

*Nepal College of Information
Technology*

(Balkumari Lalitpur)

(Affiliated to Pokhara University)

OLD QUESTIONS COLLECTION (2020)

FOR 6TH SEMESTER SOFTWARE

Sugam Stationary Suppliers & Photocopy

Service Ph. No. 9841599592

(NCIT College)

POKHARA UNIVERSITY

Level: Bachelor **Semester – Fall** **Year : 2012**
Programme: BE **Full Marks: 100**
Course: Computer Network **Pass Marks: 45**
Time : 3 hrs.

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

Attempt all the questions.

1. a) How has computer networks changed the lives of people? Illustrate with proper examples. 7
 - b) Describe intra-net, extra-net and inter-net along with their usage, scope and need. 8
 2. a) What are the factors that network designer must consider to establish the topologies of a Network? State and explain client server network model. 8
 - b) Define services and interface. Explain in brief the types of services provided by network layer to its upper layer. 7
 3. a) What are intermediate devices in a network? Specify some of the physical, datalink and network layer devices. Describe how fiber optics cable provides faster, reliable and efficient means for data transmission 8
 - b) Discuss the frame format of PPP and provide its significance in Data Link Layer 8
 4. a) Differentiate Persistent and Non Persistent carrier sense strategies. 7
 - b) Design an algorithm for CSMA/CD. 7
- OR**
1. Classify HDLC- stations and state their characteristics. Explain Flag Bytes with byte stuffing framing method. 7
 - b) Describe the IPv4 Frame format. 8
 2. a) Perform the subnetting of the given IP-address 8
 - b) Subnet mask-255.255.0.0 8
 3. No. of subnets-6 8

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Programme: BE	Full Marks : 100	
Course: Computer Networks	Pass Marks: 45	
	Time : 3hrs.	

- Decode and define IP-address based internet N/W information center.
How unicast, broadcast and multicast addresses identify a host.
- b) Define congestion control. Explain Choke Packet and Token bucket algorithm in detail with a suitable example. 7

- a) Describe the technical aspect of assigning the IP address using DHCP. 8
- Enlist some of the client and server tools used in a network.
- b) What is data encryption? Discuss the role of symmetric and asymmetric key cryptography with a suitable example. 7

7. Write short notes on any two:
a) TCP and UDP Socket call
b) Shortest Path Routing
c) X.25
d) Virtual Private Networks 2x5

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

Attempt all the questions.

1. a) What is a Computer Network? What are the uses of Computer Network? State and explain its necessity. 7
- b) You are appointed as a Network Engineer of new multinational company. How you will choose the new network topology for your organization? 7
2. a) State the characteristic of broadband cable and fibre optics. How does PSTN works. 8
- b) Why we need OSI reference model? Explain various similarities and differences between OSI reference model and TCP/IP reference model. 7
3. a) What is framing. Explain starting and ending flag with bit stuffing with an example. 8
- b) Discuss the frame format of HDLC and provide its significance in Data Link Layer 7
4. a) State and explain the advantages of IPv6 over IPv4. 7
- b) Compare the public IP-address and private IP address. Consider you have given network IP address 205.105.10.10/28. 8
- OR
- Explain about TCP and UDP header format. 7
5. a) What do you mean by congestion in a network? How leaky bucket algorithm reduces the congestion in the network? 8
- b) Compare and contrast distance vector and link state routing algorithm. 8

2nd Aug

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6. a) Discuss the role of DNS. Discuss the role of SMTP and POP in corporate Networks.

b) What is the role of distributed processing in Client/Server Architecture? Discuss TCP Socket Calls with a suitable example.

7. Write short notes on any two:

a) Network Management

b) PICO-Net

c) Virtual Private Networks

5 * 2

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define logical and physical topologies with examples. What is a protocol? Why protocol hierarchy is needed in network architecture?

b) Define the areas where LAN set up is important. Mention different modes of transmission used in computer network.

2. a) Explain the terms Interface and services with reference to ISO - OSI reference model. Also explain the role of physical layer, data link layer and network layer with necessary figures.

b) What do you understand by logical and physical network architecture? Make comparison between star and mesh topology in terms of design architecture, advantages and disadvantages.

3. a) Compare twisted pair cable, Coaxial Cable and Fiber Optic cable on the basis of Bandwidth, Cost, Speed, Attenuation, Cross talk, Implementation

b) What is piggybacking? Explain sliding window protocol with neat figures.

4. Nepal Government has decided to connect 5 University of Nepal together for online data sharing. You as network consultant suggest the Design of the network to the government as directed below.

i. Use IP 192.168.217.0/24, and explain the term "192.168.217.0/24"

ii. Each university will have maximum of 30 hosts and not less than 10 hosts.

iii. Break the network in appropriate domain to full fill the second requirement. Mention subnet range of each university.

iv. Sketch a figure using layer3 device with its subnet network addresses assigned to LAN and WAN.

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v. Explain the no of bit assigned for each subnet and why.	8
5. a) What are Network layer design issues? Explain Distance Vector routing algorithm.	7
b) What is a DHCP server? Describe its role in a Computer Network. Why do HTTP, FTP, SMTP, POP, and IMAP run on top of TCP rather than UDP? Explain.	

6. a) How can you say that cryptography protect your data from intruder. 7

Compare RSA with DES algorithm.

- b) Why socket are called endpoint? Explain TCP Socket call for client and server With example 8

2x5

7. Write short notes on any two:

- a) Shortest path routing algorithm
b) ISDN services
c) CSMA/CD

6. a) What do you mean by IP? Explain header format of IPv6. 7
b) What is congestion? How congestion in a network can be controlled? Explain. 8

6. a) What is routing? State and explain in brief about shortest path routing algorithm. 7
b) How can you transfer mail over Internet? Differentiate POP from IMAP. 8

Level: Bachelor	Semester: Spring	Year : 2013
Programme: BE	Full Marks: 100	Pass Marks: 45
Course: Computer Network	Time : 3hrs.	

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define networking? How can you evaluate computer networks? 5
b) "Extra-Net is more secure than Internet and Intra-Net" verify this statement. 5
c) What is client server network architecture? How it is more secure than peer-to-peer networks? 5
2. a) What are the three reasons for using layered protocols? Also mention two advantages and two disadvantages of having international standards for network protocols. 7
3. a) List out the services of layer 1, layer 2 and layer 3 of the OSI model. 8
b) Compare and Contrast hubs with repeaters. Discuss the network characteristics of X.25. 7
4. a) Discuss mechanism of CSMA/CD along with its application area. 7
b) Why we need subnet? If the given IP-address of a network is 192.168.10.0/25, then calculate the number of subnets and number of hosts per subnet. 8
5. a) What do you mean by IP? Explain header format of IPv6. 7
b) What is congestion? How congestion in a network can be controlled? Explain. 8
6. a) What is routing? State and explain in brief about shortest path routing algorithm. 7
b) How can you transfer mail over Internet? Differentiate POP from IMAP. 8

7. Write short notes on: (Any two) .

- a) Firewalls
- b) TCP socket calls and UDP socket calls
- c) RSA algorithm

2x5

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Level: Bachelor Semester: Fall Year : 2014
Programme: BE Full Marks: 100
Course: Computer Network Pass Marks: 45
Time : 3 hrs.

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

Attempt all the questions.

1. a) An alternative to a LAN is simply a big timesharing system with terminals for all users. Give two advantages of a client-server system using a LAN. 8
- b) Reliability, performance and security are the three essential criteria for a network and an effective and efficient network cannot be designed by ignoring any one of them. Justify your answer. 7
2. a) Define network topology? In what aspects does client server network model varies from peer to peer network model. Justify your answer. 8
- b) List the three reasons for using layered protocols. Mention two advantages and two disadvantages of having international standards for network protocols. 7
3. a) How is hub different than repeater and switch? How does frame relay overcome the limitations of X.25? 8
- b) You have read that the sliding window protocol can be used to implement flow control. You can imagine doing this by having the receiver delay ACKs, that is, not send the ACK until there is free buffer space to hold the next frame. In doing so, each ACK would simultaneously acknowledge the receipt of the last frame and tell the source that there is now free buffer space available to hold the next frame. Explain why implementing flow control in this way is not a good idea. 7
4. a) A large number of consecutive IP addresses are available starting at 192.16.0.0. Let four organizations A, B, C, D request 4000, 2000, 4000 and 8000 addresses respectively. For each of the organizations, give the first IP address assigned and the last IP address assigned and 8

most in CBRN scenarios.

- b) What is choke packet? Explain leaky bucket algorithm with a suitable diagram.
c) Explain DHCP. Explain the symmetric key cryptography for ensuring data security.

- d) What are film sets and cipher texts? Describe the symmetric key cryptography technique.

- e) What are packets? Describe the three-tier architecture for distributed processing in Client Server configuration.

- f) The following character encoding is used in a data link protocol.

A: 01000111 B: 11100011 FLAG: 0111110 ESC: 11100000

- Show the bit sequence transmitted (in binary) for a four-character frame. A BSC FLAG using 'flag bytes with stuffing' method.

2x5

- Write short notes on: (Any two)
a) Types of Network Attacks
b) Distance vector routing
c) Frame format.

- d) What are film sets and cipher texts? Describe the symmetric key cryptography technique.

- e) The following character encoding is used in a data link protocol.

A: 01000111 B: 11100011 FLAG: 0111110 ESC: 11100000

2x5

- Write short notes on: (Any two)

- a) Types of Network Attacks
b) Distance vector routing
c) Frame format.

- d) What is Flow Control? How flow control is managed through Data Link Layer.

- e) You are appointed as a Network Engineer of new multinational company.

- How you will choose the new Network topology for your organization?

- f) Write about Hub and repeaters. Differentiate between OSI and TCP/IP.

- g) Illustrate the guided and unguided transmission media for data communication. How base-band cable is differ from broad-band cable?

- h) What is Flow Control? How flow control is managed through Data Link Layer.

- i) Design an algorithm for CSMA/CD with a suitable example.

- j) If the given IP-address is 192.168.0.0 then first make exactly six subnets and compute number of hosts per subnet.

- k) Why sub-netting is important? A college is planning to design to different departments. Each department consisting of 30 computers with IP address 192.168.218.0/27. Design the subnets.

- l) Differentiate TCP and UDP with a suitable example.

- m) Define congestion. Explain leaky Bucket algorithm with suitable diagram.

- n) Discuss the role of FTP. Explain the operation of DHCP in corporate Networks.

- o) What do you mean by cryptography? Explain private key and public key cryptography with suitable block diagram.

- p) How HTTPS is superior to HTTP? Explain need and scope of virtual private network for modern society.

- q) Write short notes on: (Any two)
a) Classful and Classless Routing
b) Virtual Circuit Switching
c) ISDN Network.

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Level: Bachelor Semester: Spring Year : 2014
Programme: BE Full Marks: 100
Course: Computer Network Pass Marks: 45
Time : 3 hrs.

Candidates are required to give their answers in their own words as far as practicable.
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Attempt all the questions.

1. a) You are appointed as a Network Engineer of new multinational company.

- How you will choose the new Network topology for your organization?

- b) Write about Hub and repeaters. Differentiate between OSI and TCP/IP.

- c) Illustrate the guided and unguided transmission media for data communication. How base-band cable is differ from broad-band cable?

- d) What is Flow Control? How flow control is managed through Data Link Layer.

- e) Design an algorithm for CSMA/CD with a suitable example.

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- g) Why sub-netting is important? A college is planning to design to different departments. Each department consisting of 30 computers with IP address 192.168.218.0/27. Design the subnets.

- h) Differentiate TCP and UDP with a suitable example.

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- j) Discuss the role of FTP. Explain the operation of DHCP in corporate Networks.

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- l) How HTTPS is superior to HTTP? Explain need and scope of virtual private network for modern society.

- m) Write short notes on: (Any two)
a) Classful and Classless Routing
b) Virtual Circuit Switching
c) ISDN Network.

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2015
Programme: BE		Full Marks: 100
Course: Computer Networks		Pass Marks: 45
		Time : 3 hrs.

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

Attempt all the questions.

1. a) What is computer network? Write down the merits and demerits of a computer network. 7
b) Explain the functions of application, presentation and session layers of OSI model in brief. Explain how a bridge updates its bridge table. 8
2. a) Describe how hamming code works for data of 6 bits. Show that it can detect single bit error using an example. 7
b) Compare circuit switching and packet switching. Draw necessary diagram to illustrate. 8
3. a) A bit stream 10011101 is transmitted using the standard CRC. The generator polynomial is x^3+1 . Show the actual bit string transmitted. Suppose the third bit from left is inverted during transmission. Show that this error is detected at receiver end. 8
b) What do you mean by port and socket? Make comparison between TCP socket and UDP socket. 7
4. a) What is unicast and multicast routing? State and explain distance vector routing with an example. 8
b) What is a firewall? Explain about virtual private network with diagram. Also illustrate the application of VPN in real world scenario. 7
5. a) P.U. affiliated College is planning to design 8 different department for civil, computer, management and so on. Each department consists of 28 computers with IP address 192.168.2.18/27. Explain the process how will you allocate the IP address and subnet for each of the departments using above IP. 8
b) What is Virtual Circuit Switching? Explain how Routers build routing table using RIP. 7

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Level: Bachelor Semester: Spring Year : 2015
 Programme: BE Full Marks: 100
 Course: Computer Network Pass Marks: 45
 Time : 3hrs.

6. a) Explain the concept of leaky bucket algorithm and explain how does it solve the problem of congestion in network? 8
 b) What is DNS server and Queries? Explain any one email server 7
 protocol?
7. Write short notes on: (Any two) 2x5
- a) DHCP Principle
 b) IPSEC
 c) SMTP

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

Attempt all the questions.

