, theories, conceptual frameworks, and methods seem particularly useful for the study of the developmental processes and organization of digital government?
10. Define analysis of current reality. Explain the e-Government risk assessment and mitigation.

Contd.

11. Write short notes on any TWO: 2×4=8
    (a) Compare e-Governance and e-Government.
    (b) GIDC
    (c) Cyber laws in Nepal

PURBANCHAL UNIVERSITY

2019

Bachelor in Information Technology (B.I.T.)/Eighth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BIT480EG: E-Governance (Elective-II) *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. Differentiate between e-government and e-governance. Describe different stages of e-government. Why public private partnership is required for e-government? 3+4+5

2. What are the challenges in implementing e-government? Describe e-government system life cycle. 4+8

3. Why do we need to formulate e-government strategy? Describe how public data can be managed. 5+7

Group B

Answer SEVEN questions. **7×8=56**

4. Discuss roles of network infrastructure and data center for implementation of e-governance. 8

5. Describe citizen-centric approach to e-government. 8

6. Discuss security standards for e-government. 8

7. Describe e-readiness framework. 8

8. Explain how e-government risk assessment can be achieved. 8

9. Discuss emerging management issues for e-government. 8

10. Define e-procurement. Why government integrated data center is required? 3+5

11. Write short notes on any TWO: 2×4=8

    (a) Cyber laws

    (b) e-suvida

    (c) Security management model

PURBANCHAL UNIVERSITY

2017

4 Years Bachelor of Computer Application (BCA)/Sixth Semester/*Final*

Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32

BCA381CO: Cloud Computing *(New Course)*

Candidates are required to give their answers in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question is specified along its side.

Group A

Answer TWO questions. **2×12=24**

1(a) Define cloud computing. Explain different entities that are depicted in a cloud computing reference model. 8

(b) Briefly discuss about various issues in interoperability of cloud resources. 4

2(a) What is virtualization? Elaborate its benefits. Explain block and file level storage virtualization. 6

(b) Clarify in brief, how cloud helps reducing capital expenditure? Explain the cloud services provided by Amazon infrastructure from the prospective of a developer. 6

3. Analyze and explain the factors for successful cloud deployment. How Cloud Computing is bringing new security threats and challenges? Explain different threats and vulnerabilities and probable ways to minimize them. 3+4+5

Group B

Answer SEVEN questions. **7×8=56**

4. Explain distributed computing in cloud. 8

5. What is Grid Computing? Explain the standards and architecture of grid computing. 2+6

6. What is data center? Describe data center virtualization. Explain the difference between cloud and traditional datacenters. 1+3+4

7. What are Managed Service Providers? How do they manage single purpose architectures and multipurpose architectures? Explain. 3+5

Contd. ...

8. What is server and machine Virtualization? Explain types and business cases for server Virtualization. 2+6

9. What is mobile cloud computing? Explain its architecture and issues. 2+6

10. What is cloud cube model? Explain in context to Jericho cloud cube model along with its various dimensions. 2+6

11. Write short notes on any TWO: 4+4
    (a) Cloud Security Alliance Stack Model
    (b) Single Sign-On (SSO) and Federated Identity Management (FIDM)
    (c) Network-as-a-Service (NaaS) and Communication-as-a-Service (CaaS)

PURBANCHAL UNIVERSITY
2024

Bachelor in Information Technology (B.I.T.)/Seventh Semester/*Final*
Time: 03:00 hrs. Full Marks: 80 /Pass Marks: 32
BIT402CO: Digital Governance *(New Course)*

Candidates are required to give their answers in their own words as far as practicable. Figure in the margin indicate full marks.

Group A

Answer TWO questions. **2×12=24**

1. What is e-Governance? Differentiate it with e-Government. Discuss different benefits of e-Government. 2+4+6
2. Discuss different challenges of e-Government security and explain the e-Government security architecture. 6+6
3. What is digital democracy? How Internet helps to increase political participation? Discuss the protecting mechanism of democracy. 2+5+5

Group B

Answer SEVEN questions. **7×8=56**

4. What is PPP Model? Explain the issues of PPP for e-Government.
5. What is ICT? Describe e-government architecture.
6. What is e-Government readiness? Discuss e-readiness framework.
7. Describe the different factors for designing new e-Government system.
8. Discuss and differentiate between online service delivery electronic service delivery.
9. What is data center? Discuss different data centers with examples.
10. What is risk mitigation in e-Government system? Discuss different risk mitigation strategies.
11. Describe the different components of an e-Government hybrid system.
12. Write short notes on Any TWO:
    (a) GIDC
    (b) Human Resource Management Software in Nepal
    (c) Recent technologies of ICT