T.Y.B.SC. INFORMATION TECHNOLOGY (SEM-VI)

Internet Technologies

(DEC - 2017)

Q. P. Code: 22821

(3 Hours) Total Marks : 100

Note : : 1) All questions are compulsory.
2) Make suitable assumptions wherever necessary and state the assumptions made.
3) Numbers to the right indicate marks.

Q. 1 Attempt ***any two*** of the following **10**
- a Explain output module of TCP.
- b Write a note on timers available in RIP.
- c Explain class full addressing.
- d Explain IPv6 base header format.

Q. 2 Attempt ***any three*** of the following **15**
- a Write a note on NAT (network address translation)
- b Explain role of presentation layer.
- c Explain supernetting with example.
- d State and explain reassembly module of IP Package.
- e Explain strategies for transmission from IPv4 to IPv6.
- f Explain unicast, anycast and multicast address in IPv6.

Q. 3 Attempt ***any three*** of the following **15**
- a Explain Cache control module of ARP.
- b List and Explain Error Reporting messages of ICMP.
- c Explain role of foreign agent and home agent in Mobile IP.
- d Explain the concept of path vector routing.
- e Explain two-node instability in RIP.
- f Explain various types of links in OSPF.

Q. 4 Attempt ***any three*** of the following **15**
- a State and explain features of UDP.
- b Write and Explain pseudo code of control-block module and output module of UDP.
- c Draw and explain TCP Segment format.
- d Draw and explain client state transition diagram of TCP.
- e State and explain services of SCTP.
- f Explain INIT chunk of SCTP.

Q. 5 Attempt ***any three*** of the following **15**
- a Draw and explain DHCP packet format.
- b Explain Generic, Country and the Inverse Domain.
- c Explain the concept of NVT and NVT character set.
- d Explain in brief components of SSH.
- e Explain in brief communication over control connection & data connection in FTP.
- f Explain different messages of TFTP.

Q. 6 Attempt ***any three*** of the following **15**
- a Explain in detail hypertext and hyper media, web client(browser), webserver, Uniform resource locator.
- b Explain persistence and nonpersistent connection of HTTP.
- c Write a note on message transfer agent of email system.
- d Explain in detail the role of POP3 and IMAP4 in email system.
- e Explain various data types and subtypes in MIME.
- f Write a note on Audio Compression.

Q. 7 Attempt ***any three*** of the following **15**

a Explain in detail constructors used to create DatagramSocket.

b Write TCP socket program that will display whether a number is a prime or not.

c Explain Socket class with its methods and properties.

d Explain how UDP socket programming works?

e Write UDP socket program that will display number of vowels in a string.

f Write a Client/server application where a client contacts the server to obtain random number. Use Socket and Server Socket.

****

T.Y.B.SC. INFORMATION TECHNOLOGY (SEM-VI)

Digital Signals and System

(DEC - 2017)

Q.P. Code : 22817

(3 Hours) Total Marks : 100

Note : : 1) All questions are compulsory.
2) Make suitable assumptions wherever necessary and state the assumptions made.
3) Numbers to the right indicate marks.

Q. 1 Attempt ***any two*** of the following **10**

a What are the advantages of Digital Signal Processing (DSP) over Analog Signal Processing (ASP)?
b What is region of convergence?
c With reference to z-Transform, state and the initial and final value theorem
d Define the terms i) Linearity ii) Causality

Q. 2 Attempt ***any three*** of the following **15**

a Define & give the graphical representation of Unit step and Unit impulse
b Discuss the classification of systems.
c Draw and explain the block diagram of an analog – to – digital converter.
d What is meant by sampling? State sampling theorem.
e What is meant by quantisation and encoding?
f Write a note on Dirichlet's conditions.

Q. 3 Attempt ***any three*** of the following **15**

a Find the Laplace transform of Cosine function
b Find Laplace transform of the periodic sawtooth waveform with period of one cycle T
c State any five properties of Laplace transform.
d Define the network transfer function & explain how to obtain output impulse & step response using transfer function.
e State and explain Laplace Transform and its inverse transform
f Obtain Laplace transform for step and Impulse Responses of Series R-L Circuit

Q. 4 Attempt ***any three*** of the following **15**

a Define z-Transform. Explain the use of z-Transform
b Compare the properties of tw-sided z-transform with those of one-sided z-Transform
c What is the condition for z-Transform to exist?
d Obtain the Z-Transform of $x(n)=n^2u(n)$.
e How is z-Transform obtained from Laplace transform?
f State and explain the properties of z-Transform.

Q. 5 Attempt ***any three*** of the following **15**

a Simple problems to check the Linearity and Causality of the signals.
b Explain briefly the Paley-Wiener criterion
c Explain stability in Linear Time Invariant system. What is the condiction for a system to be BIBO stable?
d What is convolution? What are the properties of convolution?
e What is frequency response? What are the properties of frequency response?
f Check whether the system $F[x(n)]= n[x(n)]^2$ is Linear and Time-Variant.