1. a) You are appointed as a communication and network security engineer of new multinational company. How you will choose the new Network topology for your organization? Discuss with a suitable example. 8
 b) Write about bridge and repeater. Differentiate between OSI and TCP/IP.~~model~~. 3+4
2. a) How optical fiber differ from coaxial cable? How packet switching differs from circuit switching? Explain. 4+4
3. a) What are the services of transport layer? Write about TDM and FDM. 3+4
 b) What is Flow Control? How sliding window mechanism is managed through data link layer. 7
4. a) Design an algorithm for CSMA/CD with a suitable example. 8
 b) The existing network of Pokhara University (10.200.100/22) is to be divided into network of 4 different schools. Among 4 schools two schools need to be subdivided into 3 different departments. Provide a complete IP Address Plan which includes Network Address, Broadcast Address, Usable IP Pool, Subnet Mask and Wildcard Mask. 8
5. a) Differentiate between classful and classless routing. Compare & contrast Link-State and Distance-Vector routing algorithm.. 3+4
 b) Why congestion occurs in the network? Explain various congestion control algorithm in detail with a suitable example. 7
6. a) Discuss the role of DNS. Explain the operation of FTP in corporate Networks. 8
 b) Explain domain addressing. Write about Network management system with its principle components. 3+4

- b) What is firewall? Explain its type. Explain the importance of digital signatures.

7. Write short notes on: (Any two)

- a) VPN
- b) Virtual Circuit Switching
- c) Socket Programming

8
2×5

5. b) What is firewall? Explain its type. Explain the importance of digital signatures.

7. Write short notes on: (Any two)

- a) VPN
- b) Virtual Circuit Switching
- c) Socket Programming

8
2×5

5. b) What is firewall? Explain its type. Explain the importance of digital signatures.

7. Write short notes on: (Any two)

- a) VPN
- b) Virtual Circuit Switching
- c) Socket Programming

8
2×5

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2016
Programme: BE Full Marks: 100
Course: Computer Networks Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Explain the merits and demerits of computer network. List the merits of client-server model over peer-to-peer model. 7
- b) Define interfaces and services. Explain in brief OSI reference model. 8
2. a) Why flow control is required in modern communication system? Explain with example. Write about Hamming code. 8
- b) Explain ISDN architecture. Differentiate circuit and packet switching. 7
3. a) Write the functions of data link layer. Design an algorithm for CSMA/CD. 7
- b) An organization consists of 3 different departments with 20, 24 and 30 computers. Explain how you will design three subnets for the departments by subnetting 192.168.1.0/24 network. Provide network address, broadcast address, subnet mask, wildcard mask and usable IP pool for each subnet. 8
4. a) What are routing algorithms? Discuss their significance and suitability. Differentiate between classful and classless routing. 8
- b) What are the services of transport layer? Write about TCP and UDP sockets. 7
5. a) Why congestion control is important in communication service networks? Differentiate between Open-loop and Closed-loop congestion control. 7
- b) "HTTPS is preferred over HTTP for Secured Transaction". Justify. Write about different protocols used while sending and retrieving mails. 8
6. a) What is data encryption and decryption? Explain the symmetric key cryptography for ensuring data security. 8

b) What is VPN? Explain the importance of Diffie-Hellman key 7

2×5

7. Write short notes on: (Any two)

a) RSA

b) CRC

c) Proxy server

POKHARA UNIVERSITY		Year : 2016
Level: Bachelor	Semester: Spring	Full Marks: 100
Programme: BE		Pass Marks: 45
Course: Computer Network		Time : 3 hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is client server network architecture? How it is more secure than peer-to-peer networks? 7
- b) What are the reasons for using layered protocols? Explains the functions of various layers in OSI reference model. 8
2. a) Compare copper wire and fiber optics with respect to the transmission speed, installation/maintenance, security, cost effectiveness, reliability and flexibility. 8
- b) What are the factors that cause congestion? Explain Leaky bucket and token bucket traffic shaping. 7
3. a) How ISDN interfaces and channel works? 7
- b) Explain the use of Medium Access Control and Logical Link Control over LAN architecture. 8
4. a) Explain and draw a typical cell format of an ATM cell. What is the impact of cell payload in ATM network performance? 5
- b) What are the principles of using symmetric key and public key Cryptography? Explain any one of public key techniques. 5
5. a) Differentiate between HTTP and HTTPS protocol. 5
- b) Why we need subnet? If the given IP-address of a network is 192.168.10.0/25, then calculate the number of subnets and number of hosts per subnet. 8
- c) Discuss about sliding window protocol. Describe mechanism of CSMA/CD along with its application area. 7
6. a) What is Routing Metrics? Explain different protocols used by Interior Gateway Protocols and Exterior Gateway Protocols of IP-Routing Protocols. 6
- b) Why do we need port addressing even though we have local address? Explain about TCP and UDP services and header format. 5
- c) Explain the functionalities of switches, router, bridges, and repeaters. 4
7. Write short notes on: (Any two) 4
- a) VPN 2×5
- b) DNS
- c) CIDR

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2017
Programme: BE	Full Marks: 100	P _{Pass} Marks: 45
Course: Computer Networks	Time : 3hr.	

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

Attempt all the questions.

1. a) Explain different topological models in computer network. 8
 b) Discuss the TCP/IP protocol stack with a suitable example. Also Compare TCP/IP with OSI. 7
2. a) Explain the terms bandwidth, throughput and latency. Explain the working principle of satellite communication system. 7
 b) Compare circuit switching and packet switching. Draw necessary diagram to illustrate. 8
3. a) Explain channel access mechanism in CSMA/CD. 8
 b) What is Error Control? Show how Forward Error Control (FEC) technique will help to detect and correct the error. 7
4. a) Explain HTTP protocol. Describe the difference between SMTP, POP and IMAP servers. 7
5. a) The existing network of Pokhara University (172.31.255.0/22) is to be divided into network of 4 different schools. Among 5 schools two schools need to be subdivided into 4 different departments. Provide a complete IP Address Plan which includes Network Address, Broadcast Address, Usable IP Pool, Subnet Mask and Wildcard Mask. 8
6. a) Explain the difference between distance vector routing and link state routing. 7
 b) What is the role of UDP protocol? Discuss TCP and UDP socket in terms of data transmission and security. 8
7. a) What is Virtual Circuit Switching? Explain how Routers build routing table using RIP. 7
 b) Explain public key cryptography. Explain Diffie-Hellman key exchange. 8
7. Write short notes on: (Any two) 2x5
 - Virtual Private Networks
 - Email Server Protocol: SMTP,POP, IMAP
 - TCP socket

POKHARA UNIVERSITY

Level: Bachelor	Semester: Spring	Year : 2017
Programme: BE		Full Marks: 100
Course: Computer Networks		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Answer all the questions.

1. a) What is client server network? How client server architecture is more secure than peer-to-peer networks? 7
- b) Define Protocol Stack. Compare the different types of networking devices hub, bridge, switch and router. 8
2. a) Compare circuit switching, message switching and packet switching Explain ISDN signaling and architecture 8
- b) Differentiate between error detection and error correction. A bit string 0110111111011111011111110000 needs to be transmitted at the data link layer, what is string actually transmitted after bit stuffing, if flag patterns is 0111110? 7
3. a) Discuss the working principle of CSMA. How is it different from CSMA/CD? Explain with necessary diagram. 7
- b) Define class full and classless Routing. Explain the process of RPF and OSPF. 8
4. a) Define BCN If the given IP address of a network is 192.168.1.227, then calculate the number of subnets and number of hosts per subnet. 8
- b) Define open loop and closed loop congestion control? Explain Leaky bucket and token bucket traffic shaping. 7
5. a) Define DHCP. Explain the iterative and recursive DNS query for name resolution with suitable figure. 8
- b) What is SNMP? Explain the advantages of using network management tools. 7
6. a) Define cryptography. Explain the working principle of RSA. 8
- b) What is hand shaking? Explain TCP and UDP services and header format. 7

7. Write short notes on: (Any two) 2x5

- a) IPSEC
- b) Frame Relay
- c) IPv6

7
2x5

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2018
Programme: BE Full Marks: 100
Course: Computer Network Pass Marks: 45
Time : 3hrs.

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

Attempt all the questions.

1. a) You are assigned to design a network infrastructure for your college. Recommend a network solution with hardware and software in current trend that can be used in the college. Make necessary assumption and justify your recommendation with logical argument where possible. 8
- b) Discuss the Seven Layer of OSI protocol stack. Also compare TCP/IP and OSI with a suitable example. 8
2. a) Explain the parameters for analyzing network parameters. How packet switching differs from circuit switching. 8
- b) Differentiate between error detection and error correction. A bit string 01101111110011111011111111000000 needs to be transmitted at the data link layer, what is string actually transmitted after bit stuffing, if flag patterns is 0111110? 7
3. a) Explain IPv4 header format. Differentiate between IPv4 and IPv6. 8
- b) Design an algorithm for CSMA/CD with a suitable example. 7
4. a) The APNIC Pool for Pokhara University (103.16.32.0/22) is to be divided into network of 7 different schools. Among 7 schools 3 schools need to be subdivided into 2 different departments. Provide a complete IP Address Plan which includes Network Address, 7

Broadcast Address, Usable IP Pool, Subnet Mask and Wildcard
8

Mask.

- b) Differentiate TCP and UDP with a suitable example.

5. a) Why congestion occurs in the network? Explain the types of closed loop congestion control mechanism.

- b) Define DHCP. Explain the iterative and recursive DNS query for name resolution with suitable figure.

6. a) What is SNMP? Explain the advantages of using network management tools.

- b) Explain the working principle of RSA algorithm. If $N = 119$, public key $E=5$, and private key $D = 77$, then demonstrate how to send the character plain text $F=6$ using RSA.

2×5

7. Write short notes on: (Any two)

- a) Interior Routing Protocol

- b) Frame Relay

- c) DNS Server

POKHARA UNIVERSITY

Semester: Spring

Level: Bachelor

Programme: BE

Course: Computer Network

Year : 2018
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

Candidates are required to give their answers in their own words as far as practicable.
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Attempt all the questions.

1. a) Define Local Area Network. Discuss on any five applications of Computer Network.

- b) Why TCP/IP is called implementation model? Explain in brief about OSI model.

2. a) What are different guided Medias? Explain each in brief.
b) What are the main functions of Data Link Layer? Discuss any two flow control mechanisms.

3. a) Discuss on CRC error detection and Hamming code.
b) What are the special IP addresses used in Classful addressing? A multi-national company is granted a site ip 172.16.0. 15. Design an IP table with its subnets.

4. a) Define routed and routing protocol. Explain Distance Vector routing algorithm.

- b) What do you understand by port addressing? Explain TCP header format.
5. a) How does congestion occur in computer network? What are the different mechanisms used in closed loop congestion control?

- b) Discuss on protocols HTTP and SMTP.

6. a) What is cryptography? Write and explain the RSA algorithm.

- b) Discuss on Virtual Private Network with its security issues.

7. Write short notes on: (Any two)

- a) Peer to Peer Model

- b) Frame Relay

- c) Proxy Server

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2019
Programme: BE		Full Marks: 100
Course: Computer Networks		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define Converged Networks. Discuss the merits and demerits of Computer Networks with a suitable example. 7
b) What do you mean by Routing device? Explain design issues of layers. 8
2. a) Explain twisted pair cable on basis of Categories, Connector used, Performance and Application along with its suitable diagram. 7
b) What are the functions of LLC and MAC sub-layer? Discuss different farming approaches used in data link layer. 7
3. a) What is Error Correction? Show how FEC technique will help to detect and correct the error with suitable example. 8
b) Explain the frame format of IPv4 with a suitable diagram. 7
4. a) Differentiate between adaptive and non-adaptive routing. Explain about any intra-AS routing protocol. 8
b) Pokhra University has 3 sub division located at Pokhara as head office, Kathmandu as Examination office and Biratnagar as Contact office with 125, 60 and 29 hosts respectively. Now you as network administrator design the network with below details.
i. All the LANs must implement router as default Gateway.
ii. Ensure that network is secure from inside and outside the network.
iii. Calculate Broadcast, Network, usable address along with subnet and wild card mask. 7
- iv. ISP provide IP address was 10.0.17.0/24 8
5. a) Differentiate TCP and UDP with a suitable example
b) What do you mean by congestion and source of congestion? Explain 8

traffic shaping in detail. 8

6. a) Discuss the role of DHCP. Explain the operation of DNS in corporate Networks. 7

b) What do you mean by Network security? Explain the operation of Data Encryption Standard Algorithm. 2x5

7. Write short notes on: (Any two)

a) Integrated Services Digital Network

b) UDP-Connection less

c) Virtual Private Networks

POKHARA UNIVERSITY

Semester: Spring

Year : 2019

Programme: BE

Full Marks: 100

Course: Computer Network

Pass Marks: 45

Time : 3 hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define Computer Network. Briefly explain the different types of network model. 7

b) Why do you need layered Architecture in network? Compare OSI model with TCP/IP model. 8

2. a) Define transmission media. Explain different types of transmission media in detail. 7

b) What do you mean by framing? List the different framing technique and illustrate bit stuffing with an examples. 8

3. a) Explain the working principle of selective repeat ARQ and point out the merit and demerit of it over Go-Back -NARQ. 7

b) You are given IP Address 150.152.0.0. you need to subnet the given IP into five different Departments. Perform the subnetting and find the subnet mask, Network Address, Broadcast address and usable host address in all subnet. 8

4. a) Explain IPv4 Header format? Differentiate between IPv4 and IPv6. 7

b) What is socket address and communication? Explain the services provided by the transport layer. 8

5. a) What is congestion? Briefly explain different types of technique for Traffic shaping. 7

b) What is SSL? Explain how a request initiated by a HTTP client is served by a HTTP stever. 8

6. a) What is network security? How can firewalls enhance network security? Explain how firewalls can protect a system. 7

b) Compare symmetric key encryption method with asymmetric key encryption. Encrypt the message "READ" using RSA algorithm. 8

2x5

POKHARA UNIVERSITY

29 July

7. Write short notes on: (Any two)

- a) Circuit switching and packet switching
- b) Email server protocol: SMTP
- c) VPN

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is Engineering Economics? Why do you think studying this course is important for engineering students? Justify. 8

b) What do you mean by demand and elasticity of demand? Describe three kinds of elasticity of demand. 7

2. a) Sarita wants to deposit Rs 15000 in every year into a bank at an interest rate of 12 % per year, compounded semi annually. What will be the maturity amount after 5 years? 7

What is time value of money? Explain nominal interest rate and effective interest rate. 7

b) Calculate Present Worth, Future Worth and Annual Worth from the following net cash flows. The MARR is 12 % per year. 8

End of year	Net cash flows (Rs.)
0	-5000
1	-500
2	0
3	1200
4	1200
5	1200
6	1320

3. a) Explain what do you understand by Break-even analysis with a suitable example. 7
- b) Evaluate IRR of the following project, Identify whether the project is feasible or not? Also draw investment Balance Diagram. 8
- Initial Investment- Rs. 25000

POKHARA UNIVERSITY

Level: Bachelor	Semester: Spring	Year : 2013
Programme: BE	Full Marks: 100	Pass Marks: 45
Course: Engineering Economics	Time : 3hrs.	