Q. 6 Attempt ***any three*** of the following **15**

a Explain any 5 properties of DFT

b State and explain the properties of Discrete Fourier Series.

c Define Discrete Fourier Transform (DFT) for a sequence x(n)

d What are the methods used to perform Fast Convolution. Explain any one method giving all the steps involved to perform Fast Convolution.

e Compute Linear and Circular Periodic Convolutions of the sequence $x_1(n)$= {1,1,2,2} and $x_2(n)$= {1,2,3,4} using DFT.

f State the relationship between DFT and z-Transform

Q. 7 Attempt ***any three*** of the following **15**

a Explain the effects of windowing. Define Rectangular and Hamming window functions.

b Describe the Inverse Chebyshev filters.

c Obtain the system functions of normalized Butterworth filters for order N = 1 & 2.

d State the advantages of Digital filters.

e Describe elliptical filters in detail.

f Explain the procedure for designing an FIR filter using Kaiser window.

~ * ~ * ~ * ~ * ~ *

T.Y.B.SC. INFORMATION TECHNOLOGY (SEM-VI)

Data Warehousing

(DEC - 2017)

Q. P. Code: 22824

(3 Hours) Total Marks : 100

Note : : 1) All questions are compulsory.
2) Make suitable assumptions wherever necessary and state the assumptions made.
3) Numbers to the right indicate marks.

Q. 1 Attempt ***any two*** of the following 10

a What is data warehouse?
b Write a short note on information quality management.
c Briefly explain business analyst perspective.
d What is data warehouse? List and explain the characteristics of data warehouse.

Q. 2 Attempt ***any three*** of the following 15

a Differentiate between operational system and informational system.
b List and explain the characteristics of data warehouse.
c Write a short note on integrated sector.
d What are data marts?
e What are components of data warehouse environment?
f Explain evolution of data warehouse from the business perspective.

Q. 3 Attempt ***any three*** of the following 15

a Write a short note on enterprise metadata.
b Write a short note on metadata.
c Explain enterprise reference model in brief.
d How data correction stream works?
e What is spiral model methodology?
f Write a short note on heuristic analysis.

Q. 4 Attempt ***any three*** of the following 15

a Write a short note on corporate data model.
b Briefly explain peak period processing.
c Write a short note on firewall.
d Write a short note on dormant data.
e How to monitor data quality?
f What is a summarized data?

Q. 5 Attempt ***any three*** of the following 15

a Explain in brief continuous time span data.
b Write a short note on non-overlapping records.
c Explain throughput with respect to ETL.
d Explain ETL in online mode.
e Explain how data flows into integrated sector.
f Write a short note on ETL mapping.

Q. 6 Attempt ***any three*** of the following 15

a What are functions of granularity manager?
b Write a short note on filtering data.
c How transaction processing can be parallelized?
d Define online response time.
e Write a short note on building the metadata infrastructure.
f Write a short note on workload management.

Q. 7 Attempt ***any three*** of the following 15

a Write a short note on need of data warehouse.
b How DW is implemented on database systems?
c How data is deployed in data warehouse?
d Explain maintenance of data warehouse.
e Explain in brief physical design process.
f Write a short note on growth of DW.

~ * ~ * ~ * ~ * ~ * ~

T.Y.B.SC. INFORMATION TECHNOLOGY (SEM-VI)

Elective :- Project Management

(DEC - 2017)

Q. P. Code: 22826

(3 Hours) Total Marks : 100

Note : : 1) All questions are compulsory.
2) Make suitable assumptions wherever necessary and state the assumptions made.
3) Numbers to the right indicate marks.

Q. 1 Attempt ***any two*** of the following **10**

a Write note on Pragmatic Software Cost Estimation
b Explain the principles of modern software management
c What is iteration? Explain the sequence of an individual iteration workflow.
d Explain the roles, artifacts and responsibilities of software architecture team.

Q. 2 Attempt ***any three*** of the following **15**

a What kind of strategies can be applied to improve team effectiveness?
b Explain the generations of Software Development.
c What are the strategies to make error free software?
d Present the Boehm's Top-10 software metrics list in detail.
e Explain how to reduce the Software product size.
f Explain the three generations of software development.

Q. 3 Attempt ***any three*** of the following **15**

a Explain the principles of conventional software management
b Explain any five Davi's principles of conventional software management.
c Briefly explain the management artifact sets.
d What is an artifact set? What are the different types of artifact sets?
e Explain the different stages in modern software development process?
f Write note on Aspects of architecture from the management perspective.

Q. 4 Attempt ***any three*** of the following **15**

a Explain two planning guidelines.
b Explain the evolution of Work breakdown structure
c Write short note on periodic status assessment
d Discuss the cost and schedule estimating process.
e Explain the significance of periodic status assessment.
f What is a workflow? List and explain the software process workflows.

Q. 5 Attempt ***any three*** of the following **15**

a Write a note on Process automation
b Write note on Software Change Orders (SCO).
c Explain the role of infrastructure in process automation
d Explain the environment disciplines of environment evolution.
e Write note on Round trip engineering
f Explain the features of Project Organizations.

Q. 6 Attempt ***any three*** of the following **15**

a Describe the metrics for project control and process instrumentation.

b Write a note on Management Indicators

c List the basic characteristics of good metric.

d Give the comparison between small-scale and large-scale projects.

e Explain the process discriminators resulting from differences in project size.

f Explain the automation process with neat diagram.

Q. 7 Attempt ***any three*** of the following **15**

a How the project profiles differ between a conventional approach and modern process?

b What is early risk resolution? Give its advantages.

c State the traits of modern process development

d Write a note on Modern Software economics

e Explain the general structure for cost estimation model for modern software process

f Enlist the various principles of modern project management.

~ * ~ * ~ * ~ * ~ * ~