Annual revenue- Rs. 8000
Salvage value- Rs. 5000
Useful life- 5 years
MARR- 20%

Or

What do you mean by VAT? Explain the importance of VAT system in Nepal

4. a) Bond issued by Everest Bank Ltd. has a coupon rate of 8 percent. Interest is paid quarterly and the bond matures in 5 years. The face value of the bond is Rs. 1000. What is the present value of the bond if market interest rate is 7.5 percent?
- b) Find out the both types of B/C ratio using present worth and annual worth method using the following information.
- | | | |
|--------------------|-----------------|---|
| Initial investment | = Rs. 15,00,000 | 7 |
| Annual benefit | = Rs. 5,50,000 | 8 |
| Annual cost | = Rs. 50,000 | |
| Salvage value | = Rs. 40,000 | |
| MARR | = 12 % per year | |
| Useful life | = 8 years. | |
5. a) We have just purchased a minicomputer at a cost of Rs. 20,000 with an estimated salvage value of Rs. 1000 and a projected useful life of 6 years. If interest is 12% per year, determine.
- Sum of the year digit (SOYD) depreciation.
 - Double rate declining balance depreciation.
- b) Define asset and liability. Explain how balance sheet is prepared and its use with the help of a suitable example.
6. a) Briefly explain sole proprietorship, partnership, private limited and public company.
- b) Explain sunk cost, opportunity cost, fixed cost and variable cost with relevant examples.
7. Write short notes on any two:
- Relationship between journal and ledger
 - Personal tax and corporate tax
 - Common stock and preferred stock
- 2x5
1. a) What are the principles of engineering economics? Explain how the engineering economics and decision making are interrelated?
- b) Suppose that you make a series of annual deposits into a bank account that pays 10% interest. The initial deposit at the end of the first year is Rs 1200. The deposit amounts decline by Rs 200 in each of the next 4 years. How much would you have immediately after the 5th deposit?
- c) An individual makes five annual deposits of Rs 2000 in a savings account that pays interest at a rate of 4% per year. One year after making the last deposit, the interest rate changes to 6% per year. Five years after the last deposit the accumulated money is withdrawn from the account. How much is withdrawn?
2. a) Determine conventional and modified B/C ratio for the given project. The cash flows are as follows:
- | | | |
|----------------------------|-------------|--------------|
| Initial cost | Rs. 500,000 | 10 yrs |
| Life of the project | | 100,000 |
| Salvage value | | 75000 |
| Annual benefits | | 25000 |
| Annual disbursements (O&M) | | |
| Interest rate | | 10% per year |
- Whether the projects is feasible or not?
- b) Evaluate IRR of the following project, identify whether the project is feasible or not? Also draw investment balance diagram.
- | | | |
|--------------------|---------|---|
| Initial investment | 250,000 | 7 |
| Annual Revenues | 60,000 | |
| Annual cost | 15000 | |
| Useful life year | 10 | |
| MARR | 10% | |

3. a) A n costs Rs 50,00,000 and has a useful life of ten years. It's estimated salvage value at the end of the year ten is Rs 20,00,000.

Determine the depreciation for years one through ten using

- The 200% declining method and
- SOYD method.

- b) Find the both types payback period of the project with the following cash flow status.

EOY	Cash flow (Rs)
1	300,000
2	70,000
3	85,000
4	90,000
5	100,000
6	120,000
7	130,000
8	

4. a) Define bond and stock. Explain their features in brief.
b) Two mutually exclusive projects are shown below:

M	N
Capital Investment	Rs 5,00,000
Net Annual Revenue	Rs 1,10,000
Salvage Value	Rs 40,000
Useful life (Years)	3
MARR	10% per year

Select the best project by using PW method.

5. a) What do you mean by Journal and ledger? Describe briefly the relationship between the journal and ledger.

- b) Define business organization. Explain briefly the characteristics of private limited company and public limited company.

6. a) State law of demand and supply. Describe different types of elasticity of demand

- b) Explain the application of cost accounting concepts in engineering decisions.

2x5

7. Write short notes on: (Any two)

- VAT
- Taxation Structures in Nepal
- Balance sheet.

2

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2014
Programme: BE Full Marks: 100
Course: Engineering Economics Pass Marks: 45
Time : 3 hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- a) Define demand, supply and utility. Explain about elasticity of demand.
- b) What are the principles of Engineering Economics? Explain why studying Engineering Economics is fruitful to engineering student.

2. a) Find present equivalent from the cash flow given if interest rate is 11% per year using uniform gradient method.

End of year	Cash Flow
1	400
2	600
3	800
4	1000
5	1200
6	1400

सुप्रभात देवतार्थी संस्कृत
वालकुमारी लोगोलाल १८७५१९१२
NCTR College

- b) A father deposits a sum of Rs. 1,00,000 in a bank for his son's education who will be admitted to a professional course after 5 years. The bank pays 12 % interest rate per year, compounded monthly. Find the future amount of the deposited money at the time of admitting his son in the professional course.
- c) How many deposits of Rs. 5,000 each should make per month so that the final accumulation amount will be Rs. 1, 00,000 if the bank interest rate is 12% per year?
- a) What are the causes for depreciation? If a machine costing of Rs. 4, 00,000 is estimated 10 years useful life and Rs.50, 000 salvage value. Find depreciation amount for each year by using declining balance and sinking fund methods.

- b) Evaluate IRR for the following project and decide whether the project is acceptable or not? Also draw the unrecovered investment balance diagram.

Initial investment	Rs. 5,00,000
Annual revenue	Rs. 1,20,000
Salvage value	Rs. 30,000
Useful life year	10

8%

MARR

8%

4. a) Define cost benefit cost analysis. Find out the both types of B/C ration using present worth and annual worth method.

- Initial investment = Rs. 4,00,000
- Annual benefit = Rs. 1,50,000
- Annual cost = Rs. 30,000
- Salvage value = Rs. 50,000
- MARR = 12 % per year
- Useful life = 8 years

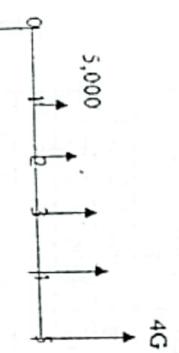
- b) What is business organization? Explain the characteristics of partnership business.

5. a) What is accounting? Write the rules for Debit and Credit.
- b) What are the differences between trading account and profit and loss account? What are the elements used in balance sheet?

8

6. a) Calculate PW of the following two mutually exclusive projects by using repeatability assumption when MARR is 10%.

A	B
Initial cost Rs. 4,00,000	6,00,000



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

Attempt all the questions.

1. a) Define Engineering Economics. Explain its principles.
- b) What is meant by elasticity of demand? Describe all types of price elasticity of demand with suitable figures.

2. a) Find the value of G if $i=12\%$

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Engineering Economics

Semester: Spring
Year : 2014
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

Y

Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

- b) Describe manufacturing cost and non manufacturing cost with examples.
3. a) Evaluate IRR of the following project, identify whether the projects is feasible or not? Also draw investment Balance Diagram.

Initial investment	Rs. 10,00,000
Annual Revenues	Rs. 240000
Annual Cost	Rs. 60000

Useful life year	10 years
MARR	10%

- b) A new machine costing Rs. 250000 is estimated to have life of 10 years and expected annual revenue is Rs. 50000 with annual cost Rs. 12500. Determine the investment decision based on PW formulation to this machine, if salvage value is Rs. 70000 and MARR is 10% per

year. Make also cash flow diagram.

4. a) Find both types of W/C ratio (Conventional and Modified) using AW formulation of the following projects and find whether the project is feasible or not.

Initial Investment	Rs.5,00,000
Annual Revenue	Rs.80,000
Annual O&M Cost	Rs.15,000
Salvage value	Rs.10,000
Life	20 yrs.
MARR	10%

- b) Make a selection from the following two mutually exclusive alternatives.

Alternative	A	B
Capital Investment (Rs.)	45000	600000
Annual Revenue (Rs.)	22000	26000
Annual Expenses (Rs.)	7450	11020
Useful Life (yr.)	6	8
Market Value (Rs.)	25000	28000
MARR	10%	10%

Make repeatability assumption method.

5. a) Consider following accounting information for a computer system.

Cost basis of the asset=Rs.40,000

Useful life=5 yrs

Estimated salvage value= Rs.2,500

Compute the annual depreciation and resulting book value using double declining balance method.

- b) prepare balance sheet of ABC Company from the following information as on 31st December 2014.

Capital	40000	Building	30000
Sundry debtors	15000	Furniture	12500
Cash in hand	4000	Cash at bank	7500

year. Make also cash flow diagram.

7

- Find both types of W/C ratio (Conventional and Modified) using AW formulation of the following projects and find whether the project is feasible or not.

Bank overdraft	8500	Trade Payables	6500
Smiley Creations	3500	Closing stock	2500
Receiving funds	4500	Net profit	20500

8

6. a) Write the fundamental equation of accounting. Explain Concept
recognizing and cost recording.

b) What do you mean by tax? Explain the term personal tax and corporate tax.

c) What are short notes on (Any two)

d) Types of depreciation.

e) Public Private Partnership.

f) Value added tax (VAT).

25

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2015
Programme: BE		Full Marks: 100
Course: Engineering Economics		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define Engineering Economics. Discuss about principles of engineering economics in project formulation and selection. 8

- b) Following are the data for the production of a 100 badminton racquets:

Labour rate: Rs. 40/hr

Leather: 50m at Rs. 200/metre

Gut: 300 m at Rs. 50 /meter.

Graphite: 100kg at Rs. 200/kg

Total annual factory overhead : Rs. 500000

Total annual direct labor hours: 25000 hrs

Total annual direct Labour hours: 25000 hrs

Labour hours needed: 200 hrs.

Show the cost breakdown and calculate the total cost for per racquet. 8

2. a) Explain time value of money. What is the efficient interest rate if the nominal rate is 9% per year, a 365 day year is used and the compounding period is (a) yearly (b) quarterly (c) daily (d) hourly (e) daily (f) continuously?

- b) Determine the internal rate of return of the following project. Also present unrecovered investment balance in graph & table. 8

Initial investment	= Rs. 150,000
Life spans of project	= 5yrs
Annual revenue	= Rs.3000
Operation cost	= 2000
Salvage value	= 8%
MARR	

- a) Find both types of B/C ratios using PW formulation for a project having first investment cost Rs. 100000, project life 10 yrs , Salvage value Rs. 20000, annual benefit Rs. 75000, annual O&M cost Rs.

15000 & MARR = 10%.

- b) Compare the following two mutually exclusive projects by using Co-terminated assumption when MARR is 10%.

	Project A	Project B
Initial cost	Rs. 1,150,000	Rs. 2,00,000
Annual revenue	Rs. 90,000	Rs. 1,00,000
Annual O & M cost	Rs. 20,000	Rs. 22,000
Useful life Year	5	8
Salvage value	Rs. 50,000	Rs. 1,00,000

- a) perform sensitivity analysis of the following project over the range of $\pm 25\%$ in i) Initial investment ii) Annual revenue iii) Useful life.

$$\text{Initial investment} = 11,500$$

$$\text{Annual revenue} = 3,000$$

$$\text{Salvage value} = 1,000$$

$$\text{Useful life} = 6 \text{ years}$$

$$\text{MARR} = 20\%$$

- b) What are the causes for depreciation? A machine is costing of Rs 5,00,000 with estimated salvage value Rs 5,000 at the end of 5th year. Find depreciation amount by i) Straight line ii) Declining balance methods for each year.

5. a) The following is trial balance of Acharya company.
- | Particulars | Debit(Rs) | Credit(Rs) |
|---------------------|-----------|------------|
| Capital | | 2,00,000 |
| Plant & machinery | 50,000 | |
| Furniture & fitting | 75,000 | |
| Motor van | 24,000 | |
| Sundry debtors | 40,000 | |
| Cash at bank | 70,000 | |

- b) From the following cash flow information, calculate PW, AW and FV by assuming rate of interest is 7% per year that compounds semi annually.

EOY	0	1	2	3	4	5
Cash flow	-3,00,000	80,000	90,000	90,000	90,000	1,20,000

7

6. a) Define debt & equity financing. What is there difference between them. If Asian Electric company presently pays a dividend of Rs. 12 per share & has a share price of Rs.110. The expected growth was 8% for ever, then what is the required return on equity?

- b) What do you mean by payback period? Find simple and discounted payback periods and justify investment with the given cash flow information;
- | | |
|--------------------|--------------|
| Initial investment | Rs. 4,00,000 |
| Annual revenue | Rs. 1,50,000 |
| Annual cost | Rs. 30,000 |
| Salvage value | Rs. 1,00,000 |
| Useful life year | 5 |

- MARR 10% Payback 2.5

7. Write short notes on: (Any two)
- VAT
 - Financial Ratios
 - Effective Interest rate
- ISF

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2015
 Programme: B.E Full Marks: 100
 Course: Engineering Economics Pass Marks: 45
 Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is meant by Engineering Economics? Describe its importance in engineering field. 7
 - b) What is meant by cross elasticity of demand? Describe all types of cross elasticity of demand with suitable figures. 8
 2. a) Ms. Sharma is planning for her retired life and has 10 more years of service. She would like to deposit 20% of her salary, which is Rs 4000 at the end of first year and thereafter she wishes to deposit the amount with an annual increase of Rs 1000 for the next 9 years with an interest of 10%. Find the total amount at the end of 10th year. 7
 - b) The first investment cost for a project is 500000. The net annual revenue from the end of first year onwards are 300000, 250000, 200000, 150000 and 50000 for five years. Determine whether the above investment is feasible or not if MARR = 15% 8
 3. a) Find out the B/C ration using present worth and annual worth method.
- | | |
|--------------------|-----------------|
| Initial investment | = Rs. 6,00,000 |
| Annual benefit | = Rs. 2,50,000 |
| Annual cost | = Rs. 30,000 |
| Salvage value | = Rs. 40,000 |
| MARR | = 12 % per year |
| Useful life | = 8 years |
- b) Calculate the simple and discounted payback period of the following project. 7
- | | |
|---------------------|------------|
| Initial investment | = Rs 50000 |
| Life of the project | = 8 years |

Annual revenue = Rs. 15000
Operating cost = Rs. 2000
MARR = 10%
Salvage value = Rs. 5000

- a) Evaluate the following two feasible investments A and B having different useful lives, if MARR is 10 % per year. Use PW method with repeatability assumptions.
- | | Investment of A (Rs.) | Investment of B (Rs.) |
|--------------------|-----------------------|-----------------------|
| Investment | 50,000 | 150,000 |
| Net annual revenue | 25,000 | 70,000 |
| Net annual cost | 3000 | 2000 |
| Salvage value | 15,000 | 40,000 |
| Useful life | 3 years | 5 years |

- b) Evaluate IRR of the following project and identify whether the project is feasible or not?

Initial investment, = Rs. 6,00,000
Annual revenue = Rs. 2,50,000
Annual cost = Rs. 50,000
Useful life = 15 years
Repair and maintenance cost at 4th and 8th year = Rs 30,000
MARR = 10 % per year

- a) A machine costing of Rs 100,000 is estimated to have life of 10 years. The salvage value of the machine at the end of life is Rs 20000. Find depreciation charge and book value of each year and tabulate it. Use straight line and sum of years digit (SOYD) method.
- b) Explain analytically the following ratios:
- Debt ratio
Current ratio and Quick ratio / acid test ratio

OR

What do you mean by balance sheet, income statement and cash flow? Explain.

- a) What do you mean by independent, dependent and mutually exclusive

project? Develop the combination of each project with suitable example.

b)

Following information has been obtained regarding two motors.

	Standard motor	New Motor
Size	100 hp	100 hp
Cost	130000	156000
Life	20	20
Salvage	0	0
Efficiency	89 %	93 %
Annual maintenance cost	8000	2500
Annual tax/insurance	2 % of investment for each	
MARR	10 %/Year	

Find at what operating hours are they equivalent?

7. Write short notes on: (Any two)

- a) Corporate tax
b) Methods of financing
c) Ecological limit and ecological footprint
d) Ledger and journal

2x5

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall Year : 2016
Programme: BE Full Marks: 100
Course: Engineering Economics Pass Marks: 45
Time : 3hrs.

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

Attempt all the questions.

1. a) Define demand, supply and utility. Explain about elasticity of demand. 7
b) What are the principles of Engineering Economics? Explain why Studying Engineering Economics is fruitful to engineering student. 8
2. a) Sabina deposits a sum of Rs. 10, 00, 000 in a bank at an interest rate of 12 % per year. What will be the future amount after 5 years?
If compounded
 - i. weekly
 - ii. quarterly and annually. 9
3. a) Evaluate the following project by the simple payback period, present worth and future worth method. The cash flows of the project are as follows: if the MARR is 12 % per year. 8

End of year	Net cash flows (Rs.)
0	-700
1	-400
2	125
3	200
4	800
5	220
6	320

	Investment of A(Rs.)	Investment of B(Rs.)
Investment	50,000	150,000
Net annual revenue	25,000	70,000
Net annual cost	3000	2000
Salvage value	15,000	40,000
Useful life	3 years	5 years

- b) Evaluate IRR of the following project and identify whether the project is feasible or not.

Initial investment = Rs. 6,00,000

= Rs. 2,50,000

= Rs 50,000

= 10 years

Repair and maintenance cost = Rs 30,000

= 10 % per year.

7

4. a) A machine costing of Rs 100,000 is estimated to have life of 10 years. The salvage value of the machine at the end of life is Rs 20000. Find depreciation charge and book value of each year and tabulate it. Use straight line and sum of years digit (SOYD) method.

b) Find out the B/C ration using present worth and annual worth method.

8

- Initial investment = Rs. 6,00,000
Annual benefit = Rs. 2,50,000
Annual cost = Rs. 30,000
Salvage value = Rs. 40,000

MARR
Useful life
= 12 % per year

5. a) What are the advantages of company? What are the features of partnership firms?

- b) What is life cycle cost? What are the differences between financial accounting and cost accounting?

6. a) Select which project is feasible to invest among other alternative projects whose cash flows are as follows: if MARR is 10 % per year. Use IRR method and incremental analysis if necessary.

	Investment of A (Rs.)	Investment of B (Rs.)
Investment	50,000	150,000
Net annual revenue	25,000	70,000
Net annual cost	25,000	70,000
Net annual cost	3000	2000
Salvage value	15,000	40,000
Useful life	7 years	7 years

5

- b) What do you mean by independent, dependent and mutually exclusive project? Explain with suitable examples.

7. Write short notes on: (Any two)

- a) Methods of financing
b) VAT
c) Stock and Bond
d) Types of cost.

मुम्बई शहरी पालिका समिति
वालामगरी, नवी मुंबई - 400092
NCIT College

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2016
Programme: BE Full Marks: 100
Course: Engineering Economics Pass Marks: 45
Time : 3hrs.

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

Attempt all the questions.

1. a) Define engineering economics and explains it's principles. 7
b) Explain manufacturing and non-manufacturing cost, opportunity cost and opportunity cost. 8 1
2. a) What do you mean by time value of money? Point out the difference between Nominal and Effective Interest rate with example. 7
b) A man aged 40 years now had borrowed Rs 5,00,000 from bank for his further studies at the age of 20 years . Interest was charged at 11% per year compounded quarterly .He wish to pay loan in semiannual equal installments with the first installment beginning 5 year after receiving the loan. He has just clear his loan now what amount did he pay in each installments. 8
3. a) Explain with example why the decision criteria of present worth (i.e. PW or net present value NPV) conflicts with decision criteria of IRR and how this can be overcome. 8
- b) Determine Both types of B/C ratio using present and annual worth method for the given project if interest rate is 12%, 7
4. a) Use repeatability assumptions to Recommend the best project from following information; 7

Investment	6,00,000
Life	8 Years
Annual Revenue	2,00,000
Annual Cost	60,000
Salvage Value	2,00,000

Project	A	B
Initial Investment(Rs)	40,000	50,000
Net Annual Revenue(Rs)	15,000	20,000
Salvage Value(Rs)	5,000	6,000
Life	5	5
MARR	15%	

b) Find the IRR, MIRR, Pay Back Period, Discounted Pay Back Period of the following project. (Assume MARR=10%)

Year	0	1	2	3	4	5
Amount(Rs)	(15000)	1000	2000	4000	5000	8000

5. a) What are the significance of financial statements in business? Explain the financial statement with its type.

b) From the following information find the annual depreciation and the book value of each year by Straight line, Declining balance, SOYD and sinking fund method.

Initial Cost=Rs. 7000
Useful Life=5 Year
Salvage Value=Rs.2000
MARR=10%

6. a) Explain the golden rule of accounting. Define the term ratio analysis what are it's types explain in brief.

b) Perform the sensitivity analysis using PW method in initial investment, annual revenue and useful life and draw graph. (choose the suitable range that you prefer)

Initial Investment=1,00,000
Annual revenue=40,000
Annual expenses=5,000
Salvage value=1,000
MARR=12%

2x5

7. Write short notes on: (Any two)

- a) Mutually Exclusive, Contingent and Independent Project
- b) Ecological limit and ecological footprint
- c) Project funding mechanism

POKHARA UNIVERSITY

Level: Bachelor
Semester: Fall
Programme: BE
Course: Engineering Economics

Year : 2017
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

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

Attempt all the questions.

- a) What do you mean by engineering economics? Explain the importance of engineering economics in business projects.
- b) Explain opportunity cost, marginal cost and sunk cost with example.

- a) Calculate the future worth of the following cash flows deposited at 8% compounded continuously for 5 years.
 - Rs 50,000 at the beginning of each year.
 - Rs 50,000 at the end of each year.

- b) A company is investing the purchase of new equipment. Interest rate is 9%. The cash flow for the equipment is as follows: Initial investment Rs 50,000, annual operating cost Rs 2,000, annual income Rs 9,000 and salvage value Rs 10,000, life 10 years.
 - Is this investment worth undertaking?
 - What should be the minimum annual benefit for marking it a worthy of investment at 9% rate of return?

- a) Evaluate the following project whose cash flows are given below. Use simple payback period, present worth and future worth method. MARR is 10 % per year.

End of Year	Net cash flows (Rs.)
0	-600
1	-500
2	125
3	300
4	1,000
5	220
6	320

- b) Select which project is feasible to invest among two following alternative projects whose cash flows are as follows. MARR is 12 % per year. Use IRR method and incremental analysis.

2

7

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2017
 Programme: BE Full Marks: 100
 Course: Engineering Economics Pass Marks: 45
 Time : 3hrs.

Particulars	Project A (Rs)	Project B (Rs)
Initial investment	6,50,000	5,00,000
Net annual revenue	2,50,000	2,00,000
Net annual cost	50,000	40,000
Salvage value	75,000	50,000
Useful life	8 years	8 years

4. a) What do you mean by project risk? Explain briefly about the methods of project risk management.
 b) What do you mean by payback period? Find simple and discounted payback periods and justify invested with the given cash flow information:

Initial investment: Rs. 4,00,000

Annual revenue: Rs. 1,50,000

Annual cost: Rs. 30,000

Salvage value: Rs. 1,00,000

Useful life year: 5

MARR: 10%

5. a) Pokhara Photocopy Center is considered to purchase a new photocopy machine costing Rs 100,000 and expected salvage value Rs 30,000 at the end of 10th year. The machine will save Rs 20,000 by consuming electricity of Rs 6,000 per year. Find IRR and interpret your result when MARR is 8% per year.

- b) A construction equipment has initial cost and annual saving per year are of Rs 40,000 and Rs 20,000 respectively with annual operating

- and maintenance cost of Rs 7,000. It will depreciate by MARCS method and will have no salvage value. The useful life of equipment is 5 years. Estimate before and after tax cash flow. The company pays income tax @ 40%.

6. a) What do you know about equity financing and debt financing? Explain ways to project funding mechanisms by giving example.
 b) Define accounting. How do you formulate an accounting equation? What are the major ratios that can be applied in decision making process?

2x5

7. Write short notes on: (Any two)
 a) Ecological limit and sustainable development
 b) Project funding mechanism
 c) Balance sheet

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

Attempt all the questions.

1. a) What are principles of engineering economics? Explain the importance of engineering economics in business projects.

OR

- What do you mean by utility, marginal utility and diminishing law of marginal utility?

- b) Define manufacturing cost, non-manufacturing cost and differential cost and differential revenues with suitable examples.

2. a) How many deposits of Rs. 25,000 each should Mr. A make each month so that the final accumulated amount will be Rs. 10,00,000 if interest rate is 12% per year.

- b) Suppose we have a project with the following cash flows; Outgoing: Rs 150,000 at beginning of year 1, Rs 250,000 at beginning of year 2, and some more Rs 250,000 at beginning of year 3; Income: Rs 1 million at end of year 3. Find the IRR of the project. (If MARR = 20%) Is the project feasible?

3. a) Compare the ERR with PW method of selecting the project with suitable example that you know which one is the superior and why?
 b) Determine both type of B/C ration using present and annual worth method for the given project if MARR is 12% and make a decision whether you select or reject this project

Investment	10,00,000
Life	12 Years
Annual Revenue	1,80,000
Annual Cost	40,000
Salvage Value	1,20,000

4. a) For the project with cash flow given below find the most sensitive factor among annual benefit, annual cost and salvage value if they changes by $\pm 20\%$.

8

Project	Rs.2,00,000
Initial investment	Rs.1,00,000
Annual revenue	Rs. 40,000
Annual Cost	Rs. 50,000
Salvage Value	10%
MARR	5
Life in years	7

- b) What do you mean by ecological footprint? How ecological limits can be overcome to attain sustainable development?

9

5. a) Select which project is best to invest among following two feasible investments A and B having different useful lives, if MARR is 10 % per year. Use PW method with repeatability assumptions.

	Investment of A (Rs.)	Investment of B (Rs.)
Investment	5,50,000	6,50,000
Net annual revenue	2,25,000	2,70,000
Net annual cost	30,000	50,000
Salvage value	70,000	80,000
Useful life	5 years	8 years

6

- b) A machine costing of Rs 200,000 is estimated to have life of 10 years. The salvage value of the machine at the end of life is Rs 50000. Find depreciation charge and book value of each year and tabulate it. Use SOYD method.

8

6. a) What are the methods that are used in calculating the depreciation in economics? Write their advantages and disadvantages.

7

- b) What do you mean by ration analysis? Explain in detail the types of ratios that are used in engineering economics.

7

7. Write short notes on: (Any two)

2×5

- a) VAT

1

- b) Cost of capital, cost of equity and cost of debt

1

- c) Dependent project, independent project and contingent project

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2018

Full Marks: 100

Pass Marks: 45

Time : 3hrs.

Course: Engineering Economics

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is Demand? What are the factors affecting demand of a commodity? Describe the law of Diminishing Utility with neat sketches.

1+2+4

- b) Define Prime cost, Overhead cost, Fixed Cost, variable Cost, Opportunity cost, Sunk Cost; Marginal cost and differential cost.

8

2. a) Define interest and time value of money. How does Compound interest differ with simple interest? Why does bank use concept of compound interest instead of simple interest? What is the interest rate if your amount will be double in 5 years?

2+2+2

- b) Define nominal and effective interest rates. If you have Rs. 10,00,000 loan now from a bank, how much Rs should you pay as installment per two month for 5 years if bank interest rate is 12% per year?

8

3. a) A machine costs Rs. 1200000 now and its useful life is 5years. Its Salvage value is expected to be Rs. 500000. Calculate depreciation in each year and corresponding salvage values using sinking fund method and double declining balance method.

8

- b) Differentiate between IRR and ERR. Calculate both IRR and ERR of the following cash flow. Explain why these values are different.

2+5

Year	0	1	2	3	4	5
Cashflow	-1100	250	-300	400	500	600

4. a) Find both types of BCR using FW formulation where initial investment is Rs. 50000; Annual income is Rs.10000 and decrease by Rs. 10000 per year; annual cost is Rs.20000 and increases by Rs 2000 per year; Useful life is 10 years and Salvage value is Rs. 150000. MARR = 11%.

- b) How many hours per day would the following motors have to be operated at full load for a motor of capacity 2 hp, for breakeven?
 $MARR = 10\%$.

	Motor A	Motor B
Purchase price	350000	500000
Efficiency	75%	90%
Life - years	5	7
Maintenance cost/year	25000	15000
Tax and Insurance/year	5000	10500

5. a) Use repeatability assumption to select the best project. MARR = 10%

Project	Initial Investment	Annual Income	Life	Salvage Value
A	2000	1000	3	
B	3000	1200	5	20 % of Initial investment
C	4000	1500	7	

5. a) Use repeatability assumption to select the best project. MARR = 10%

Debit Balance	Amount	Credit Balance	Amount
Closing Stock	30000	Capital	250000
Sundry debtors	50000	Gross profit	122000
Plant and Machinery	225000	Dividend received	1250
Goodwill	14500	Interest received	750
Land and Building	135000	Sundry creditors	39000
Salaries and Wages	27500	Reserve fund	50000
Rent	7500	Bank loan	50000
Selling Expenses	12500	Bank Overdraft	23500
Cash in Bank	10000		
Deposit with Custom	7500		
Advertisement	5000		
Investment	12000		
Total	536500	Total	536500

- b) Perform sensitivity analysis of the following project over a range of -10% to +30% in initial investment; -10% to +10% in Useful life and -20% to +20% in MARR. Draw Sensitivity diagram and decide the most sensitive parameter.

Initial Cost	Annual Income	Useful Life	Salvage Value	MARR
20 crore	3 crore	30 yrs	0	10%

2x5

- b) What are the sources of Project Finance? Explain the advantages of Debt Financing. If interest on debt is 12%, dividend to share holders are 15%. Calculate weighted average cost of capital if Debt is 70% and Equity is 30%. Tax rate is 20%.

- c) Concept of Sustainable Development
d) Ecological Limit

2

6. a) Differentiate between net profit and Gross Profit. From the following trial balance prepare P/L Account and Balance sheet.

2+6

POKHARA UNIVERSITY

Level: Bachelor
Semester: Spring
Programme: BE
Course: Engineering Economics

Year : 2018
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

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

Attempt all the questions.

1. a) What is engineering economics? Why do you think studying this course is important for engineering students? Justify. 8
- b) Explain manufacturing, non-manufacturing, sunk and opportunity costs with suitable example. 7
2. a) Ramesh, an engineer is planning to place 20% of his salary, which is Rs. 25000 per year at present, each year in mutual fund. He expects 7% of his salary increase each year for next 15 years. If the mutual fund will average 10% annual return, what will be the sum amount at the end of 15 years? If salary increase by Rs. 25000 per year. What will be the amount? 8
- b) A multipurpose hydroelectric project under consideration of the government, whose estimated benefits and costs expected to be derived from the project, are listed as below: 7

End of year	Annual cash flow (Rs.)
Initial Cost	18000000
Annual power sales	12000000
Annual flood control saving	5000000
Annual irrigation benefits	8000000
Annual recreation benefits	4000000
Annual operating and maintenance costs	5000000

Suggest, based on B/C ratio, the government about implementing the project of life 40 years. MARR = 15%.

5. a) An investment of Rs. 100,000 can be made in a project that will produce uniform annual revenue of Rs. 62,100 for 5 years and then have a market salvage value of Rs. 20,000. Annual expenses will be Rs. 30,000 each year. Company accepts projects that earn 10% or more. Evaluate IRR of this project and suggest whether the project is feasible or not? Also draw an investment balance diagram.

- b) Recommend the best project from the following two projects assume repeatability
- | Project | A | B |
|--------------------------|----------|----------|
| Initial Investment (Rs.) | 4,00,000 | 7,00,000 |
| Annual Revenue (Rs.) | 1,75,000 | 2,50,000 |
| Annual Cost (Rs.) | 25,000 | 35,000 |
| Salvage value (Rs.) | 40,000 | 70,000 |
| Useful life | 6 yrs | 8 yrs |
| MARR | 12% | 12% |

- c) Consider the following three sets of mutually exclusive alternatives:

EOV	D ₁ (Rs.)	D ₂ (Rs.)	D ₃ (Rs.)
0	-2000	-1000	-3000
1	1500	800	1500
2	1000	500	2000
3	800	500	1000

- d) Define ecological limit and sustainable development. Discuss ways for sustainable development.

- e) A company has purchased equipment whose first cost is Rs.10000 with an estimated life of 5 years. The estimated salvage of the equipment at the end of its life time is Rs. 2000. Determine the depreciation charge and book value at 3 and 4 years using the straight line and Sum of Years Digits (SOYD) method of depreciation.

- f) a) Describe income statement and balance sheet with their format. How are they related to each other?

- b) What is financial ratio? Explain major financial ratios that can be applied in decision making process in business.

- g) Write short notes on (Any Two):

- a) Nominal Rate Versus Effective Rate

- b) Sources of project risk

- c) Corporate tax

- d) e) Consider the following three sets of mutually exclusive alternatives:

Alternatives

Project	A	B
Initial Investment (Rs.)	4,00,000	7,00,000
Annual Revenue (Rs.)	1,75,000	2,50,000
Annual Cost (Rs.)	25,000	35,000
Salvage value (Rs.)	40,000	70,000
Useful life	6 yrs	8 yrs
MARR	12%	12%

Which project would you select based on BCR method on incremental investment assuming that MARR = 15%.

- b) From the following information, conduct scenario analysis based on FW formulation. Assume I=2.25,000, MARR=13.5%, and life of project is 5 years. Also give your remarks based on results of different scenarios.

Variable Considered	Worst Case Scenario	Most Likely Scenario	Best Case Scenario
Annual Sales	86,000	1,10,000	137,000
Annual Variable Cost	37,000	40,000	38,000

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2019
Programme: BE		Full Marks: 100
Course: Engineering Economics		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What do you mean by demand, elasticity of demand and types of elasticity of demand 8
 - b) Explain manufacturing cost, non-manufacturing cost, opportunity cost and marginal cost with suitable examples. 8
 2. a) Suppose a farmer want to save money semi-annually in a financial company for the engineering education of his daughter of 2 years old, How much money he needs to save per period if she need 20, 00,000 when her age will be 18 years old. The company compounded the money semi-annually and interest rate is 12%. 7
 - b) An investment of Rs. 1, 00,000 can be made in a project that will produce uniform annual revenue of Rs.50,000 for five years with annual cost of Rs 20000 and then have a market (salvage) value of Rs.5,000. If company has policy to accept any project that will earn 10% per year or more, on all invested capital. Calculate the discounted payback period and show whether this is a desirable investment by using the Present worth method. 8
 3. a) Compute discounted payback period and modified B/C ratio from the following data. 8
- | | |
|--------------------|---------------|
| Initial investment | Rs. 10,00,000 |
| Annual revenue | Rs. 1,80,000 |
| Annual cost | Rs. 60,000 |
| Salvage value | Rs. 1,50,000 |
| Useful life year | 10 |
| MARR | 5% |
- b) Select the best project by using IRR method when MARR is 8%. Use incremental analysis if necessary. 7

	Project A	Project B
Initial investment	3,00,000	5,00,000
Annual revenue	1,50,000	1,75,000
Life Year	6	6
Salvage value	70,000	1,00,000

4. a) From the given information select the best project using co-terminated assumption. Useful life = 5 years.

Items	X	Y	Z
Initial Investment	50000	40000	30000
Annual revenue	20000	15000	14000
Annual expenses	15000	10000	8000
Useful life	5 years	7 years	9 years
Salvage value	1000	500	0
MARR	10%	10%	10%

- b) A company is considering the purchase of second-hand computers at a cost of Rs.10,500 each with an estimated salvage value of Rs.500 and a projected useful life of four years. Determine the annual depreciation and book values using double declining Balance with conversion to Straight Line depreciation method.

5. a) Which motor would you select if you have to operate 12 hours a day?

	Motor A	Motor B
Purchase Price	Rs.3,00,000	Rs.4,00,000
Capacity	2 HP	2 HP
Efficiency	75%	90%
Annual Cost	Rs. 30,000	Rs. 25,500
Electricity Cost	Rs 10 per kWh	Rs 10 per kWh
Life in years	5	7

- b) Explain analytically the following ratios:

- i. Debt ratio
- ii. Current ratio and
- iii. Quick ratio / acid test ratio
- iv. Cost of capital

OR

What do you mean by balance sheet, income statement and cash flow diagram? Explain.

6. a) Briefly explain about ecological limit, overcoming ecological limit and sustainable development.

- b) What do you mean by income statement and balance sheet? Develop their formats and discuss the relationships and differences between them?

8
2x5

7. Write short notes on: (Any two)

- a) FIRR and EIRR
- b) VAT
- c) Ratio analysis for making decision.

POKHARA UNIVERSITY

Semester: Spring	Year : 2019
Level: Bachelor	Full Marks: 100
Programme: BEng	Pass Marks: 45
Course: Engineering Economics	Time : 3 hrs.

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

Attempt all the questions.

1. a) What do you understand by engineering economics? Explain its seven principles and importance in business or engineering projects. 8
 b) Define interest and time value of money. How does Compound interest differ with simple interest? Why does bank use concept of compound interest instead of simple interest? What is the interest rate if your amount will be double in 5 years? 8
 2. a) What is depreciation? A photocopy machine is costing of Rs. 4,60,000 with estimated salvage value Rs. 12,000 at the end of 6th year. Find yearly depreciation amount and book value by (i) Double declining balance conversion to straight line method (ii) Sum of years digit (SOYD) method. 7
 - b) Consider an investment project with the following cash flow. 7
- | End of Year | Net cash flow |
|-------------|---------------|
| 0 | -2,30,000 |
| 1 | -70,000 |
| 2 | 0 |
| 3 | 80,000 |
| 4 | 1,20,000 |
| 5 | 1,70,000 |
- Compute the IRR for this investment and determine its acceptability at MARR=10% and draw also an investment balance diagram. 8
3. a) Define cost benefit analysis. Find out the both types of B/C ratios using present worth and annual worth method. 8
- Initial investment = Rs. 5,00,000
 Annual benefit = Rs. 1,50,000
 Annual cost = Rs. 30,000
 Salvage value = Rs. 40,000
 MARR = 12% per year
 Useful life = 6 years

POKHARA UNIVERSITY

Year : 2011
Semester – Spring
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

Level: Bachelor
Programme: B.E.
Course: Multimedia Systems

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

The figures in the margin indicate full marks.

Attempt all the questions.

- b) Define ecological limit and sustainable development. Discuss ways for sustainable development. 7
4. a) Perform sensitivity analysis using PW method over a range of (+/- or -) 20 % in a) initial investment b) net annual revenue and c) salvage value 8
- | | |
|-------------------------|-----------------|
| Initial investment (Rs) | = 2,00,000 |
| Annual revenues (Rs) | = 50,000 |
| Annual expenses (Rs) | = 5,000 |
| Salvage value (Rs) | = 25,000 |
| Useful life | = 10 yrs |
| MARR | = 12 % per year |
- b) Draw also the sensitivity graph. 7
- a) What are the sources of Project Finance? Explain the advantages of Debt Financing. If interest on debt is 12%, dividend to share holders are 15%. Calculate weighted average cost of capital if Debt is 70% and Equity is 30%. Tax rate is 20 % 7
5. a) What is the taxation system in Nepal please describe in brief? 7
- b) Describe income statement and balance sheet with their format. How are they related to each other? 8
6. a) Evaluate the following two projects A and B having different useful lives, if MARR is 15 % per year. Use PW method with co-terminated assumptions. When MARR is 10 % per year. 8
- | | Project A (Rs.) | Project B (Rs.) |
|--------------------|-----------------|-----------------|
| Initial Investment | 40,00,000 | 50,00,000 |
| Annual revenue | 15,00,000 | 20,00,000 |
| Annual cost | 5,00,000 | 7,00,000 |
| Salvage value | 5,00,000 | 6,00,000 |
| Useful life | 5 years | 7 years |
- b) What is financial ratio? Explain major financial ratios that can be applied in decision making process in business. 7
7. Write short notes on: (Any two) 2x5
- Ecological foot print
 - Quick Acid Test
 - Benefit Cost Ratio
1. a) Define multimedia. In terms of multimedia explain different types of medium. 7
- b) Explain briefly the generation, analysis and transmission of speech methods for animation different from video? What is the general requirement for smooth digital video motion? Mention the various methods for animation control. 7
2. a) What do you understand by the term digitization of a picture? How resolution, pixel depth affects the size of an image. Explain with any two necessary calculations. 8
- b) What are the characteristics of EDTV and HDTV system? Explain briefly. 8
3. a) Explain briefly about the different roles of data compression standards. 7
- b) What are the different types of frames used in a Explain briefly about the different types of frames used in a EDTV system? 8
4. a) What is MPEG? What are the different types with necessary diagram. 7
- b) What is MPEG compression? Explain all four types with necessary diagram. 7
- c) What is the difference between CD-ROM mode 1 and CD-ROM mode 2? Illustrate with a block layout for both types and also calculate the capacity in both modes. 8
5. a) What is a resource in terms of multimedia? Compare earliest deadline and rate monotonic process management in term of resource utilization and context switching. 8
- b) Differentiate digital and hybrid systems. What are the main components of a multimedia workstation? 7

6. a) Illustrate the basic operation of optical storage media.

b) Differentiate between SGML and ODA document architecture.

7. Write short notes on any two:

a) MIDI reception modes

b) JPEG compression

c) Hypermedia system

8
7
 2×5

Level: Bachelor
Programme: BE
Course: Multimedia Systems

POKHARA UNIVERSITY
Year : 2011
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Explain the various image recognition steps. 5

b) What is a speech recognition system? Mention the features of speaker independent recognition system? 5

c) What is a medium? List the different types of medium. 5

2. a) What are the various methods of controlling animation? Explain briefly. 5

b) Discuss about the visual aspect of a video signal. 3

c) What is clustered -dot ordered dithering? 5

3. a) Describe the Huffman encoding process with an example. 2

b) Point out why H. 261 px64 uses limited motion search. 8

c) Explain the Lossy Sequential DCT-based mode of JPEG after the input image has been prepared for compression. 8

4. a) Explain about the formats of CD-ROM Extended Architecture. 5

b) Explain how error handling is done in CD-DA. 2

c) What is the role of Video RAM in the video processor in DVI 2

still-image processing? 7

5. Define real time systems. Explain the characteristics of real time OS. 7

b) Discuss about the Hybrid systems for communication architecture. How does it differ from Digital systems? 8

6. a) Define hypertext and hyper media with example. Differentiate between ODA and MHEG with suitable block diagram. 8

b) Mention and briefly describe the different layers of hypertext system architecture. 4

c) What is the significance of a MIDI message? List the types of MIDI messages. 3

7. Write short notes on any two:
a. SGML 2
b. Eight to fourteen modulation 3
c. MPFG audio encoding 3

2×5

6. a) Illustrate the basic operation of optical storage media.

b) Differentiate between SGML and ODA document architecture.

7. Write short notes on **any two**:

a) MIDI reception modes

b) JPEG compression

c) Hypermedia system

8
7
 2×5

Level: Bachelor
Programme: BE
Course: Multimedia Systems

POKHARA UNIVERSITY
Year : 2011
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Explain the various image recognition steps.
b) What is a speech recognition system? Mention the features of

speaker independent recognition system?

c) What is a medium? List the different types of medium.

d) What are the various methods of controlling animation? Explain

briefly.

e) Discuss about the visual aspect of a video signal.

f) What is clustered –dot ordered dithering?

g) Describe the Huffman encoding process with an example.

3. a) Describe the Huffmann encoding process with an example.

b) Point out why H.261 px64 uses limited motion search.

c) Explain the Lossy Sequential DCT-based mode of JPEG after the

input image has been prepared for compression.

4. a) Explain about the formats of CD-ROM Extended Architecture.

b) Illustrate with the appropriate block layouts.

c) Explain how error handling is done in CD-DA.

5. a) What is the role of Video RAM in the video processor in DVI

still-image processing?
still-image processing?
still-image processing?
still-image processing?

a) Define real time systems. Explain the characteristics of real time

OS.

b) Discuss about the Hybrid systems for communication

architecture. How does it differ from Digital systems?

6. a) Define hypertext and hyper media with example. Differentiate

between ODA and MHEG with suitable block diagram.

b) Mention and briefly describe the different layers of hypertext

system architecture.

c) What is the significance of a MIDI message? List the types of MIDI

messages.

7. Write short notes on **any two**:

a) SGML

b) Eight to fourteen modulation

c) MPEG audio encoding

2×5

POKHARA UNIVERSITY

Level: Bachelor Semester - Fall Year : 2012
 Programme: BE Full Marks: 100
 Course: Multimedia Systems Pass Marks: 45 Time : 3hrs.

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

Attempt all the questions.

1. 2) Define Multimedia System. Explain properties of Multimedia System. 8

5) Write requirements of speech generation? Explain the problems in time-dependent sound concatenation. 7

2. a) Sketch image recognition steps. "Enhanced Definition Television System is conventional system modified to offer improved resolution". Justify the statement. 7

3. 2) Differentiate between JPEG and MPEG Compression Techniques. 8
 b) What is run length coding? Construct the Huffman code for. 7

Gray Level	0	1	2	3	4	5	6	7
No. of Pixel	5320	1600	500	525	1236	965	856	128

4. a) Explain briefly the principle of CD-Magneto. 8
 b) What is CD-ROM? Explain CD-ROM in terms of Mode 1 and Mode 2. 8

5. a) What is MOS? Describe the relevancy of real time for multimedia system and explain congestion avoiding dead line. 7
 b) What do you understand by Hybrid Systems. Explain briefly main components of a multimedia workstations. 8

6. a) Define hypermedia. What are the different layers of hypertext system architecture? 7
 b) Explain the multimedia document architecture and its elements. How multimedia document is different from text document? Explain briefly. 7

7. Write short notes on any two:
 a) HDTV
 b) DVI
 c) Preemptive and Non-Preemptive Task Schedule 2x5

POKHARA UNIVERSITY

Semester: Spring Year : 2013
 Full Marks: 100 Pass Marks: 45
 Programme: BE Time : 3hrs.
 Course: Multimedia System

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

Attempt all the questions.

1. a) Define multimedia. Explain the different criteria that are used to classify media. 8
 b) Explain data stream characteristics for continuous media with practical examples. 8

2. a) Define the term speech. Explain the Time-dependent and Frequency-dependent Sound Concatenation. 7
 b) Write down the steps of Image Recognition. Explain each step with suitable diagram. 8

3. a) Define source coding. Construct the Huffman code for. 8
 b) Explain various television broadcasting standard formats. 8
 c) Why we need to compress the data? Explain the major steps for data compression. 8
 d) Explain the working principle of CD_WO with suitable diagram. 8

4. a) Explain the differences between CD-ROM mode-1 and CD-Rom mode 2 with appropriate diagram. 8
 b) Define Deadline in terms of Multimedia Operating System. What is real time system? Briefly explain the properties of real time system. 7
 c) Define hypermedia. What are the different layers of hypertext system architecture? 8

- b) Differentiate between SGML and ODA document architecture. 8
 c) Preemptive and Non-Preemptive Task Schedule 7

7. Write short notes on: (Any two)

- a) Animation Languages
- b) DVI
- c) MPEG.

Level: Bachelor	Semester: Fall	Year : 2013
Programme: BE	Full Marks: 100	Pass Marks: 45
Course: Multimedia System	Time : 3 hrs.	

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | | |
|----|---------------------------------|---|-----|
| 1. | a) | Define application domain? Explain the different criteria that are used to classify media in the multimedia system. | 8 |
| | b) | Explain different steps of image recognition. | 7 |
| 2. | a) | What do you mean by Omni On/Poly and Omni Off/Mono? Explain the steps of speech recognition and understanding with a diagram. | 8 |
| | b) | What is an animation? Describe various types of animation languages. | 7 |
| 3. | a) | Explain Lossy Sequential DCT-based mode of JPEG after the input image has been prepared for compression. | 8 |
| | b) | Explain the purpose of different types of frames used by MPEG compression technique. | 7 |
| 4. | a) | Explain the format of CD-ROM (XΛ) form-1 and CD-ROM (XΛ) form-2. Illustrate above with a block diagram. | 8 |
| | b) | What is source coding? Explain Huffman coding with an example. | 7 |
| 5. | a) | What is multimedia work station? Explain the communication architecture of a multimedia system. | 8 |
| | b) | Define real time system. Explain the characteristics of real time OS. | 7 |
| 6. | a) | Define hypermedia. Differentiate between ODA and SGML. | 8 |
| | b) | Explain MHEG with a suitable diagram. | 7 |
| 7. | Write short notes on: (Any two) | | |
| | a) | Video disk and other WORMS. | 2×5 |
| | b) | MIDI | |
| | c) | H.261. | |

POKHARA UNIVERSITY

Level: Bachelor	Semester: Spring	Year : 2014
Programme: BE		Full Marks: 100
Course: Multimedia System		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define multimedia. Explain the application areas of multimedia.
b) How is speech generated? Explain about speech analysis and transmission. 8
2. a) Explain different steps of image recognition.
b) What is flicker effect? Explain the Computer Video Format. 7
3. a) What is an animation? Describe various types of animation languages.
b) What is run length coding? Construct the Huffman code for:

Gray Level	0	1	2	3	4	5	6	7
No. of Pixel	5300	750	500	500	1250	950	850	100

8
4. a) Differentiate between lossy and lossless data compression. Is JPEG lossy or lossless, explain.
b) Explain the working principle of CD-MO. 7
5. a) Explain the format of CD-ROM (XA) form-1 and CD-ROM (XA) form-2. Illustrate above with a block diagram.
b) What is the principle of CD-ROM. Differentiate between Flash Drive and USB Storage. 8
6. a) Define hypermedia. Differentiate between ODA and SGML architecture.
b) Why is Quality of Service important for multimedia communication system? Explain QoS Layered Model for the multimedia communication system. 7
7. Write short notes on: (Any two)
a) Multimedia Real Time System.
b) Hypermedia System.
c) Session Management. 2x5

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2014
Programme: BE		Full Marks: 100
Course: Multimedia System		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What is Multimedia? Explain global structure of multimedia system.
b) What are the four MIDI reception modes? Explain. 7
2. a) Define the term speech. Explain the components of speech recognition and understanding.
b) Explain the Image recognition steps. Draw necessary figure. 8
3. a) What is run length coding? Construct the Huffman code for:

Gray Level	0	1	2	3	4	5	6	7
No. of Pixel	5000	1000	500	530	1250	950	860	130

8
4. a) Explain about JPEG Compression Techniques.
b) What are the differences between CD-ROM (XA) form-1 and CD-ROM (XA) form-2. Illustrate above with a block diagram. 7
5. a) Explain the working principle of CD-WORM.
b) What are the types of real time OS? Explain its major characteristics. 8
6. a) Illustrate why RTOS is important in context of multimedia.
b) Define hypermedia. What are the different layers of hypertext system architecture? Illustrate 7
7. a) Differentiate between SGML and ODA document architecture. Draw necessary diagrams.
b) Define animation. Describe the characteristics of animation languages. 7
7. Write short notes on: (Any two)
a) Computer Video Format
b) H261
c) MHEG. 2x5

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2015
Programme: BE		Full Marks: 100
Course: Multimedia System		Pass Marks: 45
		Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define multimedia. Explain the application areas of multimedia. 8
b) List out the names and the functions of MIDI software. 7
2. a) Define the term speech. Describe time dependent sound concatenation. 8
b) Explain the Image recognition steps. 8
3. a) Explain the principles of animation. 7
b) Explain the CD-ROM Mode 1 and CD-ROM Mode 2 with block diagram. 8
4. a) Discuss the necessity of data compression. Explain briefly one of the entropy encoding technique with a suitable example. 7
b) Explain the Form 1 and Form 2 formats of CD-ROM/Extended Architecture. 8
5. a) Differentiate the earliest deadline and rate monotonic process management in terms of resource utilization and context switching with illustrative diagram. 8
b) Define MCS. Explain the Group Communication Architecture. 7
6. a) Define hypermedia. What are the different layers of hypertext system architecture? Explain. 7
b) Briefly explain the steps of JPEG compression. 8
7. Write short notes on: (Any two) 2x5
 - a) MPEG audio encoding. 8
 - b) Necessity of Data Compression. 8
 - c) QoS. 8

POKHARA UNIVERSITY

Semester: Spring

Year : 2015
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

Level: Bachelor
Programme: BE
Course: Multimedia System

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

Attempt all the questions.

1. a) Define Multimedia. Explain different types of medium with reference to multimedia

b) What are formants? Explain how speech can be generated by time-

dependent sound concatenation.

2. a) What do you mean by digital image? Explain the different types of image formats.

b) Explain the terms Continuity of Motion and Flicker. Discuss about digitalization of a motion video.

3. a) What is run length coding? Construct the Huffman code for.

Gray Level	0	1	2	3	4	5	6	7
No. of Pixel	5000	900	750	500	1250	850	600	150

b) What is MPEG? Explain the purpose of different types of frames used by MPEG compression technique.

4. a) Explain the working principle of CD-MO.

b) Compare earliest deadline first and rate monotonic process management with respect to resource utilization and context switching.

5. a) Define hypermedia. Explain the different layers of Hypertext System Architecture.

b) Explain QoS Layered Model for the multimedia communication system.

6. a) Explain the CD-ROM/XA Form 1 and Form 2 with block diagram.

b) List and explain the image recognition steps. Draw necessary figures.

where ever required.

7. Write short notes on: (Any two)

- a) DVI
- b) Types of Animation language
- c) RTP & XTP

2x5

POKHARA UNIVERSITY

Level: Bachelor Semester: Fall
Programme: BE Pass Marks: 45
Course: Multimedia System Time : 3 hrs.

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

Attempt all the questions.

1. a) What is multimedia in terms of media combination and independence? Explain the building block of multimedia system with block diagram. 7
b) Explain the need of MIDI standard. List the types of MIDI messages and explain them. 7
2. a) What is speech? Describe the time dependent sound concatenation. 8
b) How do you represent any image in a computer? Explain briefly about the fundamental steps in image processing. 8
3. a) What is run length coding? Construct the Huffman code for. 8

Gray Level	0	1	2	3	4	5	6	7
No. of Pixel	4800	1100	550	700	1200	900	500	250

b) Discuss briefly about the concept of animation and explain the types of animation languages. 7
4. a) Explain JPEG compression steps in detail with block diagram. 8
b) Explain the CD-ROM/XA Form 1 and Form 2 with block diagram. 7
5. a) Explain the working principle of CD-DA. 8
b) Define Real Time multimedia OS? Explain the characteristics of Real Time system. 8
6. a) What is the need of hybrid system? Discuss about the hybrid system for communication architecture. 7
b) Explain QoS layered model for multimedia communication system (MCS). 7
7. Write short notes on: (Any two) 2x5
 - a) HDTV
 - b) MPEG
 - c) RTP and XTP

POKHARA UNIVERSITY

Semester Fall

Year : 2017

Full Marks: 100

Pass Marks: 45

Time : 3hrs.

Level: Bachelor
Programme: BE
Course: Multimedia System

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

Attempt all the questions.

1. a) What do you mean by multimedia computing? Explain the main properties of multimedia. 2+5
- b) Define MIDI Message. Discuss the relationship between MIDI and SMPTE timing standard. 7
2. a) List out the names and their functions of MIDI software. 8
- b) Explain the different image transmission possibilities. 8
3. a) Define Run length Encoding. Construct the Huffman code for. 3

Gray Level	0	1	2	3	4	5	6	7
No.of Pixel	4500	1500	900	750	1200	1300	550	100

- b) Explain the major types of computer video format with storage capacities of each. 7
4. a) Discuss the MPEG audio encoding technique with a suitable diagram. 7
- b) Explain the CD-ROM (XA) form-1 and CD-ROM (XA) form-2 with block diagram. 8
5. a) Explain the working principle of CD-DA with suitable diagram. 7
- b) What are the types of real-time OS? Explain its major characteristics. 8
6. a) Compare and contrast hypertext and hypermedia with suitable examples. 8
- b) Explain the Group Communication Architecture with examples. 7
7. Write short notes on: (Any two) 2x5
 - a) Animation Language
 - b) JPEG
 - c) Xpress Transport Protocol (XTP)

POKHARA UNIVERSITY

Level: Bachelor
Semester: Spring
Programme: BE
Course: Multimedia Systems

Year : 2017
Full Marks: 100
Pass Marks: 45
Time : 3 hrs.

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

Attempt all the questions.

1. a) Explain the global structure of multimedia system. 7
b) Explain different categories of MIDI software. 8
2. a) How do you define an image? Explain the various application areas of image processing. 7
b) Explain the various color encoding approaches for video transmission. Write its advantages in terms of multimedia computing. Differentiate between lossless and lossy compression techniques. 7
3. a) What do you understand by the term data compression? Write its advantages in terms of multimedia computing. Differentiate between lossless and lossy compression techniques. 8
4. a) Explain the working principle of the Compact Disk – Magneto Optical (CD-MO). 7
b) What is a resource in terms of multimedia? What are the phases of the resource reservation and management process? Explain different ways of reserving the resources. 8
5. a) With suitable examples explain the SCAN-EDF and Group Sweeping Disk Scheduling Algorithms. 7
b) Explain H.261 (px64) method of compression in detail. 8
6. a) What do you understand by the term QoS? Explain the various QoS parameters. 7
b) Define hypermedia. What are the different layers of hypertext system architecture? Explain. 7
7. Write short notes on: (Any two) 2x5
a) Document Architecture
b) Transport Sub system
c) Form 1 and Form 2 formats of CD-ROM/XA
d) Animation

POKHARA UNIVERSITY

Semester: Fall

Year : 2018
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

Level: Bachelor
Programme: BE
Course: Multimedia Systems

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

Attempt all the questions.

- 7
1. a) Define multimedia system. Explain the implementation areas of multimedia. 8
 - b) Briefly explain the Huffman Coding with example. 7
 2. a) Explain the jpeg compression techniques. 8
 - b) How the information is stored in optical disk? Explain the principle of CD-WO with diagram. 7
 3. a) List out the names and their function of Midi Software. 8
 - b) Briefly explain the spatial filtering technique for image enhancement. 7
 4. a) Define real time system. Explain the characteristics of real time OS. 8
 - b) Describe the various methods for controlling animations. 8
 5. a) Discuss about the hypermedia system architecture with nodes and pointer. 7
 - b) Explain the application subsystem of multimedia communication system. 7
 6. a) Differentiate between ODA and MHEG with suitable block diagram. 8
 - b) Why quality of service is important for multimedia communication system. Explain QoS layered model for the multimedia communication system. 8
 7. Write short notes on: (Any two)
a) DVI
b) USB
c) Multimedia Workstation 2×5

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Multimedia System

Semester: Spring

Year : 2018
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Explain the different application areas of multimedia system. 7
b) Explain different types of MIDI messages. 8
2. a) Explain the methods of controlling animation. 8
b) What are the application areas of image processing? Explain. 7
3. a) Explain the JPEG compression technique. 8
b) What are the approaches that are used to transmit animation over computer network? Describe graphical language with an example. 7
4. a) Explain the Form 1 and Form 2 formats of CD-ROM/ Extended Architecture. 8
b) Explain the arithmetic encoding and decoding technique with suitable example. 7
5. a) Explain various multimedia workstation? Explain hybrid approach. 8
b) With suitable examples explain the EDF and RMA Algorithms. 8
6. a) Explain the relationship between hypertext, hypermedia and multimedia? Explain open document architecture (ODA). 8
b) What are the architectural subsystem of Multimedia Communication System? Explain Quality of Service layered model in Multimedia Communication System 8
7. Write short notes on: (Any two) 2:
a) Image Enhancement
b) SGML
c) QoS parameters

POKHARA UNIVERSITY

Year : 2019
Semester: Fall
Full Marks: 100
Pass Marks: 45

Level: Bachelor
Programme: BE
Course: Multimedia Systems
Time : 3hrs.

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

The figures in the margin indicate full marks.
Attempt all the questions.

1. a) Define multimedia. Explain global structure of multimedia. With necessary diagrams explain how the sound is digitized and the sound stored in a multimedia system is played? 8
2. a) What are the steps involved in Image recognition. Explain with necessary block diagram. 7
3. a) Explain the principles of animation. 8
4. a) How is progressiveness achieved in lossy DCT-mode in JPEG? Explain the different image frames in MPEG. 7
b) What do you understand by the term data compression? Write its advantages in terms of multimedia computing. Differentiate between lossless and lossy compression techniques. 7
5. a) List out the advantages and limitation of optical disks. Explain data storage mechanism in optical disk. 8
b) Explain the working principle of the Compact Disk – Magneto Optical (CD-MO). 8
6. a) What is a resource in terms of multimedia? What are the phases of the resource reservation and management process? Explain different ways of reserving the resources. 7
7. a) What is Multimedia and Hypermedia Information Coding Expert Group Techniques? Explain different types of class defined by MHIEG. 8
b) Write about the ODA and SGML document architecture. 8
8. a) Explain QoS layered model for multimedia communication system. 7
9. Write short notes on: (Any two)
a) Application subsystem of Multimedia Communication System 2x5
b) Methods of controlling Animation
c) Dynamics in Graphics

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2019
Programme: BE Full Marks: 100
Course: Multimedia System Pass Marks: 45
 Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | |
|----|---|---|
| 1. | a) What is data stream? Explain representation value and representation space. | 7 |
| | b) What are the types of MIDI messages? Explain different components of speech recognition. | 8 |
| 2. | a) Explain the meaning of the following terms used in image enhancement:
Contrast enhancement, Linear and non-linear transformation,
Logarithmic transformation, power law transformation and piecewise transformation. | 8 |
| | b) What is flicker effect? Explain RGB signal, YUV signal and YIQ signal. | 7 |
| 3. | a) Compare the concept of video and animation. Explain the 2D animation technique with an example of implementation. | 8 |
| | b) What are the approaches that are used to transmit animation over computer network? Describe graphical language with an example. | 7 |
| 4. | a) What is entropy coding? Explain the lossy sequential DCT-mode in JPEG. | 8 |
| | b) Explain Huffman encoding with an example. | 7 |
| 5. | a) Explain the Form 1 and Form 2 formats of CD-ROM/ Extended Architecture. | 8 |
| | b) Define various multimedia workstation. Explain multimedia real time system. | 7 |
| 6. | a) Explain the relationship between hypertext, hypermedia and multimedia. Explain open document architecture (ODA). | 8 |
| | b) What are the architectural subsystem of Multimedia Communication System? Explain Quality of Service layered model in Multimedia Communication System. | 7 |

2x5

POKHARA UNIVERSITY

Level: Bachelor Semester: Spring Year : 2014
Programme: BE Full Marks: 100 Pass Marks: 45
Course: Object Oriented Software Development Time : 3 hrs.

7. Write short notes on: (Any two)
a) Color image processing
b) Multimedia synchronization for quality of Service
c) SGML

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

Attempt all the questions.

1. a) What are main attributes of an object oriented Analysis and design? How is this approach different from the other approach? Explain with a relevant example 8
- b) Differentiate Analysis and Design model. Explain taking an example. 7
2. a) What are artifacts that may be initiated in elaboration phase? Explain the role of use cases in analysis and design phase. 7
- b) Compare programming paradigm with design patterns and draw your conclusion. Discuss, what are the difficulties that arise while mapping design patterns to a particular programming language. Also list the advantages of a design pattern. 8
3. a) What do you understand by use case drawn software development process? Explain use case realization taking a concrete example (The example must show the realization of a use case in the s/w development process) 10
- b) Describe the importance of documenting and describing patterns 5
4. a) What is software quality? What are the parameters of a software quality? Discuss the roles of user, customer developer and manager in establishing the s/w quality 8
- b) What is a good design? Describe principles that leads to a good design in software developments 7
5. a) What are different structural patterns? Explain any three structural patterns taking an example into consideration. 10
- b) Write in short about Real Time Patterns. 5
6. a) Describe SOA architectural pattern with the design principles it helps to adhere 8

POKHARA UNIVERSITY

Level: Bachelor	Semester: Fall	Year : 2015
Programme: BE		Full Marks: 100
Course: Object Oriented Software Development		Pass Marks: 45
		Time : 3hrs.

- b) Compare and contrast design and architectural pattern.
7. Write short notes on: (Any two)
- Architecture centric process Interaction Diagram
 - Interaction Diagram
 - MVC architectural pattern
- Candidates are required to give their answers in their own words as far as practicable.*
The figures in the margin indicate full marks.
- Attempt all the questions.*
1. a) Describe the Object Oriented Analysis and Design process with example.
 b) Why is Iterative and Incremental Development advantageous over Waterfall approach? Give your reasons.
2. a) What are the key ideas to be considered in Inception phase and what artifacts may start in this phase?
- b) Define Use case realization. What do you mean by use case driven software development process?
3. a) Definition of quality varies according to users. Justify the statement.
 b) Define design pattern. Differentiate programming paradigm and design pattern.
4. a) Describe Abstraction-Occurrence pattern.
 b) Suppose you are designing a dice game. The dice game needs only one instance of dice. Which design patterns do you think will help you to design the game.
5. a) What are the difficulties and risks while using design pattern? Discuss in brief.
 b) List and describe the principles that leads to good design in brief.
6. a) Compare and contrast design patterns and architectural patterns.
 b) Describe MVC architectural pattern with the design principles it helps to adhere.
7. Write short notes on: (Any two)
- Use case driven design
 - Class Diagram
 - Importance of design pattern

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2016

Programme: BE

Full Marks: 100

Course: Object Oriented Software Development

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | |
|--|-----|
| 1. a) What is object-oriented analysis and design? Support your answer with suitable example. | 8 |
| b) What are the phases of Unified Process? Describe in short. | 7 |
| 2. a) "System development is model development." Do you agree? Justify your answer. | 7 |
| b) Discuss the strength and weakness of Object-Oriented and procedural programming with the help of Banking transaction example. | 8 |
| 3. a) Describe workflow for capturing requirement as use cases, including the participating workers and their activities. | 7 |
| b) Design is four dimensional view of a system. Justify along with design concepts. | 8 |
| 4. a) Define design pattern. How is design pattern important? Is software development possible without applying design pattern? | 7 |
| b) Describe a suitable design pattern for following problem.
"What is the best way to represent related objects (occurrence) in a class diagram?" | 8 |
| 5. a) Define design principle, design concept and design pattern. What are the disadvantages of design patterns? | 8 |
| b) What is software architecture? Why do we need it? | 7 |
| 6. a) Describe Service oriented architecture and design principles it helps to adhere. | 7 |
| b) Discuss in short about MVC Architecture with suitable diagram. | 8 |
| 7. Write short notes on: (Any two) | 2×5 |
| a) Player-Role design pattern | |
| b) Reuse vs Reusability | |
| c) Class Diagram | |

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Object Oriented Software Development

Semester: Spring

Year : 2017

Full Marks: 100

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | |
|----|--|-----|
| 1. | a) Explain about Object Oriented Analysis and Design with suitable examples. | 7 |
| | b) What is UML? Explain different UML Diagrams with an appropriate example. | 8 |
| 2. | a) Explain Iterative and Incremental Development Process. | 7 |
| | b) Explain 4 P's of software development. | 8 |
| 3. | a) What is Unified Software Development Process? Explain its characteristics. | 8 |
| | b) What is Design Pattern? Write about importance of Design Patterns. | 7 |
| 4. | a) Describe Structural design pattern. | 7 |
| | b) Write about structure and documentation of pattern. | 8 |
| 5. | a) Explain about Singleton pattern along with code in any suitable programming language (c++ or java or c#). | 8 |
| | b) What is Software Architecture? Describe an architecture using UML. | 7 |
| 6. | a) What do you mean by architectural pattern? Explain about Model View Controller (MVC) architectural pattern. | 8 |
| | b) Explain Message Oriented Architecture Pattern with design principles. | 7 |
| 7. | Write short notes on: (Any two) | 2x5 |
| | a) Life Cycle of Unified Software Development Process | |
| | b) Observer Pattern | |
| | c) Worker, Activity, Artifact and Workflow | |

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2018

Programme: BE

Full Marks: 100

Course: Object Oriented Software Development

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Explain about Object Oriented Analysis and Design with suitable examples. 7
- b) What is UML? Explain different UML Diagrams with an appropriate example. 8
2. a) Explain Iterative and Incremental Development Process. 7
- b) What is requirement analysis? Explain the different roles of project Manager. 8
3. a) Define model evolution. With example, explain about implementation model. 7
- b) What do you mean by use case driven process? Explain role and responsibility of people. 8
4. a) What is Design Pattern? Write about importance of Design Patterns. 7
- b) Describe Structural design pattern with example. 8
5. a) Write about structure and documentation of pattern. 7
- b) Compare and contrast enterprise pattern with real-time pattern. 8
6. a) What is Software Architecture? Describe an architecture using UML. 7
- b) What do you mean by architectural pattern? Explain about Model View Controller (MVC) architectural pattern. 8
7. Write short notes on: (Any two) 2×5
 - a) SOA
 - b) Criticism
 - c) Change Management

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Object Oriented Software Development

Semester: Spring

Year : 2018
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | |
|---|-----|
| 1. a) Describe the Object Oriented Analysis and Design process with example. | 8 |
| b) Change management is very important in Iterative and Incremental Development. Why and how is it done? | 7 |
| 2. a) Explain 4 P's of software development. | 8 |
| b) What is Unified Process? Explain its characteristics. | 7 |
| 3. a) Define software quality. How can you assure quality in software you develop? Give your answer from the prospect of Software System Analyst. | 8 |
| b) What do you mean by Creational Patterns? Explain any one of its type with DCD and source code snippet. | 7 |
| 4. a) What is Design Pattern? Write about importance of Design Patterns. | 7 |
| b) What are the difficulties and risks while using design pattern? Discuss in brief. | 8 |
| 5. a) Explain about concurrency pattern. | 7 |
| b) What is Software Architecture? Describe an architecture using UML. | 8 |
| 6. a) What do you mean by architectural pattern? Explain about Model View Controller (MVC) architectural pattern. | 8 |
| b) Explain Message Oriented Architecture Pattern with design principles. | 7 |
| 7. Write short notes on: (Any two) | 2×5 |
| a) Architecture centric process | |
| b) Interaction Diagram | |
| c) Message Oriented Architecture | |

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2019

Programme: BE

Full Marks: 100

Course: Object Oriented Software Development

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | |
|----|--|-----|
| 1. | a) What is an Object Oriented Paradigm? Explain about Object Oriented Analysis and Design. | 8 |
| | b) What is UML? Explain briefly about behavioural modelling using use-case diagram as an example. | 7 |
| 2. | a) Explain Iterative and Incremental Development Process. | 7 |
| | b) Explain different phases of unified software development process. | 8 |
| 3. | a) What is Unified Process? Explain its characteristics. | 8 |
| | b) What is Design Pattern? Write about importance of Design Patterns. | 7 |
| 4. | a) Explain about Behavioral pattern. | 7 |
| | b) Explain about concurrency pattern. | 8 |
| 5. | a) Write about structure and documentation of pattern. | 8 |
| | b) What is Software Architecture? Describe an architecture using UML. | 7 |
| 6. | a) What do you mean by architectural pattern? Explain about Model View Controller (MVC) architectural pattern. | 8 |
| | b) Explain Message Oriented Architecture Pattern with design principles. | 7 |
| 7. | Write short notes on: (Any two) | 2×5 |
| | a) Configuration and change management | |
| | b) Analysis Model Vs Design Model | |
| | c) Real-Time patterns | |

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Object Oriented Software Development

Semester: Spring

Year : 2019
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | |
|----|--|-----|
| 1. | a) What is UML? Explain Use Case Diagram with an appropriate example. | 8 |
| | b) Define software process. Explain two process models based on iterative and incremental developments, briefly. | 7 |
| 2. | a) What is Unified Process? Explain different phases of unified process. | 8 |
| | b) Discuss on different variations of unified process. | 7 |
| 3. | a) What is Design Pattern? Write about importance of Design Patterns. | 8 |
| | b) Explain different models evolutions during Iterative and Incremental Development of software. | 7 |
| 4. | a) Explain Singleton pattern along with its UML class diagram. | 7 |
| | b) Explain advantages and uses of Façade design pattern with its UML representation. | 8 |
| 5. | a) Explain Observer pattern along with its UML class diagram. | 8 |
| | b) What is Software Architecture? Describe an architecture using UML. | 7 |
| 6. | a) What do you mean by architectural pattern? Explain about Model View Controller (MVC) architectural pattern. | 8 |
| | b) Explain Message Oriented Architecture Pattern with design principles. | 7 |
| 7. | Write short notes on: (Any two) | 2×5 |
| | a) Object Oriented Analysis and Design | |
| | b) Real-Time Patterns | |
| | c) SOA Pattern | |

POKHARA UNIVERSITY

Level: Bachelor
Programme: BE
Course: Principles of Programming Languages

Semester: Fall

Year : 2014
Full Marks: 100
Pass Marks: 45
Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | | |
|----|----|---|-----|
| 1. | a) | Define programming language. What is the importance of studying programming language for software managers, language designer and implementers? | 8 |
| | b) | Briefly discuss the phenomenology of programming languages. | 7 |
| 2. | a) | Describe the Name structure of FORTRAN language. | 7 |
| | b) | Write a FORTRAN program to find sum of all even numbers between 1 to 50. | 8 |
| 3. | a) | Explain the data structures of Alogl-60. | 8 |
| | b) | Define the terms BNF and EBNF. What are the significant uses of Context-free and regular grammars? | 7 |
| 4. | a) | Write a function assoc in LISP that search a property from a- list. | 8 |
| | b) | Explain the control structural of LISP. | 7 |
| 5. | a) | Explain how class and objects are represented in SMALLTALK. | 8 |
| | b) | Write down the steps for Message Sending and returning to an object. | 7 |
| 6. | a) | "Programming languages needs name structure, syntactic structure and control structure." Why? How does machine independence support better syntactic structure? | 8 |
| | b) | Explain how subprograms in FORTRAN are implemented. | 7 |
| 7. | | Write short notes on: (Any Two) | 2×5 |
| | a) | Pass by value Vs pass by name | |
| | b) | Storage Reclamation | |
| | c) | Activation Record. | |

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2016

Programme: BE

Full Marks: 100

Course: Principles of Programming Languages

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the characteristics of good programming language? Why is it important for software engineers to study principles of programming languages? Explain. 8
- b) What are the major programming language domains? Explain the application of pseudo-code in programming. 7
2. a) "Fortran has been revised several times." Explain this statement with successive history of Fortran. 7
- b) How are data represented in Fortran? Differentiate the roles of arrays from scalar data types of Fortran data structure. 8
3. a) Describe the modes of passing parameters in FORTRAN with examples. 7
- b) Why is "Pass-by-name" in Algol-60 considered as a dangerous and expensive method? Explain with a suitable example. 8
4. a) Explain the extended features of EBNF compared to BNF with the help of examples. 8
- b) "Algol was a major milestone in programming languages". Justify. Also explain how Algol-60 became as its final version. 7
5. a) What is Lisp? Explain the structural organization of Lisp with a suitable example. 8
- b) How is information represented by property list and association list in Lisp? 7
6. a) How do classes allow multiple representations of data types in the SmallTalk? Explain with the help of orthogonal classification. 8
- b) Describe three forms of message templates in SmallTalk. 7
7. Write short notes on: (Any two) 2x
 - a) **car** and **cdr** function
 - b) Garbage collection
 - c) Contour diagram

POKHARA UNIVERSITY

Level: Bachelor

Semester: Spring

Year : 2017

Programme: BE

Full Marks: 100

Course: Principles of Programming Language

Pass Marks: 45

Time : 3 hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

- | | | |
|-------|---|----|
| 1. a) | What are the characteristics of good programming language? How pseudo code interpreter can simplify programming? | 8 |
| b) | Do you think that it is necessary to learn principal of programming language for software engineering students? Justify your opinion. | 7 |
| 2. a) | What do you mean by dynamic chain of activation record? Explain the control structure of FORTRAN. | 7 |
| b) | Illustrate looping in FORTRAN by writing a program to find out the square root of the first 20 natural numbers. | 8 |
| 3. a) | Why naming structure is essential for programming? Explain the name of ALGOL-60. | 8 |
| b) | Explain the enhanced features of EBNF as compare to BNF with the help of examples. | 7 |
| 4. a) | Differentiate among pass by value, pass by reference and pass by name with suitable example. | 5 |
| b) | How does CAR and CDR help in searching the data elements? Explain with the help of walking down diagram. | 5 |
| c) | How did ALGOL solve the problem of FORTRAN lexics? | 7 |
| 5. a) | What is LISP? Define the structural organization of LISP program with example. | 7 |
| b) | Differentiate between Association list and property list in LISP. Give relevant examples. | 8 |
| 6. a) | Describe three forms of message Template in Small Talk. | 8 |
| b) | Explain how Small Talk represents the object oriented paradigm with suitable examples. | 7 |
| 7. | Write short notes on: (Any two) | 2× |
| a) | Contour diagram | |
| b) | Programming Paradigm | |
| c) | Message passing and returning in Small talk | |

POKHARA UNIVERSITY

Level: Bachelor

Semester: Fall

Year : 2018

Programme: BE

Full Marks: 100

Course: Principles of Programming Languages

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the programming domains? How logical programming is differing with functional programming? 8
b) "The complexity of programming led to the development of program design notations". If this is true explain with reference of Pseudo code. 7
2. a) What do you mean by dynamic chain of activation record? Explain the control structure of FORTRAN. 8
b) Pass by reference is a dangerous proposition in FORTRAN". Justify this statement with suitable example. 7
3. a) Differentiate BNF with EBNF with the help of syntactic structure of ALGOL – 60. 8
b) "ALGOL was a major milestone in programming languages". Justify this statement. 7
4. a) Differentiate among pass by value, pass by reference and pass by name with suitable example. 5
b) What is property list? Differentiate between car and cdr. 5
c) Why does a programming language need syntactic structure? Explain with reference by ALGOL-60. 5
5. a) What is polish notation? How hierarchical structures are processed in LISP? 7
b) Translate the following expressions into LISP. 8

POKHARA UNIVERSITY

Semester: Spring

Year : 2018
Full Marks: 100

Pass Marks: 45
Time : 3hrs.

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2\sqrt{4a^2 - b^2}}$$

$$\frac{\pm \sqrt{b^2 - 4ac}}{2\sqrt{(2ax)^2}}$$

i.

$$\frac{\pm \sqrt{b^2 - 4ac}}{2\sqrt{s(s-a)(s-b)(s-c)}}$$

6. a) Explain an object and class specification in SMALLTALK. How in diagrammatically does class and object are represented in Smalltalk.

7. 8

- b) Explain Message Passing and Returning mechanism in Smalltalk.

2x5

- c) Write short notes on: (Any two)

- a) Block and scope
b) Characteristics of good programming language
c) Zero-one infinity principle
d) Lambda expressions

2x5

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

Attempt all the questions.

1. a) What are the characteristics of good programming language? How 7
pseudocode interpreter can simplify programming?

b) Describe the control structure of FORTRAN.

2. a) Mention looping in FORTRAN by writing the program to find out the 8
cube root of first 20 natural numbers?

- b) Give specific examples where FORTRAN-IV violates the principles 7
of programming languages.

3. a) Why are naming structures essential for programming? Explain the 8
name Structure of ALGOL-60.

- b) How are Context-free and regular grammars used in the describing 7
programming languages?

4. a) Translate the following expressions into LISP 8

$$\frac{1}{2} \sqrt{\pi r^2 - l^2}$$

$$\frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

- b) Write assoc function in LISP to access the value of a-list. How would you handle the case where the requested attribute is not associated by a-list?

5. a) Briefly explain the following structures in LISP

- i. The conditional expression
ii. The logical connectives

- iii. Mapcar and reduce functions

- b) Compare and Contrast object oriented programming facilities in C++ and Java.

6. a) Describe three forms of message template in SMALLTALK.
b) How is Activation Record represented in SMALLTALK?

POKHARA UNIVERSITY

Semester: Fall	Year : 2019
Level: Bachelor	Full Marks: 100
Programme: BE	Pass Marks: 45
Course: Principles of Programming Languages	Time : 3 hrs.

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

Attempt all the questions.

7. Write short notes on: (Any two)
 - Pseudocode
 - User defined function in LISP
 - Contour Diagrams

 - 8 Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.
- Attempt all the questions.*
1. a) "The complexity of programming led to the development of program design notations". If this is true explain with reference of Pseudocode. b) What are phenomenology of programming language? Explain about the "Fascination and fear are common to new tools".
 2. a) What is the significance of dynamic chain of activation record?
Explain with the help of examples.
 3. a) Illustrate looping in FORTRAN by writing a program to find out the square root of the first ten natural numbers.
 4. a) How the enhanced features of EBNF is efficient as compare to BNF with the help of examples.
 5. a) How ALGOL has changes the way of programming in efficient way?
Explain.
 6. a) What are different searching techniques in LISP? Explain them with the help of walking down diagram.
 7. a) What is LISP? Define the structural organization of LISP program with example.
 8. a) "Optional variables declarations are dangerous in FORTRAN programming". Justify the statement.
 9. a) Explain Recursive interpreters and storage Reclamation in LISP.
 10. a) Explain Message Passing and Returning mechanism in Smalltalk.
b) What are different forms of message template in SMALLTALK?
Explain them.
 11. Write short notes on: (Any two)
 - Assigned GOTO
 - Block and scope
 - Lambda Expression
 - Contour Diagram

POKHARA UNIVERSITY

Level: Bachelor

Semester: Spring

Year : 2019

Programme: BE

Full Marks: 100

Course: Principles of programming language

Pass Marks: 45

Time : 3hrs.

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

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) What are the importance and objectives of principles of programming Languages? 7
b) Explain the design of a pseudo code and its implementation. Highlight the functional enhancements brought by the Pseudo code.
2. a) "Subprograms are implemented using Activation records in Fortran". Explain with the help of examples. 7
b) Illustrate looping in FORTRAN by writing a program to find out the sum and average of first ten odd natural numbers. 8
3. a) Explain the History and Motivation of ALGOL programming .Also Explain and mention its failure factors. 7
b) Prepare a lecture note of control structure. Data structure, Name structure and Syntactic structure in ALGOL. 8
4. a) What is LISP? Explain about car and cdr indicators with examples. 7
b) How LISP has maintained the simplicity principle? Explain the searching techniques provided by it. 8
5. a) What are different forms of message template in SMALLTALK? Explain them. 8
b) "Smalltalk belongs to new programming paradigm". Explain in reference to class, object and object oriented Extensions. 7
6. a) Translate the following expressions into LISP 8
i) $(-1)^k k^{1/k}$ ii) $\frac{n!}{r!(n-r)!}$
- b) "COMMON permits aliasing, which is dangerous in FORTAN". Justify the statement. 7
7. Write short notes on: (Any two) 2×5
 - a) Recursive Interpreters and storage Reclamation in LISP
 - b) Descriptive tools in ALGOL
 - c) Nested scope in BLOCK
 - d) Phenomenology of programming languages